

3. LAKE ERIE

3.1 BUFFALO RIVER AOC, ERIE COUNTY, NY

The Buffalo River AOC is located in the city of Buffalo in western New York State. The Buffalo River flows west into Lake Erie near the head of the Niagara River. The AOC extends from the mouth of the Buffalo River approximately 6 miles to the east and includes the adjoining land (see AOC map in the appendix).

3.1.1 Hazardous Waste Sites Relevant to the Buffalo River AOC

ATSDR has evaluated the data for six hazardous waste sites in Erie County, NY, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 3-1.

Table 3-1. Hazardous Waste Sites in Erie County, NY

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
Abby Street Hickory Wood Subdivision	2 (1999 HC) 2 (2001 HC)	Non NPL	NYSFN0204229	Buffalo
Diarsenol Company	2 (1994 HA)	Non NPL	NYD981187040	Buffalo
Ernst Steel	2 (1990 HC)	Non NPL	NYD980508246	Buffalo
Newstead Site	1 (1989 HV) n.c. (1992 LI)	Non NPL	NYD986883387	Newstead
Pfohl Brothers Landfill	3,4 (1995 HA)	Final	NYD980507495	Cheektowaga
Wide Beach Development	4 (1987HA, n.d. SR)	Deleted Post SARA	NYD980652259	Brant

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, LI = Lead Initiative, SR = Site Review and Update
 n.c. = no category reported; n.d. = no date provided

For hazardous waste sites in Erie County, NY that *at any time* had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health based-screening values was 563, as shown in Table 3-2. Most of the records were for the soil media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 118 (21%) of these records, with the majority for the soil media group. The IJC critical pollutants that have been found at Erie County NY hazardous waste sites at concentrations exceeding health-based screening values are: PCBs, TCDD, B(a)P, DDT

and metabolites, aldrin/dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3-3.

ATSDR provides further evaluation of these data in the Public Health Assessments and other health-related documents listed in Table 3-1. The evaluations for the five sites with Public Health Hazard Categories of 1-3 are discussed in the following subsections.

3.1.1.1 Abby Street/Hickory Woods Subdivision

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

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

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

Contaminants of Concern in Completed Exposure Pathways: Not explicitly discussed, but completed exposure pathways appeared to be soil ingestion and soil contact in yards, vacant lots, and a playground. The contaminants that exceeded health-based screening values in soil were the IJC critical pollutants PAHs [as B(a)P equivalents] and lead. The IJC critical pollutants aldrin and dieldrin—in single samples—required further investigation. The source of lead was thought to be lead paint, and possibly historical contributions from leaded gasoline, and emissions from industry. Levels of lead and PAHs were comparable to or lower than those of two other Buffalo area neighborhoods. Arsenic levels in soil at the playground were considered high enough to constitute a public health hazard.

Demographics: Approximately 80 homes were located in this subdivision.

Public Health Outcome Data:

NYS DOH survey: NYS DOH conducted a survey of the residents to investigate potential exposures and health conditions. Among the 201 residents who participated:

- Ten (or 5%) reported thyroid disease (primarily hypothyroid); they had resided in the subdivision for at least 5 years (average 10 years). 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%. Further follow-up of the thyroid problems was planned.
- The rates and types of cancer reported among the participants did not reveal an unusual pattern of cancer incidence.

NYS DOH analysis of childhood blood lead levels: Data from the universal screening of children under the age of six were analyzed:

- Of the 49 children in the subdivision who were screened during 1994-2000, 31 had values less than 5 :g/dL, 12 had values of 5-9.9 :g/dL, and 6 had values greater than or equal to 10 :g/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.

Conclusions: This site, a residential area with contamination by lead from leaded paint and past industrial activities, and PAHs [as B(a)P equivalents] from combustion including past industrial activities, may contribute slightly to the burden of IJC critical pollutants. Elevated levels of aldrin and dieldrin were found in soil at one location, but these IJC critical pollutants do not appear to have been widespread contaminants at this site. Concentrations of arsenic (not an IJC critical pollutant) in soil at a playground were high enough to be considered a public health hazard.

ATSDR recommended follow-up on the thyroid conditions among Hickory Woods residents, because the prevalence was elevated, in comparison with the general population.

3.1.1.2 Diarsenol Company (Kingsley Park)

This site is the grounds of the former Diarsenol Company pharmaceutical manufacturing plant, approximately 2.5 miles north of the AOC. The pharmaceutical plant produced an arsenic-based medication from 1930 to 1948, and was reported to have stored waste materials and unused product on open ground beside the facility. The property was purchased by the City of Buffalo in 1968 and was used as a public recreation area (called Kingsley Park) until 1988, when it was closed because of concerns regarding contamination. Information regarding this site is taken from the 1994 ATSDR public health assessment.

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

Contaminants of concern in Completed Exposure Pathways: None. Prior to 1991, residents were exposed to the IJC priority critical pollutants carcinogenic PAHs [including B(a)P] and lead, as well as to arsenic, at levels that could adverse health effects. 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 considered site-related. The source of lead, which was higher off-site than on-site, was thought to be leaded paint on older buildings and 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.

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

Public Health Outcome Data:

- The NYS DOH is conducting a cancer study in the Kingsley Park area.
- The Erie County Health Department conducted a blood lead and urinary arsenic screening program for residents of all ages in the community, but participation was limited. The screening blood lead level was 25 :g/dL (previous CDC guideline). Only 2 of the 305 samples showed elevated blood

leads (one child, born after the park was closed, had 25 :g/dL, and one older person had 29 :g/dL). Testing of 304 community residents for urinary arsenic revealed that all had levels below 10 :g/L; the health-based screening value was 50 :g/L.

Conclusions: Although this site may have contributed slightly to human exposure and the burden of the IJC critical pollutants lead and PAHs in the past, these pollutants are not considered related to the manufacturing activities that occurred at the site, but rather to leaded paint, combustion of leaded gasoline and fossil fuels, and to urban air quality. The site may also have contributed to arsenic pollution; arsenic was a site-related contaminant. The site has been remediated by removal and replacement of the contaminated soil.

3.1.1.3 Ernst Steel Site

This site is located 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 up until 1980. Access to this area is not restricted. Information regarding this site is taken from the 1990 ATSDR health consultation.

Category of Public Health Hazard: ATSDR concluded that this site posed a Public Health Hazard due to the levels of lead and chromium found on-site and the potential for the public to frequent the site.

Contaminants of Concern in Completed Exposure Pathways: The IJC critical pollutant lead and also chromium were present in soil at concentrations that were anticipated to have adverse health effects through ingestion and inhalation of dust by nearby residents, including children, who may frequently traverse the site or play on-site. The contamination with lead and chromium was considered site-related. Insufficient data were available to determine if off-site migration through runoff, air dispersion, or contamination of groundwater were occurring.

Demographics: Not reported. A residential area was located nearby.

Public Health Outcome Data: Not reported.

Conclusions: This site may have contributed to the environmental burden of lead, an IJC critical pollutant, and also chromium. Issues for further investigation include the lack of information regarding possible offsite migration or contamination of groundwater by lead and chromium, and the lack of monitoring data for organic contaminants that may be present from the machine cutting oil and other unknown organics that may have been dumped.

3.1.1.4 Newstead Site

The Newstead housing site is a 6-acre parcel of land located on Fletcher Road in Newstead, Erie County, NY, several miles northeast of the AOC. It contains a residence and associated play area and barn, plus a fallow field, a garden, and an area that had reportedly been used for disposal of old chemicals and paints from a paint manufacturing firm in Buffalo. In 1985, a site inspection revealed (an unspecified number of) protruding 55 gallon drums and waste material of tar-like and resinous consistency on the surface of the ground. Information regarding this site is taken from the 1992 ATSDR lead initiative summary report and from HazDat.

Category of Public Health Hazard: In 1989, ATSDR issued a public health advisory (category 1, Urgent Public Health Hazard) due to high levels of lead and cadmium in soil and physical hazards. A further assessment in 1992 did not provide a health hazard category, but recommended that further actions await the results of a Remedial Investigation/Feasibility Study.

Contaminants of Concern in Completed Exposure Pathways: In the past, when people were living at the site, exposure to soil contaminated with very high concentrations of the IJC critical pollutant lead and also high concentrations of cadmium probably occurred during routine domestic activities (playing, lawn care, gardening). Although the site has been fenced, there is still a concern for exposure to trespassers. Groundwater was monitored, but results are not mentioned in the discussion of contaminants of concern, and are not on HazDat.

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

Public Health Outcome Data: The past residents of the site, who had been relocated sometime after 1985 and before 1989, were tested in 1991 for blood lead and cadmium levels and urinary cadmium levels by the NYS DOH. The levels of contaminants were reported to be within the ranges of the general population.

Conclusions: Lead and cadmium contamination of soil has not been remediated, but apparently has not resulted in groundwater contamination. The site is fenced. The location of the site with regard to streams feeding into the Buffalo River is not available in the materials reviewed for this report, but the site is not near the AOC.

3.1.1.5 Pfohl Brothers Landfill

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

Category of Public Health Hazard: ATSDR concluded In 1995 that this site represents *No Apparent Public Health Hazard* (category 4) because the data do not indicate that exposure to contaminants is high enough to cause adverse effects. Removal and remedial activities have greatly reduced the likelihood of exposure to site-related contamination.

ATSDR further concluded that this site is an *Indeterminate Public Health Hazard* (category 3) for past exposures because the data were not adequate to conduct a groundwater contaminant trend analysis.

Chemicals of Concern in Completed Exposure Pathways: None currently. A large number of contaminants, including the IJC critical pollutants carcinogenic PAHs, PCBs, lead, and mercury, exceeded health-based comparison concentrations in one or more of the following media: on-site soil, waste materials, leachate, and surface water, and off-site sediments (Aero Lake). Based on further estimation of exposure doses, ATSDR concluded that none exceeded health guideline doses. Potentially site-related contaminants were not found above background or health-based comparison levels in fish in Aero Lake and Ellicott Creek. Data for groundwater including on- and off-site monitoring wells and

private drinking water wells were not adequate to determine whether contaminants, and particularly PCBs and metals, have migrated off-site and to what extent. Additional more systematic monitoring was to be conducted.

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

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

Public Health Outcome Data:

- NYS DOH surveys conducted in 1990 included the 60 residents of 20 nearby households, 35% of which 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 NYS DOH concluded that the survey did not reveal any unusual patterns of illnesses.
- Blood lead screenings of 20 children living near the site, conducted in 1991 by the NYS DOH, found a maximum blood lead level of 8 :g/dL, which was below the CDC action level of 10 :g/dL.
- NYS DOH conducted initial and follow-up studies of cancer incidence for 1978-1987 in three census tracts that comprise the site and Ellicott Creek areas. Observed rates were significantly greater than expected (based on other areas of NY with similar population densities) for all cancers in women, breast cancer in women, and prostate cancer in men. Most of the excess cancer in women was accounted for by breast cancer (130 versus 105 expected), and the breast cancer excess was accounted for by the census tract (100.01) in which the landfill is located. Few of the cases, however, had exposure to landfill contaminants, and there was no geographical clustering of cases around the landfill. The excess prostate cancer in men (79 observed versus 49 expected) was mostly accounted for by the landfill census tract (100.01), but geographic analysis revealed no clustering around the landfill. ATSDR concluded that the occurrence of cancer is probably not related to the site.

Conclusions: Although this site probably contributed to human and environmental exposure burdens for the IJC critical pollutants carcinogenic PAHs, PCBs, lead, and mercury in the past, completed exposure pathways do not appear to exist following remediation activities and fencing of the site. Groundwater monitoring was to be continued. Public health outcome did not indicate unusual patterns of illnesses. The occurrence of cancer did not appear to be site-related.

3.1.2 TRI Data for the Buffalo River AOC

The TRI on-site chemical releases for Erie County, NY are summarized in Table 3-3. Total on-site releases in 2001 were 5,269,495 pounds, the majority of which were released to air, followed by releases to water. Little was released to soil.

Of the total on-site releases, 9387 pounds (0.2%) were accounted for by IJC critical pollutants. The IJC critical pollutants released on-site were PCDDs and PCDFs (to air), lead and lead compounds (to air and water), and mercury and mercury compounds (to air). The facilities that released these pollutants are listed in Table 3-4.

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

3.1.3 County Demographics and Health Status Data for the Buffalo River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Erie County, NY is as follows:

Children 6 years and younger	82,897
Females aged 15-44	197,414
Adults 65 and older	151,258

According to the 2000 HRSA community health status reports, Erie County health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties were as follows (indicators that were above the upper limit of the peer county range are bolded):

Infant mortality (per 1,000 births)

- **black infant mortality**
- neonatal infant mortality

Birth measures (as percent)

- none

Death measures (per 100,000 population)

- breast cancer (female)
- colon cancer
- coronary heart disease
- lung cancer

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

3.1.4.1 Hazardous Waste Sites

ATSDR has categorized five sites in Erie County, NY in health hazard categories 1-3 at some time in their assessment history. Based on the documents for these sites reviewed in Section 3.1.1, there is no clear evidence that human exposure to waste-site-related IJC critical pollutants is currently occurring at concentrations or doses that exceed health-based screening values. Most of these sites have been remediated by removal of contaminated soil and waste-containing barrels, or exposure is prevented through the use of institutional controls (fencing, covering contaminated soil). A possible exception is the Ernst Steel Site, which had not been fenced or remediated as of the 1990 ATSDR health consultation, and was contaminated with the IJC critical pollutant lead (and also with chromium). Also, the non-IJC pollutant arsenic was present in playground soil at the Abby Street/Hickory Woods Subdivision at levels considered a public health hazard as of ATSDR's 2001 health consultation.

In the past, the hazardous waste sites may have contributed to the environmental burden of the IJC critical pollutants, particularly PCBs, B(a)P, lead, and mercury. Lead was a site-related soil contaminant at three sites, but was considered due to leaded paint on older buildings and the historical contribution of leaded

gasoline at the other two sites. B(a)P also was considered related to urban air quality rather than to be specifically site-related for two of the three sites at which it exceeded health-based comparison values. It is possible that some of the sites are still releasing pollutants, as discussed under Issues for Follow-Up.

The most common exposure pathways for these contaminants were ingestion and dermal contact with contaminated soil.

Public health outcome data, available for three of the sites, generally did not indicate unusual rates of health conditions, or did not indicate an association with site-related exposures. The exception was an apparent increased prevalence of thyroid conditions among residents of the Abby Street/Hickory Woods Subdivision site.

Issues for Follow-Up

Abby Street/Hickory Woods Subdivision: ATSDR concluded that follow up of the thyroid conditions is needed. High arsenic levels in playground soil appear to have been a subject for follow up by the NYS DOH, but the health consultation is not clear on this point (pertinent text was missing from page 29 of the consultation).

Diarsenol Company (Kingsley Park): The NYS DOH is conducting a cancer study in the Kingsley Park area.

Newstead Site: As of ATSDR's 1992 assessment, this site had high levels of lead and cadmium in soil from disposal of old chemicals and paint from paint manufacturing. It had been fenced, but not remediated, and was undergoing a remedial investigation/feasibility study.

Ernst Steel: Data for organic contaminants that may be present from machine cutting oil that was dumped at this site were not available, and no information regarding potential off-site migration or potential contamination of groundwater by known contaminants (lead and chromium) was available.

3.1.4.2 TRI Data

On-site TRI releases in Erie County, NY, totaled 5,269,495 pounds, the majority of which were released to air, followed by releases to water. Considerably less was released to soil.

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

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

3.1.4.2 County Demographics and Health Status Indicators

Vulnerable populations totaled 431,569. Several Erie County, NY, health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These health status indicators included black infant mortality, neonatal infant mortality, and deaths from various cancers (breast, colon, and lung), and coronary heart disease.

**Table 3-2. Waste Sites Contaminants that Exceeded Health-Based Screening Values
Buffalo River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						Total
			Air	Biota	Human Material	Other Media	Soil	Water	
011097-69-1	AROCLOR 1254	1					2		2
011096-82-5	AROCLOR 1260	1					2		2
001336-36-3	POLYCHLORINATED BIPHENYLS	1				1	2	3	6
001746-01-6	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	2				1	1		2
000050-32-8	BENZO(A)PYRENE	4					3		3
HZ1500-50-T	BENZO(A)PYRENE EQUIVALENTS	4				1	6		7
HZ1500-02-T	PAHS (CARCINOGENIC)	4		1		3	16	2	22
000072-54-8	DDD, P,P'-	5					2	1	3
000072-55-9	DDE, P,P'-	5					2		2
000050-29-3	DDT, P,P'-	5					2		2
000309-00-2	ALDRIN	6				1	3	2	6
000060-57-1	DIELDRIN	6		1		1	5	1	8
007439-92-1	LEAD	8		2	2	2	21	7	34
007439-97-6	MERCURY	9				2	9	3	14
000118-74-1	HEXACHLOROENZENE	11		1			4		5
		Total IJC		5	2	12	80	19	118
000071-55-6	1,1,1-TRICHLOROETHANE						1	1	2
000075-34-3	1,1-DICHLOROETHANE						1	1	2
000075-35-4	1,1-DICHLOROETHENE						1	1	2
000120-82-1	1,2,4-TRICHLOROENZENE						1	1	2
000096-12-8	1,2-DIBROMO-3-CHLOROPROPANE							1	1
000106-93-4	1,2-DIBROMOETHANE							1	1
000540-59-0	1,2-DICHLOROETHYLENE					1			1
000541-73-1	1,3-DICHLOROENZENE						1		1
000106-46-7	1,4-DICHLOROENZENE						1	1	2
000120-83-2	2,4-DICHLOROPHENOL						1		1
000105-67-9	2,4-DIMETHYLPHENOL						3	1	4
000051-28-5	2,4-DINITROPHENOL						2		2
000121-14-2	2,4-DINITROTOLUENE						2		2
000606-20-2	2,6-DINITROTOLUENE						2		2
000078-93-3	2-BUTANONE						1		1
000091-57-6	2-METHYLNAPHTHALENE					1	3		4
000088-74-4	2-NITROANILINE						2		2
000099-09-2	3-NITROANILINE						1		1
000534-52-1	4,6-DINITRO-O-CRESOL						1		1
000083-32-9	ACENAPHTHENE						2		2
000208-96-8	ACENAPHTHYLENE						2		2
000067-64-1	ACETONE					1	1	1	3
000098-86-2	ACETOPHENONE						2		2
007429-90-5	ALUMINUM						2	8	3
000120-12-7	ANTHRACENE						2		2
007440-36-0	ANTIMONY						3	1	4
007440-38-2	ARSENIC			2		1	20	5	28
007440-39-3	BARIUM						2	12	8
000100-52-7	BENZALDEHYDE						2		2
000071-43-2	BENZENE						1	3	4
000056-55-3	BENZO(A)ANTHRACENE						2		2
000205-99-2	BENZO(B)FLUORANTHENE						2		2
000191-24-2	BENZO(GHI)PERYLENE						2		2
000207-08-9	BENZO(K)FLUORANTHENE						2		2
000100-51-6	BENZYL ALCOHOL					1			1
007440-41-7	BERYLLIUM						2	2	4
000092-52-4	BIPHENYL						2		2
000085-68-7	BUTYL BENZYL PHTHALATE						2	1	3
007440-43-9	CADMIUM					2	19	8	29
007440-70-2	CALCIUM						2		2
000105-60-2	CAPROLACTAM						2		2
000086-74-8	CARBAZOLE						2		2
000075-15-0	CARBON DISULFIDE						1		1
000108-90-7	CHLOROENZENE						1	1	2
000075-00-3	CHLOROETHANE						1	2	3

**Table 3-2. Waste Sites Contaminants that Exceeded Health-Based Screening Values
Buffalo River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						
			Air	Biota	Human Material	Other Media	Soil	Water	Total
000067-66-3	CHLOROFORM						1		1
007440-47-3	CHROMIUM					1	12	4	17
000218-01-9	CHRYSENE						2		2
005103-71-9	CIS-CHLORDANE						2		2
007440-48-4	COBALT					1	6	2	9
007440-50-8	COPPER					2	8		10
000095-48-7	CRESOL, ORTHO-					1	2	1	4
000106-44-5	CRESOL, PARA-					1	3	1	5
000098-82-8	CUMENE						1		1
000057-12-5	CYANIDE					1	2		3
000110-82-7	CYCLOHEXANE						1		1
000117-81-7	DI(2-ETHYLHEXYL)PHTHALATE			1			5	6	12
000053-70-3	DIBENZO(A,H)ANTHRACENE						2		2
000084-66-2	DIETHYL PHTHALATE						2		2
000131-11-3	DIMETHYL PHTHALATE						1		1
000084-74-2	DI-N-BUTYL PHTHALATE						2		2
000117-84-0	DI-N-OCTYL PHTHALATE						2		2
001031-07-8	ENDOSULFAN SULFATE						2		2
000959-98-8	ENDOSULFAN, ALPHA						2		2
033213-65-9	ENDOSULFAN, BETA						2		2
000072-20-8	ENDRIN					1	2		3
007421-93-4	ENDRIN ALDEHYDE						2		2
053494-70-5	ENDRIN KETONE						2		2
000100-41-4	ETHYLBENZENE					1	1		2
000206-44-0	FLUORANTHENE						2		2
000086-73-7	FLUORENE						2		2
000076-44-8	HEPTACHLOR					1	2		3
001024-57-3	HEPTACHLOR EPOXIDE					1	2	1	4
000319-84-6	HEXACHLOROCYCLOHEXANE, ALPHA-					1	2		3
000319-85-7	HEXACHLOROCYCLOHEXANE, BETA-						2	1	3
000319-86-8	HEXACHLOROCYCLOHEXANE, DELTA-						2		2
000058-89-9	HEXACHLOROCYCLOHEXANE, GAMMA-					1	1		2
HZ1000-01-T	HYDROCARBONS, UNSPECIFIED					1	2		3
000193-39-5	INDENO(1,2,3-CD)PYRENE						2		2
007439-89-6	IRON						5		5
007439-95-4	MAGNESIUM						3		3
007439-96-5	MANGANESE					1	9	7	17
HZ0900-01-T	METALS N.O.S.			2			3		5
000072-43-5	METHOXYCHLOR					1	2		3
000079-20-9	METHYL ACETATE						1		1
000108-10-1	METHYL ISOBUTYL KETONE						1		1
000108-87-2	METHYLCYCLOHEXANE						1		1
000075-09-2	METHYLENE CHLORIDE					1	1		2
000091-20-3	NAPHTHALENE						2		2
007440-02-0	NICKEL					1	7	2	10
000098-95-3	NITROBENZENE						1		1
000086-30-6	N-NITROSODIPHENYLAMINE					1	2		3
HZ1500-03-T	PAHS (NON-CARCINOGENIC)					2	8		10
000087-86-5	PENTACHLOROPHENOL					1			1
HZ1200-01-T	PESTICIDES N.O.S.						1		1
000085-01-8	PHENANTHRENE						2		2
000108-95-2	PHENOL					1	2	1	4
130498-29-2	POLYCYCLIC AROMATIC HYDROCARBONS						2	6	8
007440-09-7	POTASSIUM						2		2
000129-00-0	PYRENE						2		2
007782-49-2	SELENIUM					1	5		6
007440-22-4	SILVER					1	6		7
007440-23-5	SODIUM						2		2

**Table 3-2. Waste Sites Contaminants that Exceeded Health-Based Screening Values
Buffalo River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						Total	
			Air	Biota	Human Material	Other Media	Soil	Water		
025322-20-7	TETRACHLOROETHANE					1		1	2	
000127-18-4	TETRACHLOROETHYLENE						1		1	
007440-28-0	THALLIUM						2		2	
000108-88-3	TOLUENE					1	1		2	
005103-74-2	TRANS-CHLORDANE						2		2	
000079-01-6	TRICHLOROETHYLENE							2	2	
000075-69-4	TRICHLOROFLUOROMETHANE						1		1	
007440-62-2	VANADIUM						8	1	9	
000075-01-4	VINYL CHLORIDE							1	1	
001330-20-7	XYLENES, TOTAL						1		1	
007440-66-6	ZINC						2	10	3	15
000132-64-9	DIBENZOFURAN						2	9	3	14
MEDEXP-00-0			2	2			4	6	4	18
			1	2			2	6		11
		Total Non-IJC	3	9	0	50	328	84	445	
		Total	3	14	2	62	408	103	563	

Table 3-3. 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 On-site Releases	Total Off-site Releases	Total On-and Off-site Releases
POLYCHLORINATED BIPHENYLS	1	0	0	0	0	0	0.43	0.43
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.00059535	No data	0	0	0.000595	0	0.00059535
LEAD	8	758.37	0	0	0	758.37	1676.6	2434.97
LEAD COMPOUNDS	8	3947.3164	4311.41	0	48	8306.726	48134.46	56441.1864
MERCURY	9	0.01	0	0	0	0.01	0	0.01
MERCURY COMPOUNDS	9	322	0	0	0	322	18	340
Total IJC		5027.696995	4311.41	0	48	9387.106	49829.49	59216.597
1,1-DICHLORO-1-FLUOROETHANE		13756	No data	0	0	13756	0	13756
1,2,4-TRIMETHYLBENZENE		704	1	0	0	705	50	755
1,3-BUTADIENE		13	0	0	0	13	0	13
ACETONITRILE		383	No data	0	0	383	0	383
AMMONIA		707047	13158	0	0	720205	250	720455
ANILINE		6247	193	0	0	6440	0	6440
ANTHRACENE		2	No data	0	0	2	0	2
ANTIMONY COMPOUNDS		0	No data	0	0	0	4556	4556
ARSENIC COMPOUNDS		585	8	0	0	593	14000	14593
BARIUM COMPOUNDS		895	74000	0	0	74895	19000	93895
BENZENE		17948	751	0	0	18699	39	18738
BENZO(G,H,I)PERYLENE		21.7414289	0	0	0	21.74142	1.64	23.3814289
BROMOMETHANE		10898	No data	0	0	10898	0	10898
BUTYL ACRYLATE		34	No data	0	0	34	0	34
CARBON DISULFIDE		671000	No data	0	0	671000	1800	672800
CERTAIN GLYCOL ETHERS		25803	0	0	0	25803	0	25803
CHLORINE		252	No data	0	0	252	0	252
CHROMIUM		1277	0	0	0	1277	313	1590
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)		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		117	No data	0	0	117	0	117
DIBUTYL PHTHALATE		4	No data	0	0	4	0	4
DICHLOROMETHANE		29255	No data	0	0	29255	8700	37955
DIISOCYANATES		11	No data	0	0	11	2	13
ETHYLBENZENE		1265	1	0	0	1266	35	1301
ETHYLENE		1993	0	0	0	1993	0	1993
ETHYLENE GLYCOL		1	5	0	0	6	0	6
FORMALDEHYDE		1009	0	0	0	1009	0	1009
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		2224000	No data	0	0	2224000	0	2224000
HYDROGEN FLUORIDE		170005	No data	0	0	170005	0	170005
MALEIC ANHYDRIDE		23	0	0	0	23	0	23
MANGANESE		1401	250	0	0	1651	3791	5442
MANGANESE COMPOUNDS		1483	32000	0	2048	35531	11100	46631
METHANOL		7990	0	0	0	7990	0	7990
METHYL ETHYL KETONE		66492	0	0	0	66492	0	66492
METHYL ISOBUTYL KETONE		518	No data	0	0	518	0	518
METHYL METHACRYLATE		111160	No data	0	0	111160	250	111410
METHYL TERT-BUTYL ETHER		6014	5	0	0	6019	0	6019
N,N-DIMETHYLANILINE		19	11	0	0	30	750	780
N,N-DIMETHYLFORMAMIDE		170	No data	0	0	170	0	170
NAPHTHALENE		7331	750	0	0	8081	0	8081
N-BUTYL ALCOHOL		169	No data	0	0	169	0	169
N-HEXANE		15284	5	0	0	15289	56	15345
NICKEL		1191	0	0	0	1191	1987	3178
NICKEL COMPOUNDS		1163	17000	0	9488	27651	6634	34285

Table 3-3. 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 On- site Releases	Total Off- site Releases	Total On- and Off-site Releases
NITRATE COMPOUNDS		0	27160	0	0	27160	1430	28590
NITRIC ACID		1179	No data	0	0	1179	0	1179
PERACETIC ACID		4000	0	0	0	4000	0	4000
PHENANTHRENE		1397	No data	0	0	1397	0	1397
PHENOL		24000	1200	0	0	25200	0	25200
POLYCYCLIC AROMATIC COMPOUNDS		1399.279526	14.75	0	0	1414.029	32.8	1446.82952
PROPYLENE		587	No data	0	0	587	0	587
SODIUM NITRITE		584	No data	0	0	584	6960	7544
STYRENE		24556	5	0	0	24561	6850	31411
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		430393	0	0	0	430393	0	430393
TOLUENE		395405	2	0	0	395407	5232	400639
TRICHLOROETHYLENE		8400	No data	0	0	8400	No data	8400
URETHANE		0	No data	0	0	0	195	195
VANADIUM COMPOUNDS		475	0	0	0	475	39000	39475
VINYL ACETATE		64	No data	0	0	64	0	64
XYLENE (MIXED ISOMERS)		9679	3	0	0	9682	139	9821
ZINC COMPOUNDS		4597	12288	0	0	16885	400863	417748
Total Non-IJC		5043953.021	203592.75	0	12562	5260107.7	556137.4	5816245.21
Total		5048980.718	207904.16	0	12610	5269494.8	605966.9	5875461.80

Table 3-4. TRI Facilities Releasing IJC Critical Pollutants On-site for the Buffalo River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Dioxin and dioxin-like compounds (PCDDs and PCDFs)	1			
Erie County, NY	1	HUNTLEY GENERATING STATION	14150CRHNT3500R	TONAWANDA
Lead and lead compounds	17			
Erie County, NY	17	BETHLEHEM STEEL CORP. GALVANIZED PRODS. DIV.	14218BTHLHGALVA	BLASDELL
		BUFFALO CHINA INC.	14210BFFLCHAYES	BUFFALO
		DERRICK CORP.	14225DRRCK590DU	CHEEKTOWAGA
		FEDCO AUTOMOTIVE COMPONENTS CO.	14207FDCTM57TON	BUFFALO
		FMC CORP. TONAWANDA PLANT	14150FMCCR37SAW	TONAWANDA
		FRONTIER HOT DIP GALVANIZING INC.	14207FRNTR1740E	BUFFALO
		GIBRALTAR STEEL CORP.	14225GBRLT2555W	BUFFALO
		GMC POWERTRAIN DIV. TONAWANDA NY	14240CHVRLRIVER	BUFFALO
		GOODYEAR DUNLOP TIRE N.A. LTD.	14240DNLPT10SHE	TONAWANDA
		HUNTLEY GENERATING STATION	14150CRHNT3500R	TONAWANDA
		ITT STANDARD	14227TTSTN175ST	CHEEKTOWAGA
		L.D. MCCAULEY INC.	14127LDMCC3875C	ORCHARD PARK
		NOCO ENERGY CORP.	14150NCNRG700GR	TONAWANDA
		POHLMAN FNDY. CO. INC.	14206PHLMN205BA	BUFFALO
		REPUBLIC TECHS. INTL. L.L.C.	14218BTHLHBARRO	BLASDELL
		TONAWANDA COKE CORP.	14150TNWWD3875R	TONAWANDA
		WILLIAMS ADVANCED MATERIALS INC.	14214WLLMS2978M	BUFFALO
Mercury and mercury compounds	3			
Erie County, NY	3	BETHLEHEM STEEL CORP. LACKAWANNA COKE DIV.	14218BTHLHPOBOX	LACKAWANNA
		HUNTLEY GENERATING STATION	14150CRHNT3500R	TONAWANDA
		NOCO ENERGY CORP.	14150NCNRG700GR	TONAWANDA

3.2 PRESQUE ISLE BAY AOC, ERIE COUNTY, PA

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

3.2.1 Hazardous Waste Sites Relevant to the Presque Isle Bay AOC

ATSDR has evaluated the data for an industrial site and three hazardous waste sites in Erie County PA, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, are summarized in Table 3-5:

Table 3-5. Hazardous Waste Sites in Erie County, PA

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
Foamex Products Site (Corry Area Middle-High School)	3 (2001 HC)	Non NPL	PAD005029517	Corry
Hammermill – Scott Run Site	2 (1998 HC)	Non NPL	PAD981114648	Harborcreek Township
Lord-Shope Landfill	2 (1989 HA) 4 (n.d. SR)	Final	PAD980508931	Girard Township
Mill Creek Dump	3 (1989 HA) 2 (1993 SR)	Final	PAD980231690	Erie

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

For sites in Erie County, PA that *at any time* had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health-based screening concentrations was 552, as shown in Table 3-6. Most of the records were for the soil and water media groups.

The IJC Great Lakes critical pollutants account for 90 (16%) of these records, with the majority for soil, followed by water. The specific IJC critical pollutants whose concentrations exceeded health-based screening values are: PCBs, DDT, dieldrin, lead, and mercury. Details are provided in Table 3-7.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the table. These evaluations are discussed in the following subsections.

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

The Foamex Products Site is an active manufacturing facility located in Corry, Erie County, PA. ATSDR was asked to evaluate whether air emissions from this facility present a public health hazard to students of

Corry Area Middle-High School, located approximately 2,000 feet west of the plant, and to nearby residents. Information regarding this site is taken from the 2001 ATSDR health consultation on this site.

Category of Public Health Hazard: Because the air sampling data may not be representative of long-term or peak exposure patterns, ATSDR classified the emissions from the plant as an *Indeterminate Public Health Hazard* (category 3).

Contaminants of Concern in Completed Exposure Pathways: The conclusion was that the air sampling and monitoring data, from four consecutive days in April 2000, were not adequate to be representative of long-term or peak exposure patterns. The data indicate completed exposure pathways (inhalation) to methylene chloride for residents near the plant, and possibly for the school students, at time-integrated concentrations below ATSDR's MRLs for intermediate and chronic exposure. In addition, for residents near the plant, peak air concentrations of methylene chloride exceeded ATSDR's acute MRL. Toluene diisocyanate isomers in air were not above detection limits.

Demographics: Not reported. The facility is located near a school and residential areas.

Public Health Outcome Data: Not reported.

Conclusions: The site is not associated with IJC critical pollutants. As the Foamex Products Site is an active manufacturing facility rather than a hazardous waste site, its releases also are taken into account in the TRI section of this document.

3.2.1.2 Hammermill – Scott Run Site

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

Category of Public Health Hazard: The site was classified as a category 1 *Public Health Hazard* for people visiting the site due to physical dangers from drowning (lagoons) and falling (foot bridge). There is a potential risk of exposure to chemicals in the drums, but the drum contents have not been adequately characterized. ATSDR concluded that there is no public health risk from hazardous chemicals migrating from the site in surface water and sediment based on 1988 data, but that the potential for additional and new contamination exists as the drums continue to deteriorate.

Contaminants of Concern in Completed Exposure Pathways: Inadequate data. Metals, including the IJC critical pollutant lead, and also arsenic, cadmium, and chromium, were found in the contents of the only drum that was sampled. Analysis of soil and sediment did not reveal any chemicals at levels that would be expected to cause adverse health effects. Although the IJC critical pollutant DDT was detected in sediments on-site at the outlet of a lagoon, in a marsh close to Scott Run, and off-site in Scott Run (but upstream, so not site-related), it was not present at levels high enough to impact health, and no fishing was known to occur in Scott Run or the stream into which it flows, which flows into Lake Erie approximately 10 miles east of the AOC.

Demographics: Not reported.

Public Health Outcome Data: Not reported.

Conclusions: Contaminants from the Hammermill-Scott Run site do not appear to be migrating offsite. The deteriorating barrels may release additional as-yet-unknown chemicals, however, and the monitoring data are old (1988) and incomplete. Because there were reported to be only 50 barrels dumped at the site, the amount of potentially hazardous waste is not large.

3.2.1.3 Lord Shope Landfill

This site is located approximately 17 miles west of the City of Erie, PA. The NPL site of about 30 acres includes the 4-acre landfill and adjacent areas of contaminated soil and surface and groundwater. Lord Corporation wastes were dumped at the landfill from about 1954 to 1979, and consisted primarily of debris, but included rubber scrap, organic and inorganic chemicals, solvents, cooling oils, acids, and caustics. Remedial actions in 1982-1983 included removal of exposed drums, containment and removal of 20,000 gallons of leachate, re-grading and capping of the landfill, construction of an upgradient subsurface groundwater diversion wall, and fencing of the site. Additional remediation, initiated after the 1989 public health assessment, included removal of VOCs from the landfill and surrounding soils through vapor stripping and extraction, removal of VOCs from groundwater by vapor stripping, and discharge of treated groundwater to a tributary of Elk Creek. This phase of remediation is ongoing. Information regarding this site was taken from the 1989 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: In 1989, ATSDR concluded that the site posed an *Indeterminate Public Health Hazard* (category 3) because the characterization of on-site and off-site contamination was incomplete. The available data indicated that long-term oral exposure to lead from private wells and dermal exposure to arsenic in off-site surface water were of public health concern. More recently, an ATSDR site review and update (not provided for inclusion in this document) concluded that the site poses *No Apparent Public Health Hazard* (category 4).

Contaminants of Concern in Completed Exposure Pathways: None. In the past, concentrations of the IJC critical pollutant lead in off-site residential well water presented a long-term public health concern for ingestion, but it could not be determined whether they were site-related. Concentrations of arsenic in off-site surface water were considered a possible dermal contact threat, but it could not be determined whether the contamination was attributable to the site. On-site groundwater contained VOCs and metals at levels considered a potential concern for public health, but there was no exposure to this groundwater. There were no monitoring data for surface soil.

Demographics: 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

Public Health Outcome Data: Not reported.

Conclusions: This site has been remediated through removal of contaminants and fencing, and remediation continues through air stripping. The vulnerable populations living within 1 mile of this site are relatively small.

3.2.1.4 Mill Creek Dump

This approximately 85-acre site is 2 miles west of the City of Erie and less than 2 miles from Presque Isle Bay. Originally a wetland, most of the site was filled with foundry sand and other industrial and municipal wastes containing VOCs, SVOCs, PCBs, PAHs, and heavy metals during its use as an unpermitted landfill between 1941 and 1981. Drums of hazardous liquids were removed from the site in 1983, and some fencing was completed, but access to most of the site was unrestricted. Information regarding this site was taken from the 1989 ATSDR public health assessment, the 1993 ATSDR site review and update, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: Based on the 1989 public health assessment, ATSDR concluded that the site was an *Indeterminate Public Health Hazard* (category 3) because of potential migration of contaminated groundwater during extended droughts to an upgradient public water supply well field. In the 1993 site review and update, ATSDR concluded that the site is a Public Health Hazard (category 2) to area residents, workers, and site intruders because of exposure to contaminated soil, sediment, and surface water, airborne dust during riding of recreational vehicles, and contaminated groundwater during flooding of basements. Not all of the contaminated groundwater is site-related.

Contaminants of Concern in Completed Exposure Pathways: Not explicitly described in the 1993 assessment, but appeared to be the IJC critical pollutants PCBs and lead, as well as other heavy metals and PAHs, in on-site soil through ingestion of soil and inhalation of entrained dust; VOCs and lead in on-site surface water; PAHs and lead in on-site sediment; and VOCs in groundwater by inhalation and direct contact during flooding of basements. The greatest concern in the earlier (1989) assessment was the potential during drought conditions for groundwater contaminated with the IJC critical pollutant lead as well as VOCs to migrate to the upgradient public water supply well field, which could lead to exposure through ingestion, dermal contact, and inhalation.

Demographics: Demographic profile, from the 2000 U.S. Census, for 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

Public Health Outcome Data: Not reported.

Conclusions: Since the time of the most recent ATSDR assessment (1993 site review and update), the landfill has been capped and a flood retention basin constructed. These measures, and continued groundwater treatment and monitoring, should be eliminating the threat of human exposure to site contaminants.

3.2.2 TRI Data for the Presque Isle Bay AOC, Erie County, PA

The TRI on-site chemical releases for Erie County, PA are summarized in Table 3-7. Total on-site releases in 2001 were 3,688,175 pounds, primarily to air. Considerably less was released to land, and very little to surface water.

Only 7,974 pounds (0.2%) of this total was accounted for by IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), lead and lead compounds (to air and land), and mercury (to air and land). The facilities that released these IJC critical pollutants are listed in Table 3-8.

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

3.2.3 County Demographics and Health Status Data for the Presque Bay AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Erie County, PA is as follows:

Children 6 years and younger	25,115
Females aged 15-44	59,958
Adults 65 and older	40,256

According to the 2000 HRSA community health status reports, health status indicators for Erie County, PA, that compared unfavorably with those of the U.S. and also with the median of the peer counties were as follows (none exceeded the upper limit of the peer county range):

Infant mortality (per 1,000 births)

- infant mortality
- white infant mortality
- black infant mortality
- neonatal infant mortality

Birth measures (as percent)

- unmarried mothers
- no care in first trimester

Death measures (per 100,000 population)

- breast cancer (female)
- coronary heart disease
- stroke

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

3.2.4.1 Hazardous Waste Sites

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

Two of the sites have been remediated and are not expected to be contributing to human or environmental exposure. One of the remediated sites, the Mill Creek Dump, may have contributed to human exposure and the environmental burden of the IJC critical pollutants PCBs and lead in the past. The other remediated site was a potential, but not confirmed, source of lead in off-site residential well water in the past.

The fourth site, the Hammermill-Scott Run site, has not been remediated. It was thought to contain approximately 50 deteriorating drums of waste when assessed by ATSDR in 1998. The drum contents had not been adequately characterized, and the only available monitoring data were old (1988). The amount of potential hazardous waste, however, is not large. Demographic data were not available for this site.

Public health outcome data were not reported for any of the four sites.

Issues for Follow-Up

The Hammermill-Scott Run site has not been remediated and may release wastes from the estimated 50 deteriorating drums on site. The contents of the drums have not been adequately characterized.

3.2.4.2 TRI Data

The TRI total on-site chemical releases for Erie County, PA, in 2001 were 3,688,175 pounds.

Only 0.2% of this total was accounted for by IJC critical pollutants. 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 on-site releases ($\geq 500,000$ pounds) of non-IJC chemicals were of dichloromethane, methanol, and hydrochloric acid aerosols (primarily to air).

3.2.4.3 County Demographics and Health Status Indicators

Vulnerable populations in Erie County, PA, totaled 125,329. Several Erie County, PA, health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These health status indicators included infant mortality measures (total, white, black, and neonatal), birth measures (unmarried mothers, no care in first trimester), and deaths from breast cancer, coronary heart disease, and lung cancer. None exceeded the upper end of the peer county range.

**Table 3-6. Waste Site Contaminants that Exceeded Health-Based Screening Values
Presque Isle Bay AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						
			Air	Biota	Human Material	Other Media	Soil	Water	Total
011097-69-1	AROCLOR 1254	1					1		1
011096-82-5	AROCLOR 1260	1					9		9
001336-36-3	POLYCHLORINATED BIPHENYLS	1				2	3		5
000050-29-3	DDT, P,P'-	5					2		2
000060-57-1	DIELDRIN	6		4					4
007439-92-1	LEAD	8				4	31	24	59
007439-97-6	MERCURY	9				2	7	1	10
	Total IJC		0	4	0	8	69	25	90
000071-55-6	1,1,1-TRICHLOROETHANE		2			1	12	16	31
000107-06-2	1,2-DICHLOROETHANE							10	10
000156-60-5	1,2-DICHLOROETHENE, TRANS-						1	2	3
000540-59-0	1,2-DICHLOROETHYLENE						4	16	20
000078-93-3	2-BUTANONE						1	2	3
007440-36-0	ANTIMONY					1	2		3
007440-38-2	ARSENIC					2	31	13	46
007440-39-3	BARIUM						5	5	10
000071-43-2	BENZENE		2					2	4
007440-43-9	CADMIUM					3	31	18	52
000056-23-5	CARBON TETRACHLORIDE							1	1
000067-66-3	CHLOROFORM						8	5	13
007440-47-3	CHROMIUM					1	29	21	51
007440-50-8	COPPER						2	3	5
HZ1200-08-T	DDT,DDE,DDD			4					4
000084-74-2	DI-N-BUTYL PHTHALATE					1			1
000100-41-4	ETHYLBENZENE					1			1
HZ0900-02-T	HEAVY METALS, UNSPECIFIED					2			2
HZ1000-01-T	HYDROCARBONS, UNSPECIFIED		4						4
007439-89-6	IRON						1		1
007439-96-5	MANGANESE							2	2
HZ0900-01-T	METALS N.O.S.			2			2	4	8
000074-82-8	METHANE		2			2			4
000075-09-2	METHYLENE CHLORIDE		2						2
000091-20-3	NAPHTHALENE					1			1
HZ1200-01-T	PESTICIDES N.O.S.			2					2
064743-03-9	PHENOLICS					2			2
000088-99-3	PHTHALIC ACID					2			2
130498-29-2	POLYCYCLIC AROMATIC HYDROCARBONS					2	20		22
HZ1900-02-T	SEMIVOLATILE ORGANIC COMPOUNDS N.O.S.			2			2	4	8
HZ0300-02-T	SOLVENTS, UNSPECIFIED					2			2
000108-88-3	TOLUENE		4			1			5
000079-01-6	TRICHLOROETHYLENE					2	9	13	24
000075-01-4	VINYL CHLORIDE		2				5	21	28
HZ1900-01-T	VOLATILE ORGANIC COMPOUNDS N.O.S.		4	2			2	8	16
001330-20-7	XYLENES, TOTAL					1	1	1	3
007440-66-6	ZINC					2	3	3	8
MEDEXP-00-0			3	5			9	11	28
			5	6		5	6	8	30
	Total Non-IJC		30	23	0	34	194	189	462
	Total		30	27	0	42	263	214	552

Table 3-7. 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 On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2 3	0.0018612	No data	0	1.90292	0.002051	0	0.0020515
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
BARIIUM COMPOUNDS		5161	250	0	35005	40416	28345	68761
BENZENE		2529	No data	0	0	2529	0	2529
BENZO(G,H,I)PERYLENE		1.0004	No data	0	0	1.0004	37.7278	38.7282
CATECHOL		0	No data	0	1	1	0	1
CERTAIN GLYCOL ETHERS		41044	No data	0	0	41044	0	41044
CHLORINE		1105	No data	0	0	1105	0	1105
CHLORINE DIOXIDE		5905	No data	0	0	5905	0	5905
CHROMIUM		1539	5	0	0	1544	15492	17036
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)		1005	0	0	0	1005	157171	158176
COPPER		8589.6	505	0	772.4	9867	13325.4	23192.4
COPPER COMPOUNDS		5470	250	0	3705	9425	22673	32098
CYANIDE COMPOUNDS		471	No data	0	0	471	0	471
DI(2-ETHYLHEXYL) PHTHALATE		0	No data	0	0	0	17000	17000
DICHLOROMETHANE		1245087	No data	0	0	1245087	0	1245087
ETHYLENE GLYCOL		4	No data	0	0	4	0	4
ETHYLENE OXIDE		500	No data	0	0	500	0	500
FORMALDEHYDE		5	No data	0	0	5	0	5
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		507164	No data	0	0	507164	0	507164
HYDROGEN FLUORIDE		69250	0	0	0	69250	0	69250
MANGANESE		6011	250	0	5	6266	172466	178732
MANGANESE COMPOUNDS		150	No data	0	50000	50150	28082	78232
METHANOL		1156000	No data	0	31000	1187000	0	1187000
METHYL ETHYL KETONE		762	0	0	0	762	0	762
MOLYBDENUM TRIOXIDE		5	No data	0	0	5	500	505
NAPHTHALENE		874	No data	0	0	874	0	874
N-BUTYL ALCOHOL		5590	0	0	0	5590	0	5590
N-HEXANE		2475	0	0	0	2475	0	2475
NICKEL		6170	260	0	461	6891	266100	272991
NICKEL COMPOUNDS		1000	5	0	0	1005	19485	20490
NITRATE COMPOUNDS		0	5	0	0	5	250	255
NITRIC ACID		4097	No data	0	0	4097	0	4097
PHENANTHRENE		10	No data	0	0	10	0	10
POLYCYCLIC AROMATIC COMPOUNDS		262.2199	No data	0	0	262.2199	254.2716	516.4915
SEC-BUTYL ALCOHOL		25650	No data	0	0	25650	0	25650
STYRENE		89105	0	0	0	89105	0	89105
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		166924	No data	0	0	166924	0	166924
TETRACHLORO-ETHYLENE		51557	No data	0	0	51557	0	51557
TOLUENE		4578	No data	0	0	4578	0	4578
TOLUENE DIISOCYANATE (MIXED ISOMERS)		446	No data	0	0	446	0	446
VANADIUM COMPOUNDS		500	No data	0	0	500	63890	64390
XYLENE (MIXED ISOMERS)		23450	0	0	0	23450	0	23450

Table 3-7. 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 On- site Releases	Total Off- site Releases	Total On- and Off-site Releases
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 3-8. TRI Facilities Releasing IJC Critical Pollutants On-site for the Presque Isle Bay AOC

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

3.3 ASHTABULA RIVER AOC, ASHTABULA COUNTY, OH

The Ashtabula River, located in northeastern Ohio, flows into Lake Erie's central basin at the city of Ashtabula. Its drainage basin covers an area of 137 square miles and its major tributaries include Fields Brook, Hubbard Run, and Ashtabula Creek. The Ashtabula AOC is defined as the lower two miles of the Ashtabula River, Ashtabula Harbor, and the adjacent Lake Erie near shore (see AOC map in appendix).

3.3.1 Hazardous Waste Sites Relevant to the Ashtabula River AOC

ATSDR has evaluated the data for five hazardous waste sites in Ashtabula County OH, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, are summarized the following table:

Table 3-9. Hazardous Waste Sites in Ashtabula County, OH

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
Big D Campground	3 (1989 HA) 4 (n.d. SR)	Final	OHD980611735	Kingsville
Fields Brook	3 (1986 HA) 4 (1996 HA)	Final	OHD980614572	Ashtabula
Laskin/Poplar Oil Co.	3 (1987 HA) 3 (n.d. SR)	Deleted Post SARA	OHD061722211	Jefferson Township
New Lyme Landfill	3 (1986 HA) 4 (n.d. SR)	Final	OHD980794614	New Lyme
Old Mill	5 (1987 HA) 4 (n.d. SR)	Final	OHD980510200	Rock Creek

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

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

For hazardous waste sites in Ashtabula County, OH that at any time had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health-based screening concentrations was 294, as summarized in Table 3-10. Most of the records were for the soil and water media groups.

The IJC critical pollutants exceeding health-based screening concentrations, primarily in soil, were: PCBs, dioxins (TCDD), B(a)P, dieldrin, lead, mercury, and hexachlorobenzene. The IJC chemicals accounted for 41 (14%) of the total detections above health-based screening values.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the above table. These evaluations are discussed in the following subsections.

3.3.1.1 Big D Campground

This site includes a former sand and gravel pit, which was used as a landfill for waste products. It was no longer in operation as a landfill, and had been capped at the time of the ATSDR health assessment in 1989. According to the EPA fact sheet, the landfill site had included drums containing halogenated and non-halogenated solvents, caustics, oily wastes, toluene diisocyanate (TDI), TDI residue contaminated with monochlorobenzene and carbon tetrachloride, and monoethylamine. The soils were contaminated with many of these compounds. Groundwater was contaminated with volatile organic compounds and heavy metals, including barium, chromium, and lead. Information regarding this site is taken from the 1989 ATSDR preliminary health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) because of the potential threat to human health from exposure to contaminants and the lack of monitoring data. A subsequent ATSDR site review and update (not provided for inclusion in this document) categorized the site as posing *No Apparent Public Health Hazard* (category 4).

Contaminants of Concern in Completed Exposure Pathways: No monitoring data were available to ATSDR at the time this health assessment was conducted (1989). No completed exposure pathways were determined. Private wells were within the vicinity of the site, and one well on the campground supplied potable water to campers. Conneaut Creek is about one-half mile from the site. Potential pathways included ingestion and direct contact with contaminated groundwater, surface water, soil, and possible ingestion of bioaccumulated contaminants in the food chain, as well as inhalation of volatilized contaminants or contaminants entrained in air. Since that time, the site has been remediated.

Demographics: Demographic profile, from the 2000 U.S. Census, 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

Public Health Outcome Data: Not reported.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutant lead, as well as other contaminants including VOCs. As reported in the EPA NPL fact sheet, extensive remediation of the site, including on-site incineration of wastes and disposal of the resulting ash in the landfill, capping, vegetating, installation of a runoff treatment system, and installation of a groundwater extraction system, has largely eliminated releases of contaminants from the site.

3.3.1.2 Fields Brook

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

site is taken from the 1996 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: In the 1986 public health assessment (not provided for inclusion in this document), ATSDR concluded that this site was an *Indeterminate Public Health Hazard* (category 3). In the 1996 public health assessment, which specifically dealt with a single industrial site, Reactive Metals Incorporated, located within the Fields Brook site, ATSDR concluded that the Reactive Metals, Inc. site constitutes *No Apparent Public Health Hazard* (category 4); Reactive Metals Inc. was assessed because it released uranium dusts between 1962 and 1990. Exposure to on-site uranium-contaminated soil is prevented by fencing. There is slight uranium contamination of soil just outside the fence, but levels are too low to present a human health risk from either chemical toxicity or radiological effects.

Contaminants in Completed Exposure Pathways: None identified. For the 1986 assessment of the entire Fields Brook site, contaminants of concern for potential completed exposure pathways included the IJC critical pollutant PCBs in sediment and fish, and VOCs, and the 1996 assessment states that new data were not provided to alleviate those concerns. Potential exposure pathways included absorption through skin or through ingestion. Further detail was not provided in the available source, the 1996 public health assessment, and ATSDR assumed, in the absence of new data to the contrary, that Fields Brook is still contaminated at levels discussed in the 1986 assessment.

The 1996 health assessment states that for the Reactive Metals, Inc. portion of the site, there are no contaminants in completed exposure pathways at levels that would be expected cause adverse health effects.

Demographics: Demographic profile, from the 2000 U.S. Census, 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: The Ohio Department of Public Health completed an epidemiological study of cancers associated with the Fields Brook site in 1988. The final document found no evidence for excess cancer mortalities associated with the Fields Brook site.

Conclusions: The six square-mile Fields Brook site, which is the watershed of Fields Brook, located in a highly industrialized area including many chemical plants, contributed to the environmental burden of the critical IJC pollutants PCBs, mercury, and lead. Remediation activities, described in the EPA NPL fact sheet, have included removal and treatment or containment of PCB-contaminated soil and sediment, and of mining residuals. Low-level radionuclides (primarily radium isotopes) and dense non-aqueous phase liquid have been discovered and are being remediated. Several industrial facilities are potentially recontaminating Fields Brook sediment.

3.3.1.3 Laskin Poplar Oil

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

used the oil to heat a greenhouse on the property, and for road oiling. Information regarding this site was taken from the 1987 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: Based on its 1989 public health assessment, ATSDR concluded that the site posed an *Indeterminate Public Health Hazard* (category 3) because of the contaminated sludge remaining in the tanks and pits, which could potentially be released due to fire or some act of nature, and which was not well characterized. In addition, soil and the boiler house where the oil was burned were highly contaminated, and contaminants may have an impact on the local creek. A subsequent ATSDR site review and update (not provided for inclusion in this document) also categorized the site as an *Indeterminate Public Health Hazard*.

Contaminants in Completed Exposure Pathways: None demonstrated. Contaminants of concern included the IJC critical contaminants 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 pathways included soil ingestion, dermal absorption, or inhalation of reentrained dust, contact with sediments and/or surface water, and food chain. Groundwater, although contaminated, was not in use as a source of drinking water, but could flow into nearby Cemetery Creek.

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

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

Public Health Outcome Data: None.

Conclusions: In the past, the Laskin Poplar Oil site probably contributed to the environmental burden of the IJC critical pollutants PCBs, 2,3,7,8-TCDD, lead, and mercury. Based on the EPA NPL Fact Sheet for this site, extensive site remediation has been performed, including removal and/or off-site and on-site incineration of waste oil, sludges, soils, and other materials, lowering of the water table, and capping. It therefore appears unlikely that any completed exposure pathways exist at the present, or that releases from the site are currently occurring.

3.3.1.4 New Lyme Landfill

This 40-acre landfill was in operation from 1969 to 1978, with most of waste coming from industrial and commercial sources. It is located about 20 miles south of the city of Ashtabula, in Ashtabula County, OH. Information regarding this site was taken from the 1987 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: On the basis of the 1986 public health assessment, ATSDR concluded that the site was an *Indeterminate Public Health Hazard* (category 3). The major concern appeared to be possible future exposure if the site were to be developed residentially. ATSDR, based on its subsequent site review and update (not provided for inclusion in this document), then concluded that the site posed *No Apparent Health Hazard* (category 4).

Contaminants in Completed Exposure Pathways: None identified. Contaminants of concern for potential exposure included the IJC critical pollutants: lead in sediment, PCBs in one soil sample, and benzo(a)pyrene in soil. Chrysotile asbestos was found in a few leachate samples. VOCs were found in groundwater and leachate. Potential exposure pathways included groundwater ingestion, direct contact with sediments and leachate or inhalation exposure to leachate, and inhalation, ingestion, and direct contact with soil.

Demographics: Demographic profile, from the 2000 U.S. Census, 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

Public Health Outcome Data: Not reported.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutants lead and benzo(a)pyrene, and other chemicals such as VOCs and chrysotile asbestos. The site, however, has been remediated according to the EPA NPL Fact Sheet. Remediation included groundwater and leachate treatment, lowering of the water table to eliminate leachate production, and capping and vegetating. Thus, further releases of contaminants and exposure of human populations are unlikely.

3.3.2 TRI Data for Ashtabula River AOC, Ashtabula County, OH

The TRI on-site chemical releases for Ashtabula County are summarized in Table 3-11. Total on-site releases in 2001 were 6,138,371 pounds, primarily to air.

Only 1,970 pounds (0.03%) of this total was accounted for by IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to land), lead and lead compounds (to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these IJC critical pollutants are listed in Table 3-12.

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

3.3.3 County Demographics and Health Status Data for the Ashtabula River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Ashtabula County, OH, is as follows:

Children 6 years and younger	9,547
Females aged 15-44	20,729
Adults 65 and older	15,051

According to the 2000 HRSA community health status reports, health status indicators for Ashtabula County that compared unfavorably with the U.S. and with the median of the peer counties were as follows (none exceeded the upper limit of the peer county range):

- Infant mortality (per 1,000 births)
 - none
- Birth measures (as percent)
 - unmarried mothers
- Death measures (per 100,000 population)
 - breast cancer (female)
 - colon cancer

3.3.4 Summary and Conclusions for the Ashtabula River AOC

3.3.4.1 Hazardous Waste Sites

ATSDR has categorized four sites in Ashtabula County, OH, in health hazard categories 1-3 at some time in their assessment history. Based on these assessments, and on updated information from the 2003 EPA NPL fact sheets for the sites, most of the sites have been remediated and no longer are releasing contaminants and contributing to public health risk. The Fields Brook site (Section 3.3.1.2), which is a very large site impacted by many industrial releases, is under remediation and may still pose a threat. It was contaminated with the IJC critical pollutants PCBs, mercury, and lead.

Issues for Follow Up

Monitor the progress of remediation of the Fields Brook site.

3.3.4.2 TRI Data

The TRI on-site chemical releases for Ashtabula County in 2001 were 6,138,371 pounds, primarily to air.

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

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

3.3.4.3 County Demographics and Health Status Indicators

Vulnerable populations in Ashtabula County, OH, totaled 45,327. Only three health status indicators for Ashtabula County compared unfavorably with the U.S. and with the median of the peer counties: the percentage of unmarried mothers and deaths from breast cancer and colon cancer. None exceeded the upper limit of the peer county range.

**Table 3-10. Waste Site Contaminants that Exceeded Health-Based Screening Values
Ashtabula River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records							Total
			Air	Biota	Human Material	Other Media	Soil	Water		
011097-69-1	AROCLOR 1254	1					2		2	
001336-36-3	POLYCHLORINATED BIPHENYLS	1		1	1	1	6		9	
001746-01-6	2,3,7,8-TETRACHLORODIBENZO- P-DIOXIN	2				1	3		4	
041903-57-5	TETRACHLORODIBENZO-P- DIOXIN	2						1	1	
000050-32-8	BENZO(A)PYRENE	4					3		3	
000060-57-1	DIELDRIN	6					1		1	
007439-92-1	LEAD	8				2	7	5	14	
007439-97-6	MERCURY	9				1	3	1	5	
000118-74-1	HEXACHLOROBENZENE	11		1			1		2	
		Total IJC	0	2	1	5	26	7	41	
000071-55-6	1,1,1-TRICHLOROETHANE						2	1	3	
000079-34-5	1,1,2,2-TETRACHLOROETHANE			1			1	2	4	
000079-00-5	1,1,2-TRICHLOROETHANE						1	1	2	
000075-35-4	1,1-DICHLOROETHENE						1		1	
000120-82-1	1,2,4-TRICHLOROBENZENE						1		1	
000095-50-1	1,2-DICHLOROBENZENE						1		1	
000107-06-2	1,2-DICHLOROETHANE							4	4	
000156-60-5	1,2-DICHLOROETHENE, TRANS-						1	1	2	
000540-59-0	1,2-DICHLOROETHYLENE							2	2	
000541-73-1	1,3-DICHLOROBENZENE						1		1	
000106-46-7	1,4-DICHLOROBENZENE						2	1	3	
000105-67-9	2,4-DIMETHYLPHENOL						1		1	
000078-93-3	2-BUTANONE						1	1	2	
000091-57-6	2-METHYLNAPHTHALENE					1			1	
000083-32-9	ACENAPHTHENE						1		1	
000208-96-8	ACENAPHTHYLENE						1		1	
000067-64-1	ACETONE						1	3	4	
000107-02-8	ACROLEIN							1	1	
007429-90-5	ALUMINUM					1			1	
000120-12-7	ANTHRACENE						1		1	
007440-38-2	ARSENIC						1	1	2	
001332-21-4	ASBESTOS							2	2	
007440-39-3	BARIUM						1	3	4	
000071-43-2	BENZENE						1	4	5	
000056-55-3	BENZO(A)ANTHRACENE						1		1	
000205-99-2	BENZO(B)FLUORANTHENE						1		1	
000191-24-2	BENZO(GHI)PERYLENE						1		1	
000207-08-9	BENZO(K)FLUORANTHENE						1		1	
000085-68-7	BUTYL BENZYL PHTHALATE						1		1	
007440-43-9	CADMIUM					1	2	1	4	
012705-33-8	CH						1		1	
000057-74-9	CHLORDANE						1		1	
000108-90-7	CHLOROBENZENE						2	5	7	
000067-66-3	CHLOROFORM						1	2	3	
007440-47-3	CHROMIUM						3	3	6	
000218-01-9	CHRYSENE						1		1	
007440-48-4	COBALT					1	1		2	
007440-50-8	COPPER					1			1	
000095-48-7	CRESOL, ORTHO-						1		1	
000106-44-5	CRESOL, PARA-							1	1	
000057-12-5	CYANIDE						1	1	2	
000117-81-7	DI(2-ETHYLHEXYL)PHTHALATE						2		2	
000053-70-3	DIBENZO(A,H)ANTHRACENE						1		1	
000084-66-2	DIETHYL PHTHALATE						1		1	
000131-11-3	DIMETHYL PHTHALATE						1		1	
000084-74-2	DI-N-BUTYL PHTHALATE						1	1	2	
HZ1200-13-T	ENDOSULFAN I/ENDOSULFAN II						1		1	
000100-41-4	ETHYLBENZENE						2	1	3	
000206-44-0	FLUORANTHENE						1		1	

**Table 3-10. Waste Site Contaminants that Exceeded Health-Based Screening Values
Ashtabula River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records							
			Air	Biota	Human Material	Other Media	Soil	Water	Total	
000086-73-7	FLUORENE						1		1	
HZ0900-02-T	HEAVY METALS, UNSPECIFIED						1	1	2	
000087-68-3	HEXACHLOROBUTADIENE						1		1	
HZ1000-01-T	HYDROCARBONS, UNSPECIFIED						1	3	2	6
000193-39-5	INDENO(1,2,3-CD)PYRENE							1	1	
HZ0900-18-T	INORGANICS, N.O.S.							1	2	3
007439-89-6	IRON						1		1	
000078-59-1	ISOPHORONE						1		1	
007439-96-5	MANGANESE							1	1	
HZ0900-01-T	METALS N.O.S.							3	4	7
000108-10-1	METHYL ISOBUTYL KETONE								3	3
000075-09-2	METHYLENE CHLORIDE							1	3	4
000091-20-3	NAPHTHALENE							1	1	2
007440-02-0	NICKEL						1			1
HZ0600-01-T	OIL/GREASE, UNSPECIFIED								1	1
000095-47-6	O-XYLENE							2		2
000087-86-5	PENTACHLOROPHENOL								1	1
HZ1200-01-T	PESTICIDES N.O.S.							1		1
000085-01-8	PHENANTHRENE						1	1		2
000108-95-2	PHENOL							1	2	3
130498-29-2	POLYCYCLIC AROMATIC HYDROCARBONS						1	6	5	12
000129-00-0	PYRENE							1		1
007782-49-2	SELENIUM							1		1
HZ1900-02-T	SEMIVOLATILE ORGANIC COMPOUNDS N.O.S.							1		1
007440-22-4	SILVER						1			1
000100-42-5	STYRENE							1		1
014133-76-7	TECHNETIUM-99								1	1
000127-18-4	TETRACHLOROETHYLENE			1				2	4	7
007440-28-0	THALLIUM						1			1
000108-88-3	TOLUENE							3	4	7
HZ2100-18-T	TOTAL ORGANIC CARBON								1	1
HZ1300-02-T	TOTAL PHENOLS						1			1
025323-89-1	TRICHLOROETHANE								2	2
000079-01-6	TRICHLOROETHYLENE			1				2	7	10
000075-69-4	TRICHLOROFLUOROMETHANE							1		1
007440-61-1	URANIUM		1					4	1	6
011113-93-2	URANIUM OXIDE							1	2	3
007440-62-2	VANADIUM							1		1
000075-01-4	VINYL CHLORIDE							2	5	7
HZ1900-01-T	VOLATILE ORGANIC COMPOUNDS N.O.S.							8	10	18
001330-20-7	XYLENES, TOTAL								1	1
007440-66-6	ZINC							1		1
MEDEXP-00-0			3	4			2	5	8	22
			1				1	3		5
		Total Non-IJC	5	7	0	17	108	116	253	
		Total	5	9	1	22	134	123	294	

Table 3-11. 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 On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2 3	0.00062688	0.000583443	0	0.2855034	0.28671372	0.037485	0.32419872
LEAD	8	20.1	No data	0	304	324.1	40	364.1
LEAD COMPOUNDS	8	78.4	40	0	0	118.4	6076	6194.4
MERCURY	9	1396.57	0	0	0	1396.57	217	1613.57
MERCURY COMPOUNDS	9	130	0.5	0	0	130.5	22	152.5
Total IJC		1625.07062	40.5005834	0	304.28550	1969.85671	6355.0374	8324.89419
1,3-DICHLOROPROPYLENE		511	No data	0	0	511	0	511
ALUMINUM (FUME OR DUST)		904	17	0	0	921	574189	575110
ALUMINUM OXIDE (FIBROUS FORMS)		250	No data	0	0	250	31300	31550
ANTIMONY COMPOUNDS		6	No data	0	0	6	7425	7431
BARIUM COMPOUNDS		2102	640	0	0	2742	139146	141888
CARBON DISULFIDE		53400	No data	0	0	53400	0	53400
CARBONYL SULFIDE		5400000	No data	0	0	5400000	0	5400000
CHLORINE		3333	0	0	0	3333	0	3333
CHLOROPICRIN		527	No data	0	0	527	0	527
CHROMIUM		10	1	0	0	11	9	20
COBALT		5	No data	0	0	5	4	9
COPPER		765	1	0	5	771	22	793
COPPER COMPOUNDS		255	250	0	0	505	750	1255
DECABROMODIPHENYL OXIDE		0	No data	0	0	0	8926	8926
EPICHLOROHYDRIN		409	0	0	0	409	0	409
ETHYLBENZENE		308	No data	0	0	308	0	308
FORMALDEHYDE		241	No data	0	0	241	0	241
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		193550	0	0	0	193550	0	193550
HYDROGEN FLUORIDE		35000	No data	0	0	35000	0	35000
LITHIUM CARBONATE		47	No data	0	0	47	6458	6505
MANGANESE COMPOUNDS		1314	12799	0	5	14118	51739	65857
METHANOL		5468	0	0	0	5468	0	5468
METHYL ETHYL KETONE		2605	No data	0	0	2605	0	2605
METHYL ISOBUTYL KETONE		254	No data	0	0	254	0	254
N-BUTYL ALCOHOL		2250	No data	0	0	2250	0	2250
NICKEL		265	1	0	0	266	8	274
PHENOL		1415	No data	0	0	1415	0	1415
POLYCYCLIC AROMATIC COMPOUNDS		4.838	No data	0	0	4.838	119.7	124.538
STYRENE		253981	0	0	0	253981	228273	482254
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		111000	No data	0	0	111000	0	111000
TERT-BUTYL ALCOHOL		8405	0	0	0	8405	0	8405
TITANIUM TETRACHLORIDE		596	No data	0	0	596	0	596
TOLUENE		21161	0	0	0	21161	0	21161
TRANS-1,3-DICHLOROPROPENE		511	No data	0	0	511	0	511
XYLENE (MIXED ISOMERS)		21273	No data	0	0	21273	0	21273
ZINC COMPOUNDS		551	5	0	0	556	131080	131636
Total		6122676.83	13714	0	10	6136400.83	1179448.7	7315849.53
Non-IJC								
Total		6124301.90	13754.5005	0	314.28550	6138370.69	1185803.7	7324174.43

Table 3-12. TRI Facilities Releasing IJC Critical Pollutants On-site 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 MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 1	44004FRSTN2133L 44004SCMCH2900M	ASHTABULA ASHTABULA
		MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 2	44004SCMCH2426M	ASHTABULA
Lead and lead compounds	5			
Ashtabula County, OH	5	ASHTABULA ELKEM METALS CO.	44004FRSTN2133L 44004LKMMT2700L	ASHTABULA ASHTABULA
		ASHTABULA L.P. 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 MILLENNIUM INORGANIC CHEMICALS ASHTABULA PLANT 2	44004FRSTN2133L 44004SCMCH2426M	ASHTABULA ASHTABULA

3.4 CUYAHOGA RIVER AOC, CUYAHOGA AND SUMMIT COUNTIES, OH

The Cuyahoga River AOC includes the lower 45 miles of the river from the Ohio Edison Dam to the mouth of the river where it drains into Lake Erie at Cleveland. It includes approximately 10 miles of Lake Erie shoreline (see AOC map in appendix).

3.4.1 Hazardous Waste Sites Relevant to the Cuyahoga River AOC

ATSDR has evaluated the data for one site in Cuyahoga County and two sites in Summit County and reached conclusions regarding the public health threat posed by the site. These conclusions, along with information regarding the type and location of the site, are summarized the following table.

Table 3-13. Hazardous Waste Sites in Cuyahoga and Summit Counties, OH

Site Name, County	Public Health Hazard Category (ref)	EPA NPL Status	Site ID	City
Cady Road, Cuyahoga	4 (n.d. HC) 1 (2002 HC)	Non NPL	OHD980614572	North Royalton,
Bolin Oil, Summit	5 (1999 HC)	Non NPL	OH0000004895	Hudson,
Sam Winer Motors, Summit	5 (2002 HC)	Non NPL	OHD987054376	Akron

1 = Urgent Public Health Hazard, 4 = No Apparent Public Health Hazard, 5 = No Public Health Hazard
HC = Health Consultation

For hazardous waste sites in Cuyahoga and Summit Counties, OH that *at any time* had Public Health Hazard Categories of 1-3 (1 site—Cady Road, Cuyahoga County), the number of contaminant records in HazDat that exceeded health based-screening values was 144, as shown in Table 3-14. Most of the records were for the air media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for only one of these records, for the water media group. The IJC critical pollutant was lead. Details are provided in Table 3-15.

Further evaluation of the data for the Cady Road site was conducted by ATSDR in the health consultation documents listed in Table 3-13. These evaluations are discussed in the following subsection.

3.4.1.1 Cady Road, Cuyahoga County, OH

This site is a residential neighborhood with 25 houses that use private wells as their drinking and household water source. The residents complained of gases and odors in the water, oily appearance and taste, explosions at the wellheads and gas bubbling up through the ground. Between 1954 and 1958, oil and gas wells were drilled about 3,000 feet deep at varying elevations along Cady Road. As of the 2002 health consultation, there were approximately 13 oil and gas production wells and one former saltwater injection well about ¼ - ½ mile from the nearest private water well. Many of these wells have a history of violations regarding maintenance and accidents. It is unclear whether the contamination of the water wells is due to the nearby oil and gas extraction wells and saltwater injection well, or to a fault line that has caused a major fracture in the shale that underlies the aquifer used for drinking water and may allow

the migration of underlying oil and gas to the upper water-bearing zones. The information regarding this site is taken from the 2002 ATSDR health consultation (public comment release) and HazDat.

Category of Public Health Hazard: An earlier health consultation (not provided for inclusion in this document) had classified the site as *No Apparent Public Health Hazard* (category 4). In the 2002 health consultation, ATSDR concluded that the well water presents an *Urgent Public Health Hazard* (category 1) due to the explosive hazard of combustible gases.

Contaminants of Concern in Completed Exposure Pathways: No IJC critical pollutants were found in completed exposure pathways at exposure levels that were considered harmful. The dissolved gases found in the well water (e.g., methane, sulfides) were consistent with oil and gas deposits. The urgent public health hazard is due to outgassing of combustible VOCs, including methane, from the private well water such that concentrations near two wellheads were at explosive levels, and levels in two basements were near the explosive level. In addition, hydrogen sulfide in the private well water presents a public health hazard because the resulting indoor air concentrations could cause adverse health effects from inhalation exposure. Ingestion of sodium at the levels found in the well water may be harmful to residents with high blood pressure or who are on low sodium diets.

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

Public Health Outcome Data: None. Residents have complained of a number of health concerns, however, including lightheadedness, blacking out, shortness of breath, fatigue, and headaches. These complaints would be consistent with high-level exposure to the chemicals in completed exposure pathways.

Conclusions: Whether the contaminants in the aquifer used for drinking water wells on Cady Road resulted from human activities (oil and natural gas extraction) or from geological activity is unclear, but the contamination with VOCs such as methane poses an explosive health hazard and with hydrogen sulfide poses a health hazard due to inhalation. No IJC critical pollutants are implicated. The suggested solution to this problem is switching the residents to municipal water.

3.4.2. TRI Data for the Cuyahoga AOC, Cuyahoga and Summit Counties, OH

The TRI on-site chemical releases for Cuyahoga and Summit Counties (combined) are summarized in Table 3-15. Total on-site releases in 2001 were 5,037,090 pounds, the majority of which were released to air, followed by releases to soil. Very little was released to surface water. Cuyahoga County accounted for 68% and Summit County accounted for 32% of the total on-site releases.

Only 75,042 pounds (1.5%) of the total on-site 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 3-16.

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

3.4.3 County Demographics and Health Status Data for the Cuyahoga River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Cuyahoga and Summit Counties, OH, is as shown in Table 3-17:

Table 3-17. County Demographic Profiles for the Cuyahoga River AOC

Vulnerable population	Cuyahoga County	Summit County	Total for AOC
Children 6 years and younger	129,863	51,062	180,925
Females aged 15-44	296,262	115,325	411,587
Adults 65 years and older	217,161	76,572	293,733

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with the U.S. indicators and also with the median of the peer counties for the two counties relevant to the Cuyahoga River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Cuyahoga County:

Infant mortality (per 1,000 births)

- **infant mortality**
- **white infant mortality**
- black infant mortality
- **neonatal infant mortality**
- post-neonatal infant mortality

Birth measures (as percent)

- low birth weight
- very low birth weight
- premature births
- unmarried mothers

Death measures (per 100,000 population)

- breast cancer (female)
- colon cancer
- coronary heart disease
- lung cancer

Summit County:

Birth measures (as percent)

- premature births

Death measures (per 100,000 population)

- lung cancer

3.4.4 Summary and Conclusions for the Cuyahoga River AOC

3.4.4.1 Hazardous Waste Sites

Only one hazardous waste site in Cuyahoga and Summit Counties has ever been categorized by ATSDR with a public health hazard category in the range of 1-3. The Cady Road site in Cuyahoga County has well water contaminated with dissolved gases consistent with oil and gas deposits, which present an explosive hazard (methane) and an inhalation hazard (hydrogen sulfide). The residents of this area are to be switched to municipal water. No IJC critical pollutants are associated with the site.

3.4.4.2 TRI Data

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

Only 75,042 pounds (1.5%) of the total on-site 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 3-16.

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

3.4.4.3 County Demographics and Health Status Indicators

Vulnerable populations in Cuyahoga County and Summit County OH, totaled 643,286 and 242,959, respectively. Many health status indicators for Cuyahoga County compared unfavorably with the U.S. and with the median of the peer counties, and three infant mortality indicators were above the upper limit of the peer county range. In contrast, only two health status indicators for Summit County compared unfavorably with the U.S. and with the median of the peer counties. None exceeded the upper limit of the peer county range.

**Table 3-14. Waste Site Contaminants that Exceeded Health-Based Screening Values
Cuyahoga River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						Total
			Air	Biota	Human Material	Other Media	Soil	Water	
007439-92-1	LEAD	8						1	1
		Total IJC	0	0	0	0	0	1	1
000071-55-6	1,1,1-TRICHLOROETHANE		2						2
000076-13-1	1,1,2-TRICHLORO-1,2,2- TRIFLUOROETHANE		2						2
000095-63-6	1,2,4-TRIMETHYLBENZENE		2			1			3
000108-67-8	1,3,5-TRIMETHYLBENZENE		2			1			3
000071-36-3	1-BUTANOL		2						2
000078-93-3	2-BUTANONE		4						4
000591-78-6	2-HEXANONE		2						2
000075-65-0	2-METHYL-2-PROPANOL		2						2
000107-87-9	2-PENTANONE		2						2
000096-22-0	3-PENTANONE		2						2
000622-96-8	4-ETHYLTOLUENE		1						1
000067-64-1	ACETONE		4					1	5
007429-90-5	ALUMINUM							1	1
HZ0800-02-T	BACTERIA/VIRUSES, UNSPECIFIED							1	1
007440-39-3	BARIUM							1	1
000071-43-2	BENZENE		4			1			5
024959-67-9	BROMIDE							1	1
000106-97-8	BUTANE		1			1			2
000123-72-8	BUTYRALDEHYDE		2						2
007440-70-2	CALCIUM							1	1
000075-15-0	CARBON DISULFIDE		2						2
000056-23-5	CARBON TETRACHLORIDE		1						1
016887-00-6	CHLORIDE							1	1
HZ2100-12-T	CHLORIDES							1	1
000067-66-3	CHLOROFORM		1						1
000074-87-3	CHLOROMETHANE		4						4
007440-47-3	CHROMIUM							1	1
007440-50-8	COPPER							1	1
000124-18-5	DECANE		1						1
000075-43-4	DICHLOROFLUOROMETHANE		2						2
000074-84-0	ETHANE		1			1		1	3
000100-41-4	ETHYLBENZENE		3			1			4
000074-85-1	ETHYLENE							1	1
HZ0800-10-T	FECAL COLIFORM BACTERIA							2	2
016984-48-8	FLUORIDE ION							1	1
000111-71-7	HEPTANAL		1						1
000110-54-3	HEXANE, N-		2			1			3
007783-06-4	HYDROGEN SULFIDE		1			1		1	3
HZ0900-18-T	INORGANICS, N.O.S.							1	1
007439-89-6	IRON							1	1
000067-63-0	ISOPROPANOL		2						2
HZ1000-24-T	M/P-XYLENE		2			1			3
007439-95-4	MAGNESIUM							1	1
007439-96-5	MANGANESE							1	1
HZ0900-01-T	METALS N.O.S.							1	1
000074-82-8	METHANE		2			1		3	6
000075-09-2	METHYLENE CHLORIDE		3					1	4
007439-98-7	MOLYBDENUM							1	1
000142-82-5	N-HEPTANE		1						1
014797-55-8	NITRATE							2	2
000111-84-2	NONANE		1						1
000109-66-0	N-PENTANE		2			1			3
000111-65-9	OCTANE		1						1
HZ0600-01-T	OIL/GREASE, UNSPECIFIED							1	1
000095-47-6	O-XYLENE		2			1			3
000110-62-3	PENTANAL		2						2
007440-09-7	POTASSIUM							1	1

**Table 3-14. Waste Site Contaminants that Exceeded Health-Based Screening Values
Cuyahoga River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						Total
			Air	Biota	Human Material	Other Media	Soil	Water	
000074-98-6	PROPANE		1			1			2
000071-23-8	PROPANOL		2						2
000078-92-2	SEC-BUTYL ALCOHOL		2						2
007440-23-5	SODIUM							2	2
000100-42-5	STYRENE		3						3
014808-79-8	SULFATE							2	2
018496-25-8	SULFIDE							1	1
000127-18-4	TETRACHLOROETHYLENE		1						1
000108-88-3	TOLUENE		3			1		1	5
000079-01-6	TRICHLOROETHYLENE		1						1
000075-69-4	TRICHLOROFLUOROMETHANE		2						2
HZ1900-01-T	VOLATILE ORGANIC COMPOUNDS N.O.S.		2			1		1	4
001330-20-7	XYLENES, TOTAL		1						1
007440-66-6	ZINC							1	1
								1	1
		Total Non-IJC	89	0	0	15	0	39	143
		Total	89	0	0	15	0	40	144

Table 3-15. 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 On-site Releases	Total Off-site Releases	Total On-and Off-site Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2 3	0.006514673	0	0	0	0.006514673	0.06370245	0.070217123
LEAD	8	6448.830016	30.64	0	5.1	6484.570016	236809.474	243294.044
LEAD COMPOUNDS	8	24518.78246	89.1	0	43891	68498.88246	84424.09	152922.9724
MERCURY	9	0.1	0.006	0	0	0.106	67.5	67.606
MERCURY COMPOUNDS	9	58.74	0.1	0	0	58.84	11.5	70.34
Total IJC		31026.45899	119.846	0	43896.1	75042.40499	321312.6277	396355.0326
1,1-DICHLORO-1-FLUOROETHANE		5868	0	0	0	5868	0	5868
1,2,4-TRIMETHYLBENZENE		19247	0	0	0	19247	0	19247
1,3-BUTADIENE		10843	0	0	0	10843	0	10843
1,4-DICHLOROBENZENE		540	0	0	0	540	0	540
1-CHLORO-1,1-DIFLUOROETHANE		781687	0	0	0	781687	0	781687
2-MERCAPTOBENZO-THIAZOLE		10	0	0	0	10	750	760
4,4'-ISOPROPYLIDENE-DIPHENOL		28	0	0	0	28	1828	1856
ACRYLIC ACID		13	0	0	0	13	1	14
ACRYLONITRILE		2998	0	0	0	2998	623	3621
ALLYL ALCOHOL		7959	0	0	0	7959	0	7959
ALUMINUM (FUME OR DUST)		3749	300	0	0	4049	30783	34832
AMMONIA		107113	134	0	0	107247	12000	119247
ANILINE		4740	0	0	0	4740	0	4740
ANTIMONY		50	0	0	0	50	5707	5757
ANTIMONY COMPOUNDS		3610	191	0	583	4384	27687	32071
BARIUM		204	0	0	0	204	0	204
BARIUM COMPOUNDS		2240	438	0	0	2678	188309	190987
BENZENE		24016	8	0	0	24024	0	24024
BENZO(G,H,I)PERYLENE		232.225	0.3	0	0	232.525	204	436.525
BUTYL ACRYLATE		339	0	0	0	339	36	375
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 MINED IN THE TRANSVAAL REGION)		589	111	0	24039	24739	128318	153057
COBALT		10	0	0	0	10	250	260
COBALT COMPOUNDS		292	0	0	0	292	5318	5610
COPPER		7035	279	0	0	7314	176210	183524
COPPER COMPOUNDS		1683	305	0	0	1988	105857	107845
CUMENE		209	0	0	0	209	0	209
CYANIDE COMPOUNDS		578	0	0	0	578	250	828
CYCLOHEXANE		2539	0	0	0	2539	0	2539
DECABROMODIPHENYL OXIDE		57	0	0	0	57	50327	50384
DI(2-ETHYLHEXYL) PHTHALATE		510	0	0	0	510	4280	4790
DICHLOROMETHANE		110482	0	0	0	110482	317	110799
DIETHANOLAMINE		157	0	0	0	157	2505	2662
DIISOCYANATES		29	0	0	0	29	21656	21685
EPICHLOROHYDRIN		1510	0	0	0	1510	0	1510
ETHYLBENZENE		9686	2	0	0	9688	573	10261
ETHYLENE		1135	0	0	0	1135	0	1135
ETHYLENE GLYCOL		835	0	0	37	872	1509	2381
FORMALDEHYDE		39615	0	0	0	39615	97	39712
FORMIC ACID		28	0	0	0	28	774	802
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		352996	0	0	0	352996	0	352996
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

Table 3-15. 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 On- site Releases	Total Off- site Releases	Total On- and Off-site Releases
MANGANESE		1090	171	0	0	1261	152058	153319
MANGANESE COMPOUNDS		15720	1623	0	328016	345359	884801	1230160
METHANOL		63062	0	0	76012	139074	3564	142638
METHYL ETHYL KETONE		263954	0	0	0	263954	884	264838
METHYL ISOBUTYL KETONE		8018	0	0	0	8018	0	8018
METHYL METHACRYLATE		23138	0	0	0	23138	0	23138
MOLYBDENUM TRIOXIDE		562	0	0	0	562	252	814
N,N-DIMETHYLFORMAMIDE		7846	0	0	0	7846	0	7846
NAPHTHALENE		20831	3	0	0	20834	0	20834
N-BUTYL ALCOHOL		7073	0	0	0	7073	87	7160
N-HEXANE		27526	0	0	0	27526	0	27526
NICKEL		2850	27	0	0	2877	175837.6	178714.6
NICKEL COMPOUNDS		746	74	0	3571	4391	30651	35042
NITRATE COMPOUNDS		5518	101722	0	0	107240	52290	159530
NITRIC ACID		20505	33	0	0	20538	42830	63368
N-METHYL-2-PYRROLIDONE		32001	0	0	0	32001	0	32001
PHENOL		24964	30	0	0	24994	550	25544
PHOSGENE		14	0	0	0	14	0	14
POLYCHLORINATED ALKANES		0	0	0	0	0	585	585
POLYCYCLIC AROMATIC COMPOUNDS		2220.379	1	0	0	2221.379	1334.6	3555.979
PROPYLENE		2188	0	0	0	2188	0	2188
SODIUM NITRITE		4208	0	0	0	4208	41818	46026
STYRENE		34661	0	0	0	34661	262	34923
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		157490	0	0	0	157490	0	157490
TETRACHLORO-ETHYLENE		114976	5	0	0	114981	0	114981
THIRAM		25	0	0	0	25	2530	2555
TOLUENE		330191.77	16	0	0	330207.77	1207	331414.77
TRICHLOROETHYLENE		155347	0	0	0	155347	555	155902
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
Total		3164070.743	111058.146	0	1761961.1	5037089.989	4675000.328	9712090.317

Table 3-16. TRI Facilities Releasing IJC Critical Pollutants On-site 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
Summit County, OH	1	WABASH ALLOYS L.L.C.	44109WBSHL4365B	CLEVELAND
		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 CSM INDS. INC.	44102STNDR2130W 44117CLMXS21801	CLEVELAND EUCLID
		DU PONT CLEVELAND REFINISH SERVICE CENTER	44125DPNTC9200M	GARFIELD HEIGHTS
		FEDERAL METAL CO.	44146THFDR7250D	OAKWOOD VILLAGE
		FERRO CORP. 130CLEVELAND130	44105FRRRCR4150E	CLEVELAND
		FORD MOTOR CO. CLEVELAND CASTING	44142FRDMT5600H	BROOK PARK
		FORD MOTOR CO. CLEVELAND ENGINE PLANTS	44142FRDMT17601	BROOK PARK
		FOSECO METALLURGICAL INC.	44142FSCNC20200	CLEVELAND
		GE EUCLID LAMP PLANT	44103GNRLL1814E	CLEVELAND
		GENERAL ENVIRONMENTAL MANAGEMENT L.L.C.	44115RSRCH2655T	CLEVELAND
		GMC METAL FABRICATING DIV. GO/DAN INDS.	44130CHVRL5400C 44142DNLRD15600	PARMA CLEVELAND
		I. SCHUMANN & CO.	44146SCHMN22500	OAKWOOD VILLAGE
		LAKESHORE PLANT	44103FRSTN6800S	CLEVELAND
		LINCOLN ELECTRIC CO.	44117LNCLN22801	EUCLID
		LTV STEEL CO. CLEVELAND WORKS	44127LTVST3100E	CLEVELAND
		METALDYNE INC. BEDFORD HEIGHTS PLANT	44146TTLST25661	BEDFORD HEIGHTS
		MODINE AFTERMARKET HOLDINGS INC.	44136MDNGR20137	STRONGSVILLE
		MORGAN ELECTRO CERAMICS	44146MRGNM232FO	BEDFORD
		NORTH AMERICAN WIRE PRODS. INC.	44139NRTHM30000	OLON
		OATEY CO.	44135TYCMP4700W	CLEVELAND
		PPG INDS. OHIO INC. (CL)	44111PPGND3800W	CLEVELAND
		REPUBLIC ANODE FABRICATORS	44136RPBLC11288	STRONGSVILLE
		REPUBLIC METALS	44105RPBLC7930J	CLEVELAND
		RIVER RECYCLING INDS. INC.	44109RVRRRC4195B	CLEVELAND
		S. K. WELLMAN CORP.	44142SNTRM5372W	BROOKPARK
		SAINT-GOBAIN CRYSTALS & DETECTORS	44139NGLHR6801C	OLON
		SHERWOOD	44102SHRWD1201W	CLEVELAND
		STANLEY WORKS	44143STNLY700BE	CLEVELAND
		TDE GROUP INC.	44139TLDNG28850	OLON
		VENTURE LIGHTING INTL. INC.	44139VNTRL3200A	OLON
		VICTORY WHITE METAL CO.	44127VCTRY6100R	CLEVELAND
		WABASH ALLOYS L.L.C.	44109WBSHL4365B	CLEVELAND

Table 3-16. TRI Facilities Releasing IJC Critical Pollutants On-site for the Cuyahoga River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
Summit County, OH	18	WYMAN-GORDON FORGINGS (CLEVELAND) INC.	44127DRPDF3097E	CLEVELAND
		AMERICHEM INC.	44221MRCHM225BR	CUYAHOGA FALLS
		CARGILL INC. SALT DIV.	44314KZSLT2065M	AKRON
		CHEMIONICS CORP.	44278CHMNC390MU	TALLMADGE
		COMMERCIAL ALLOYS CORP.	44087CMMRC1831E	TWINSBURG
		GOODYEAR TIRE & RUBBER CO. AKRON MIX CENTER	44309GDYRT1080R	AKRON
		GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER	44309GDYRT200SM	AKRON
		GOODYEAR TIRE & RUBBER STOW MODEL SHOP	44224GDYRT1549C	STOW
		HARWICK STANDARD DISTRIBUTION CORP.	44305RPBLC60SOU	AKRON
		LANCER DISPERSIONS INC.	44305LNCRD1680E	AKRON
		LOCKHEED MARTIN N.E. & S.S.	44315LRLCR1210M	AKRON
		METALDYNE	44087TTTMT8001B	TWINSBURG
		METALLIC RESOURCES INC.	44087MTLLC2116E	TWINSBURG
		MOTOR PRODS. - OHIO CORP.	44203MTRPR65ERO	BARBERTON
		NOVEON INC.	44301BFGDR240WE	AKRON
		POLYMERICS INC.	44221PLYMR2828S	CUYAHOGA FALLS
		REVLIS CORP.	44203RVLSC2845N	NORTON
		ROCKWELL AUTOMATION INC.	44087RCKWL8440D	TWINSBURG
STRUKTOL CO. OF AMERICA	44224STRKT201ES	STOW		
Mercury and mercury compounds	3			
Cuyahoga County, OH	2	LAKESHORE PLANT	44103FRSTN6800S	CLEVELAND
Summit County, OH	1	VENTURE LIGHTING INTL. INC.	44139VNTRL3200A	OLON
		GOODYEAR TIRE & RUBBER CO. AKRON TECHNICAL CENTER	44309GDYRT200SM	AKRON

3.5 BLACK RIVER AOC, LORAIN COUNTY, OH

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

3.5.1 Hazardous Waste Sites Relevant to the Black River AOC, Lorain County OH

ATSDR has evaluated the data for hazardous waste sites in Lorain County, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 3-18 for sites that at any time had Public Health Hazard Categories of 1-3.

Table 3-18. Hazardous Waste Sites in Lorain County, OH

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
Ford Rd Industrial Landfill	3 (2002 HC)	Non NPL	OHD980510002	Elyria
Republic Steel Corp. Quarry	3 (1989 HA) 4 (n.d. SR)	Deleted Post SARA	OHD980903447	Elyria

3 = Indeterminate Public Health Hazard, 4 = No Apparent Public Health Hazard
 HA = Public Health Assessment, HC = Health Consultation, SR = Site Review and Update
 n.d. = no date provided

For the listed hazardous waste sites, the number of contaminant records in HazDat that exceeded health based-screening values was 230, as shown in Table 3-19. Most of the records were for the soil media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 21 (9.1%) of these records, and all were for the soil media group. The IJC critical pollutants that have been found at Lorain County OH hazardous waste sites at concentrations exceeding health-based screening values are: PCBs (including aroclors 1242, 1254, and 1260), DDT and metabolites, dieldrin, lead, and mercury. Details are provided in Table 3-20.

ATSDR provides further evaluation of these data in the Public Health Assessment and other health-related documents listed in Table 3-18. These evaluations are discussed in the following subsections.

3.5.1.1 Ford Road Industrial Landfill

This site is an inactive 15-acre landfill located in Elyria, and bordering on the Black River. The landfill was originally a ravine, but has been filled by the waste disposed there. The site is not fenced, accessible from all sides, and within 1 mile of several residences. Surface water at the site flows directly, as runoff, into the Black River, and also into an intermittent stream that drains into the Black River, and into a ravine, from whence runoff enters a wetland that drains into the Black River. Groundwater flow is expected to be toward the Black River. The site was used for the disposal of industrial wastes from the 1050s until 1974. The wastes, from several local industries, included organics, inorganics, heavy metals,

pesticides, catalysts, sanitary sewage sludges, paint sludges, latex sludges, and small quantities of unknown hazardous wastes. The wastes were frequently burned after dumping; several areas of exposed ash are visible. Closing and capping of the landfills was not completed under EPA supervision or guidelines, the cap is sagging, and a number of drums and other wastes including ash are visible. The landfill is unlined. No study of landfill gas has been conducted. Information regarding this site is taken from the 2002 ATSDR health consultation for the site.

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) because of the lack of current environmental monitoring data and the fact that the available data do not provide a complete picture of the extent of contamination.

Contaminants of Concern in Completed Exposure Pathways: None identified, but few samples had been obtained and analyzed, and the data were from a 1993 investigation, and thus, outdated. Concern was focused on sediments in the Black River and an intermittent tributary leading to the Black River, in which elevated levels of PAHs, including the IJC critical pollutant B(a)P, and elevated levels of the IJC critical pollutants PCBs and lead were found, as well as the non-IJC pollutant arsenic. The data were inadequate, however, to determine whether contaminants are leaching from the landfill into the Black River. Contaminants in surface water did not exceed background, but there was concern that ingestion or contact with surface water and sediments could be a pathway of exposure to contaminants from this site.

Demographics: Not reported, but several residences are located within 1 mile of the site.

Public Health Outcome Data: Not reported.

Conclusions: The Ford Road Industrial Landfill site may have contributed and may continue to contribute to the Black River AOC's environmental burden of the IJC critical pollutants PCBs, B(a)P, and lead, as well as other contaminants, but the sampling and monitoring data were inadequate to characterize the extent of contamination at the site, and whether transport into the Black River is occurring. Surface water flows into the Black River, and groundwater flow is expected to be towards the Black River. The landfill is unlined, the cap is not adequate, access to the site is not restricted, and closure was not performed under EPA supervision and guidelines.

3.5.1.2 Republic Steel Corp. Quarry

The site includes a 4-acre quarry and a few acres of wooded land surrounding the quarry. It was originally a sandstone quarry. From 1950 to 1975, Republic Steel Corp. used the quarry as a disposal site for waste pickle liquor consisting of sulfuric acid and dissolved metal oxides, and for rinse water from pickling operations. The waste was carried from the plant to the quarry by a ditch. Information regarding this site is taken from the 1989 ATSDR preliminary health assessment for this site, HazDat, and the 2003 EPA NPL fact sheet for the site.

Category of Public Health Hazard: This site was categorized by the 1989 ATSDR health assessment as an *Indeterminate Public Health Hazard* (category 3) because of the potential threat to human health from exposure to contaminants in quarry water and sediment, soil and dust, and possibly in fish. Contaminants of concern included the IJC critical pollutants B(a)P and lead. A subsequent ATSDR site review and update (not provided for inclusion in this document) concluded that the site poses *No Apparent Public Health Hazard* (category 4). The site was remediated after the original 1989 health assessment was completed.

Contaminants of Concern in Completed Exposure Pathways: None identified. In the 1989 ATSDR health assessment, contaminants of concern included the IJC critical pollutants B(a)P and lead.

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

Children 6 years and younger	1,400
Females aged 15-44	2,469
Adults 65 and older	1,539

Public Health Outcome Data: Not reported.

Conclusions: The Republic Steel Corp. Quarry site may have contributed to the environmental burden of the IJC critical pollutants B(a)P and lead in the past. As reported in the EPA fact sheet, remediation of the site, including removal of sediment and oils from the drainage ditch and hot spots near the edge of the quarry, has occurred. Contaminated quarry sediments were left in place because the contaminants were below the mixing zone, and remediation could entrain contaminated sediments in the water, increasing the hazard. Fencing was to be improved, and continued periodic monitoring of quarry surface water, quarry fish tissue, and groundwater were recommended. Deletion of the site from the NPL was finalized in December 2002.

3.5.2. TRI Data for the Black River AOC

The TRI on-site chemical releases for Lorain County, OH, are summarized in Table 3-20. Total on-site releases in 2001 were 2,940,334 pounds, the majority of which were released to air. Small amounts were released to surface water.

Only 9,594 pounds (0.3% of the total on-site releases) were IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (to air), aldrin (to air), lead and lead compounds (to air and surface water), mercury and mercury compounds (primarily to air), toxaphene (to air), and hexachlorobenzene (to air). The facilities that released these pollutants are listed in Table 3-21.

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

3.5.3 County Demographic and Health Status Data for the Black River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Lorain County, OH, is as follows:

Children 6 years and younger	28,198
Females aged 15-44	60,297
Adults 65 and older	35,583

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with the U.S. indicators and also with the median of the peer counties for the Lorain County, OH were as follows (indicators that were above the upper limit of the peer county range are bolded):

Infant mortality (per 1,000 births)

- **infant mortality**
- **white infant mortality**
- **neonatal infant mortality**

Birth Measures (as percent)

- **unmarried mothers**
- no care in first trimester

Death measures (per 100,000 population)

- **breast cancer (female)**
- colon cancer
- coronary heart disease
- lung cancer

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

3.5.4.1 Hazardous Waste Sites

Only two hazardous waste sites in Lorain County have ever been categorized by ATSDR in health hazard categories 1-3. Based on the documents for these sites reviewed in Section 3.1.1, there is no clear evidence that human exposure to site-related IJC critical pollutants is currently occurring at concentrations or doses that exceed health-based screening values. The Republic Steel Quarry Site has been remediated by removal of contaminated soil and exposure is prevented by restriction of access to the site. Contaminants remain in the quarry sediment, but are below the mixing zone. In the past, this site may have contributed to the environmental burden of the IJC critical pollutants B(a)P and lead, and it still may serve as a reservoir of these contaminants.

The Ford Road Industrial Landfill, however, has not been investigated adequately, nor has it been remediated, nor is exposure prevented by restricting access to the site. It is situated on the Black River and surface water and groundwater flow is toward the Black River. This site may have contributed and may continue to contribute to the Black River AOC's environmental burden of the IJC critical pollutants PCBs, B(a)P, and lead, as well as other contaminants, but the sampling and monitoring data were inadequate to characterize the extent of contamination at the site or potential migration of contaminants to the Black River.

Public health outcome data were not available for these sites.

Issues for Follow-Up

Ford Road Industrial Landfill—In its 2002 health consultation, ATSDR concluded that up-to-date and more extensive monitoring data are needed to characterize the extent of the contamination and whether contaminants are leaching from the landfill into the Black River. Sampling of fish tissue may be needed. Access to the site should be restricted to protect children from the exposed drums and waste.

Republic Steel Corp. Quarry—Continued periodic monitoring of quarry surface water, quarry fish tissue, and groundwater were recommended by EPA in 1998 (as per the EPA NPL fact sheet for this site) and had been recommended by ATSDR in the 1989 health assessment. ATSDR's site review and assessment document may present additional information, but was not provided for inclusion in this document.

3.5.4.2 TRI Data

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

3.5.4.3 County Demographics and Health Status Indicators

Members of vulnerable populations in Lorain County totaled 124,078. A number of Lorain County health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These included infant mortality measures (**infant mortality, white infant mortality, neonatal infant mortality**), birth measures (**higher percent unmarried mothers** and no care in first trimester), and deaths from various cancers (**breast**, colon, and lung) and coronary heart disease. Indicators that were higher than the upper limit of the range for peer counties are shown in bold type.

**Table 3-19. Waste Site Contaminants that Exceeded Health-Based Screening Values
Black River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						
			Air	Biota	Human Material	Other Media	Soil	Water	Total
053469-21-9	AROCLOR 1242	1					2		2
011097-69-1	AROCLOR 1254	1					1		1
011096-82-5	AROCLOR 1260	1					1		1
001336-36-3	POLYCHLORINATED BIPHENYLS	1					2		2
000050-32-8	BENZO(A)PYRENE	4					4		4
000072-55-9	DDE, P,P'	5					1		1
000050-29-3	DDT, P,P'	5					2		2
000060-57-1	DIELDRIN	6					1		1
007439-92-1	LEAD	8					5		5
007439-97-6	MERCURY	9					2		2
		Total IJC	0	0	0	0	21	0	21
000071-55-6	1,1,1-TRICHLOROETHANE							1	1
000075-34-3	1,1-DICHLOROETHANE							1	1
000156-59-2	1,2-DICHLOROETHENE, CIS-							1	1
000078-93-3	2-BUTANONE					4			4
000091-57-6	2-METHYLNAPHTHALENE					2			2
000083-32-9	ACENAPHTHENE					2			2
000208-96-8	ACENAPHTHYLENE					1			1
000067-64-1	ACETONE					4	1		5
007429-90-5	ALUMINIUM					2	3		5
000120-12-7	ANTHRACENE					2			2
007440-36-0	ANTIMONY					1	1		2
007440-38-2	ARSENIC					5	1		6
007440-39-3	BARIUM					4	6		10
000071-43-2	BENZENE						1		1
000056-55-3	BENZO(A)ANTHRACENE					6			6
000205-99-2	BENZO(B)FLUORANTHENE					6			6
000191-24-2	BENZO(GH)PERYLENE					4			4
000207-08-9	BENZO(K)FLUORANTHENE					2			2
000085-68-7	BUTYL BENZYL PHTHALATE					3			3
007440-43-9	CADMIUM					2	2		4
007440-70-2	CALCIUM					6	6		12
000086-74-8	CARBAZOLE					2			2
007440-47-3	CHROMIUM					6			6
000218-01-9	CHRYSENE					2			2
005103-71-9	CIS-CHLORDANE					2			2
007440-48-4	COBALT					2	1		3
007440-50-8	COPPER					2			2
000057-12-5	CYANIDE					1			1
000117-81-7	DI(2-ETHYLHEXYL)PHTHALATE					6			6
000053-70-3	DIBENZO(A,H)ANTHRACENE					2			2
000084-66-2	DIETHYL PHTHALATE					1			1
000084-74-2	DI-N-BUTYL PHTHALATE					2	1		3
007421-93-4	ENDRIN ALDEHYDE					1			1
000206-44-0	FLUORANTHENE					1			1
000086-73-7	FLUORENE					2			2
000319-86-8	HEXACHLOROCYCLOHEXANE, DELTA-					1			1
000193-39-5	INDENO(1,2,3-CD)PYRENE					2			2
HZ0300-21-T	INORGANIC CHEMICALS					2	1		3
007439-89-6	IRON					6	6		12
007439-95-4	MAGNESIUM					2	2		4
007439-96-5	MANGANESE					4	6		10
HZ0900-01-T	METALS N.O.S.					1	1		2
000075-09-2	METHYLENE CHLORIDE						3		3
000091-20-3	NAPHTHALENE					2			2
007440-02-0	NICKEL					2	3		5
HZ0600-01-T	OIL/GREASE, UNSPECIFIED					2			2
000087-86-5	PENTACHLOROPHENOL					1			1
HZ1200-01-T	PESTICIDES N.O.S.					1			1

**Table 3-19. Waste Site Contaminants that Exceeded Health-Based Screening Values
Black River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						
			Air	Biota	Human Material	Other Media	Soil	Water	Total
000085-01-8	PHENANTHRENE						2		2
130498-29-2	POLYCYCLIC AROMATIC HYDROCARBONS						2		2
007440-09-7	POTASSIUM						2	3	5
000129-00-0	PYRENE						3		3
007782-49-2	SELENIUM						1	1	2
HZ1900-02-T	SEMIVOLATILE ORGANIC COMPOUNDS N.O.S.						3	2	5
007440-22-4	SILVER						1		1
007440-23-5	SODIUM							2	2
025322-20-7	TETRACHLOROETHANE						1		1
005103-74-2	TRANS-CHLORDANE						1		1
007440-62-2	VANADIUM						2		2
HZ1900-01-T	VOLATILE ORGANIC COMPOUNDS N.O.S.						2	2	4
007440-66-6	ZINC						2		2
000132-64-9	DIBENZOFURAN						2		2
MEDEXP-00-0				1			2	2	5
				2			2	3	8
		Total	0	3	0	1	142	63	209
		Non-IJC							
		Total	0	3	0	1	163	63	230

Table 3-20. 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 On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.00507877	No data	0	0	0.00507877	0	0.00507877
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
HEXACHLOROENZENE	11	0.23	No data	0	0	0.23	0	0.23
Total IJC		7333.44377	2260.98	0	0	9594.4237	153137.216	162731.640
1,1,1-TRICHLOROETHANE		64	No data	0	0	64	5	69
1,1,2-TRICHLOROETHANE		3	No data	0	0	3	0	3
1,2,4-TRIMETHYLBENZENE		24676	0	0	0	24676	0	24676
1,2-DICHLOROENZENE		4	No data	0	0	4	0	4
1,2-DICHLOROETHANE		5	No data	0	0	5	0	5
1,2-PHENYLENEDIAMINE		28	No data	0	0	28	0	28
1,3-PHENYLENEDIAMINE		28	No data	0	0	28	0	28
1,4-DIOXANE		3	No data	0	0	3	0	3
2,4,6-TRICHLOROPHENOL		9	No data	0	0	9	0	9
2,4-DINITROTOLUENE		3	No data	0	0	3	0	3
ACETONITRILE		76	No data	0	0	76	27	103
ACRYLAMIDE		1289	No data	0	0	1289	0	1289
ACRYLIC ACID		1647	No data	0	0	1647	0	1647
ACRYLONITRILE		3634	No data	0	0	3634	0	3634
ALACHLOR		5	No data	0	0	5	0	5
ALLYL ALCOHOL		18	No data	0	0	18	0	18
ALUMINUM (FUME OR DUST)		5148	37	0	0	5185	1120	6305
AMMONIA		10519	0	0	0	10519	0	10519
ANILINE		39	No data	0	0	39	0	39
ANTIMONY COMPOUNDS		500	5	0	0	505	12192	12697
ARSENIC		0	No data	0	0	0	12034	12034
ARSENIC COMPOUNDS		369	5	0	0	374	21684	22058
ATRAZINE		5	No data	0	0	5	0	5
BARIUM COMPOUNDS		1265	255	0	0	1520	199172	200692
BENZENE		141	3	0	0	144	0	144
BENZOYL CHLORIDE		267	0	0	0	267	0	267
BIPHENYL		3	No data	0	0	3	0	3
BUTYL ACRYLATE		1756	No data	0	0	1756	0	1756
CARBON DISULFIDE		116500	No data	0	0	116500	0	116500
CARBON TETRACHLORIDE		19	No data	0	0	19	0	19
CERTAIN GLYCOL ETHERS		62212	No data	0	0	62212	0	62212
CHLORDANE		1	No data	0	0	1	0	1
CHLORINE		1857	No data	0	0	1857	0	1857
CHLOROBENZENE		29	No data	0	0	29	0	29
CHLOROFORM		22	No data	0	0	22	0	22
CHROMIUM		371	395	0	0	766	1725	2491
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE 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)		7	No data	0	0	7	0	7
CYANIDE COMPOUNDS		14	No data	0	0	14	0	14
CYCLOHEXANE		62	No data	0	0	62	0	62
CYCLOHEXANOL		10	No data	0	0	10	0	10
DI(2-ETHYLHEXYL) PHTHALATE		3	No data	0	0	3	755	758
DIBUTYL PHTHALATE		3	No data	0	0	3	0	3
DICHLOROMETHANE		19126	No data	0	0	19126	5	19131
DIISOCYANATES		74	No data	0	0	74	5	79
DIMETHYL PHTHALATE		24	No data	0	0	24	0	24

Table 3-20. 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 On- site Releases	Total Off- site Releases	Total On- and Off-site Releases
DIMETHYL SULFATE		24	No data	0	0	24	0	24
EPICHLOROHYDRIN		4	No data	0	0	4	0	4
ETHYL ACRYLATE		5486	No data	0	0	5486	0	5486
ETHYLBENZENE		26811	3	0	0	26814	5	26819
ETHYLENE GLYCOL		83	No data	0	0	83	48	131
FORMALDEHYDE		50	No data	0	0	50	0	50
FORMIC ACID		4	No data	0	0	4	0	4
HEPTACHLOR		1	No data	0	0	1	0	1
HYDRAZINE		15	No data	0	0	15	0	15
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		1495678	No data	0	0	1495678	0	1495678
HYDROGEN FLUORIDE		96202	0	0	0	96202	0	96202
MALEIC ANHYDRIDE		4	No data	0	0	4	0	4
MANGANESE		3737	14000	0	0	17737	124000	141737
MANGANESE COMPOUNDS		1070	10	0	0	1080	58381	59461
METHANOL		26021	No data	0	0	26021	58	26079
METHOXYCHLOR		0.72	No data	0	0	0.72	0	0.72
METHYL ETHYL KETONE		13368	No data	0	0	13368	1887	15255
METHYL ISOBUTYL KETONE		8714	No data	0	0	8714	5	8719
METHYL METHACRYLATE		3230	No data	0	0	3230	5	3235
METHYL TERT-BUTYL ETHER		400	No data	0	0	400	0	400
MOLYBDENUM TRIOXIDE		2015	5	0	0	2020	2975	4995
N,N-DIMETHYLFORMAMIDE		44	No data	0	0	44	0	44
NAPHTHALENE		110	No data	0	0	110	0	110
N-BUTYL ALCOHOL		13352	No data	0	0	13352	5	13357
N-HEXANE		4210	0	0	0	4210	5	4215
NICKEL		899	200	0	0	1099	420	1519
NICKEL COMPOUNDS		787	255	0	0	1042	36582	37624
NITRATE COMPOUNDS		81	24000	0	0	24081	0	24081
NITRIC ACID		46	0	0	0	46	6211	6257
NITROBENZENE		3	No data	0	0	3	0	3
N-METHYL-2-PYRROLIDONE		10	No data	0	0	10	0	10
N-METHYLOLACRYLAMIDE		1260	No data	0	0	1260	0	1260
PHENOL		34616	No data	0	0	34616	0	34616
PHTHALIC ANHYDRIDE		34	No data	0	0	34	0	34
POLYCYCLIC AROMATIC COMPOUNDS		9.534	0	0	0	9.534	0	9.534
P-PHENYLENEDIAMINE		28	No data	0	0	28	0	28
PYRIDINE		9	No data	0	0	9	0	9
SELENIUM COMPOUNDS		152	220	0	0	372	891	1263
STYRENE		7813	No data	0	0	7813	5	7818
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		621287	0	0	0	621287	0	621287
TERT-BUTYL ALCOHOL		13201	0	0	0	13201	0	13201
TETRACHLORO-ETHYLENE		57465	No data	0	0	57465	8	57473
TOLUENE		8637	21	0	0	8658	2041	10699
TOLUENE DIISOCYANATE (MIXED ISOMERS)		7	No data	0	0	7	0	7
TOLUENE-2,4-DIISOCYANATE		79	No data	0	0	79	5	84
TRICHLOROETHYLENE		5541	No data	0	0	5541	5	5546
TRIFLURALIN		0.87	No data	0	0	0.87	0	0.87
URETHANE		91	No data	0	0	91	5	96
VANADIUM EXCEPT WHEN CONTAINED IN AN ALLOY)		47	170	0	0	217	452	669
VANADIUM COMPOUNDS		325	5	0	0	330	38107	38437
VINYL ACETATE		36	No data	0	0	36	0	36
XYLENE (MIXED ISOMERS)		164881	15	0	0	164896	156	165052
ZINC (FUME OR DUST)		7693	No data	0	0	7693	0	7693
ZINC COMPOUNDS		2389	4555	0	0	6944	89206	96150
Total		2883660.12	47079	0	0	2930739.1	800989	3731728.12
Non-IJC								
Total		2890993.56	49339.98	0	0	2940333.5	954126.216	3894459.76

Table 3-21. TRI Facilities Releasing IJC Critical Pollutants On-site for the Black River AOC

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 ROSS INCINERATION SERVICES INC.	44012FRSTN33570 44044RSSNC36790	AVON LAKE 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 BECOTEK MFG. INC. FORMERLY JOHNSON METALL INC. FORD MOTOR CO. OHIO ASSEMBLY PLANT INSERVCO INC. NATIONAL BRONZE & METALS (OHIO) INC. NEW NGC INC. REPUBLIC TECHS. INTL. LORAIN PLANT ROCK CREEK ALUMINUM INC. ROSS INCINERATION SERVICES INC.	44012FRSTN33570 44052MRCNC305OB 44012FRDMT650MI 44050NSRVC110CO 44055NTNLB5311W 44052NWNGC1901H 44055SSLRN1807E 44035RCKCR320HU 44044RSSNC36790	AVON LAKE LORAIN AVON LAKE LAGRANGE LORAIN LORAIN LORAIN ELYRIA GRAFTON
Mercury and mercury compounds	3			
Lorain County, OH	3	AVON LAKE POWER PLANT REPUBLIC TECHS. INTL. LORAIN PLANT ROSS INCINERATION SERVICES INC.	44012FRSTN33570 44055SSLRN1807E 44044RSSNC36790	AVON LAKE LORAIN GRAFTON
Toxaphene	1			
Lorain County, OH	1	ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON
Hexachlorobenzene	1			
Lorain County, OH	1	ROSS INCINERATION SERVICES INC.	44044RSSNC36790	GRAFTON

3.6 MAUMEE RIVER AOC, LUCAS, OTTAWA, AND WOOD COUNTIES, OH

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

3.6.1 Hazardous Waste Sites Relevant to the Maumee River AOC

Only one hazardous waste site in the counties relevant to the Maumee River AOC has been, at some point in ATSDR's assessment, designated with Public Health Hazard Category in the range of 1-3. That site is listed in Table 3-22, along with information regarding the type and location of the site, the hazard category, and the date and type of assessment document, as described on HazDat.

Table 3-22. Hazardous Waste Sites in Lucas, Ottawa, and Wood Counties, OH

Site Name, County	Public Health Hazard Category	EPA NPL Status	Site ID	City
Brush Wellman Inc., Ottawa	3 (2002 HC) 5 (n.d. HC)	Non NPL	OHD004212999	Elmore

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

HC = Health Consultation

n.d. = no date provided

The documents and data regarding the number of contaminant records in HazDat that exceeded health based-screening values for this waste site were inadvertently omitted from the materials provided by ATSDR for inclusion in this document. Chemical releases from this facility, however, are represented in the TRI data discussed in the next section of this document.

3.6.2 TRI Data for the Maumee River AOC

The TRI on-site chemical releases for Lucas, Ottawa, and Wood counties, OH (combined), summarized in Table 3-23, were 16,694,945 pounds, the majority of which were released to land, followed by releases to soil. Very little was released to surface water. Lucas County accounted for 96.4%, Ottawa County accounted for 1.7%, and Wood County accounted for 1.9% of the total on-site releases.

Of the total on-site releases (in pounds), 2,240,392 (13.4%) was released as IJC critical pollutants. The IJC critical pollutants released were: PCBs (to land), PCDDs and PCDFs, (primarily to air and land), lead and lead compounds (2,239,778 pounds, primarily to land), and mercury and mercury compounds (primarily to air and land). Lead releases accounted for >2,000,000 pounds. The facilities that released these pollutants are listed in Table 3-24.

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

3.6.3 County Demographics and Health Status Data for the Maumee River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in the three counties of this AOC is shown in Table 3-25.

Table 3-25. County Demographic Profiles for the Maumee River AOC

Vulnerable population	Lucas County	Ottawa County	Wood County	Total for AOC
Children 6 years and younger	44,499	3,160	10,068	57,727
Females aged 15-44	100,352	7,746	29,708	137,806
Adults 65 years and older	59,441	6,710	13,315	79,466

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for the two counties relevant to the Cuyahoga River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Lucas County:

Infant mortality measures (per 1,000 births)

- black infant mortality
- post-neonatal infant mortality

Birth measures (as percent)

- premature births
- unmarried mothers

Death measures (per 100,000 population)

- breast cancer (female)
- colon cancer
- coronary heart disease
- lung cancer

Ottawa County

Infant mortality measures (per 1,000 births)

- **infant mortality**
- **white infant mortality**
- neonatal infant mortality
- **post-neonatal infant mortality**

Death measures (per 100,000 population)

- coronary heart disease

Wood County

Infant mortality measures (per 1,000 births)

- white infant mortality

Death measures (per 100,000 population)

- breast cancer
- **colon cancer**
- **coronary heart disease**

3.6.4 Summary and Conclusions for the Maumee River AOC

3.6.4.1 Hazardous Waste Sites

Only one site (Brush Wellman, Inc., non-NPL) was identified by HazDat as ever having been ranked with a public health hazard category in the range of 1-3. This site, located in Ottawa County, was categorized as an *Indeterminate Public Health Hazard* in 2002, and as *No Public Health Hazard* in another health consultation. Additional detail regarding this site was not available as of the writing of this document, but Brush Wellman, Inc. is represented in the TRI data presented in this document.

Issues for Follow-Up

The two health consultations for the Brush Wellman Inc. site in Ottawa County OH, and data regarding chemicals that exceeded health based screening values, will need to be provided for evaluation and addition to this document.

3.6.4.2 TRI Data

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

3.6.4.3 County Demographics and Health Status Indicators

Total vulnerable populations were 204,292 for Lucas County, 17,616 for Ottawa County, and 53,091 for Wood County, OH. Lucas County had the largest number of health status indicators of concern (measures that compared unfavorably both with the U.S. and with the median of the peer counties), but none of these were outside the range of the peer county indicators. Ottawa County had fewer indicators of concern, but three of the infant mortality indicators (infant mortality, white infant mortality, and post-neonatal infant mortality) exceeded the upper limit of the peer county range. Wood County had the fewest indicators of concern, but two of the death measures (colon cancer and coronary heart disease) exceeded the upper limit of the peer county range.

Table 3-23. 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 On-site Releases	Total Off-site Releases	Total On-and Off-site Releases
POLYCHLORINATED BIPHENYLS	1	0.0000001	0	0	51	51.0000001	0	51.0000001
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.00237699	0.0007938	0	0.004851	0.00802179	0	0.00802179
LEAD	8	430.1	2.3	0	2234245.4	2234677.8	7915.64	2242593.44
LEAD COMPOUNDS		1345.6	355	0	3400	5100.6	4837.583	9938.183
MERCURY	9	0.1	0	0	30	30.1	0.791	30.891
MERCURY COMPOUNDS	9	254.4	5.35	0	273.1	532.85	7.2	540.05
Total IJC		2030.202377	362.6507938	0	2237999.505	2240392.358	12761.214	2253153.572
1,2,4-TRIMETHYLBENZENE		30563	17	0	250	30830	816	31646
1,2-DIBROMOETHANE		3005	0	0	0	3005	0	3005
1,3-BUTADIENE		350	0	0	0	350	0	350
1,4-DICHLOROBENZENE		1004	0	0	0	1004	0	1004
ACETALDEHYDE		1300	0	0	0	1300	0	1300
ALUMINUM (FUME OR DUST)		255	0	0	357000	357255	250	357505
ALUMINUM OXIDE (FIBROUS FORMS)		500	250	0	0	750	5	755
AMMONIA		121006	5100	0	0	126106	1220	127326
ANTIMONY COMPOUNDS		2864	5	0	0	2869	19260	22129
BARIUM		10	0	0	121000	121010	260	121270
BARIUM COMPOUNDS		2492	185	0	130000	132677	158454	291131
BENFLURALIN		385	0	0	0	385	0	385
BENZENE		22150	19	0	250	22419	10	22429
BENZO(G,H,I) PERYLENE		2.1076608	0	0	0	2.1076608	3	5.1076608
BERYLLIUM		241	25	0	54580	54846	796	55642
BROMOCHLORO-DIFLUOROMETHANE		1000	0	0	0	1000	0	1000
BROMOTRIFLUOROMETHANE		4653	0	0	0	4653	0	4653
BUTYL ACRYLATE		218	0	0	0	218	0	218
BUTYRALDEHYDE		1200	0	0	0	1200	0	1200
CADMIUM		10	0	0	56000	56010	15	56025
CADMIUM COMPOUNDS		0	1	0	0	1	1753	1754
CARBON DISULFIDE		56851	0	0	0	56851	0	56851
CARBONYL SULFIDE		7	0	0	0	7	0	7
CERTAIN GLYCOL ETHERS		474072	250	0	750	475072	15992	491064
CHLORODIFLUOROMETHANE		2512	0	0	0	2512	0	2512
CHROMIUM		506	0	0	523000	523506	1990	525496
CHROMIUM COMPOUNDS(EXCEPT CHROMITE ORE MINED IN THE TRANVAAL REGION)		306	51	0	7100	7457	7352	14809
COPPER		810	84	0	605858	606752	14349	621101
COPPER COMPOUNDS		22	0	0	0	22	2050	2072
CUMENE		502	5	0	250	757	0	757
CYCLOHEXANE		13226	5	0	250	13481	0	13481
DI(2-ETHYLHEXYL) PHTHALATE		0	0	0	0	0	250	250
DIAZINON		5100	0	0	0	5100	0	5100
DICHLORODIFLUOROMETHANE		2716	0	0	0	2716	0	2716
DICHLOROMETHANE		9718	0	0	0	9718	0	9718
DIETHANOLAMINE		500	0	0	0	500	0	500
DIISOCYANATES		1	0	0	0	1	0	1
ETHYLBENZENE		59225	18	0	250	59493	260	59753
ETHYLENE		5902	0	0	0	5902	0	5902
ETHYLENE GLYCOL		3433	250	0	5	3688	974	4662
FORMALDEHYDE		51378	0	0	0	51378	6753	58131
FORMIC ACID		1750	0	0	0	1750	0	1750
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		53968	0	0	0	53968	0	53968
HYDROGEN FLUORIDE		56022	0	0	0	56022	0	56022
MANGANESE		330	106	0	2420000	2420436	3516	2423952
MANGANESE COMPOUNDS		310	6600	0	13000	19910	5560	25470
METHANOL		89737	0	0	0	89737	2228	91965
METHYL ACRYLATE		184	0	0	0	184	0	184
METHYL ETHYL KETONE		711912	250	0	0	712162	3700	715862
METHYL ISOBUTYL KETONE		109170	0	0	0	109170	0	109170
METHYL METHACRYLATE		1884	0	0	0	1884	0	1884

Table 3-23. 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 On- site Releases	Total Off- site Releases	Total On- and Off-site Releases
METHYL TERT-BUTYL ETHER		4075	0	0	0	4075	0	4075
MOLYBDENUM TRIOXIDE		0	0	0	0	0	250	250
NAPHTHALENE		2121	29	0	0	2150	52	2202
N-BUTYL ALCOHOL		362737	0	0	0	362737	5	362742
N-HEXANE		38015	5	0	250	38270	0	38270
NICKEL		25	23	0	36032	36080	4361	40441
NICKEL COMPOUNDS		1606	937	0	71000	73543	16112	89655
NITRATE COMPOUNDS		0	0	0	0	0	32	32
NITRIC ACID		3521	0	0	0	3521	0	3521
N-METHYL-2-PYRROLIDONE		25750	5	0	0	25755	250	26005
OXYDIAZON		335	0	0	0	335	0	335
O-XYLENE		10	0	0	0	10	0	10
PHENANTHRENE		6	0	0	0	6	33	39
PHENOL		5601	0	0	0	5601	10440	16041
POLYCHLORINATED ALKANES		0	0	0	0	0	247	247
POLYCYCLIC AROMATIC COMPOUNDS		809.578738	0.005	0	1.1	810.683738	10532	11342.68374
PROPYLENE		13454	0	0	0	13454	0	13454
SODIUM NITRITE		5	0	0	0	5	257	262
STYRENE		68937	0	0	0	68937	33292	102229
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		179950	0	0	0	179950	0	179950
TETRACHLORO-ETHYLENE		61961	0	0	0	61961	0	61961
TOLUENE		118234	269	0	750	119253	1867	121120
TRICHLOROETHYLENE		16420	0	0	0	16420	250	16670
TRICHLOROFLUOROMETHANE		165	0	0	0	165	0	165
TRIFLURALIN		1110	0	0	0	1110	0	1110
VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY)		10	0	0	13500	13510	505	14015
VANADIUM COMPOUNDS		7103	13	0	330000	337116	4900	342016
XYLENE (MIXED ISOMERS)		344110	279	0	750	345139	280	345419
ZINC (FUME OR DUST)		1000	0	0	6520000	6521000	6505	6527505
ZINC COMPOUNDS		3212	5001	0	7400	15613	729396	745009
Total Non-IJC		3165544.686	19782.005	0	11269226.1	14454552.79	1067382	15521934.79
Total		3167574.889	20144.65579	0	13507225.6	16694945.15	1080143.214	17775088.36

Table 3-24. TRI Facilities Releasing IJC Critical Pollutants On-site for the Maumee River AOC

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	18			
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	3	BRUSHWELLMAN INC. ELMORE PLANT	43416BRSHWSOUTH	ELMORE
		GRAYMONT DOLIME OH INC.	43430GRYMN21880	GENOA
		UNITED STATES GYPSUM CO.	43433NTDSTGYPSU	GYPSUM
Wood County, OH	3	JOHNSON RUBBER CO.NORTH BALTIMORE	45872NRBLT587WB	NORTH BALTIMORE
		TECHNEGLAS INC.	43551NGTVP25875	PERRYSBURG
		MODINE MFG. CO.	43450MDNMN615BI	PEMBERVILLE
Mercury and mercury compounds	4			
Lucas County, OH	2	BAYSHORE PLANT	43616FRSTN4701B	OREGON
		BP AMERICA INC. TOLEDO REFY.	43616SHLCM4001C	OREGON
Ottawa County, OH	2	GRAYMONT DOLIME OH INC.	43430GRYMN21880	GENOA
		UNITED STATES GYPSUM CO.	43433NTDSTGYPSU	GYPSUM

3.7 RIVER RAISIN AOC, MONROE COUNTY, MI

The River Raisin AOC, located in the southeastern part of Michigan's lower peninsula, is defined as the lower (2.6 mile) portion of the River Raisin, downstream from Dam #6 at Winchester Bridge in the City of Monroe, and extending one-half mile out into Lake Erie along the near shore, both north and south, for one mile (see AOC map in the appendix).

3.7.1 Hazardous Waste Sites Relevant to the River Raisin AOC

ATSDR has evaluated the data for two hazardous waste sites in Monroe County, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Table 3-26.

Table 3-26. Hazardous Waste Sites in Monroe County, MI

Site Name, County	Public Health Hazard Category	EPA NPL Status	Site ID	City
Consolidated Packaging Corp.	3 (1995 HC)	Non NPL	MID980999882	Monroe
Novaco Industries	5 (1988 HA)	Deleted Post SARA	MID084566900	Temperance

3 = Indeterminate Public Health Hazard, 5 = No Public Health Hazard
HA = Public Health Assessment, HC = Health Consultation

For hazardous waste sites in Monroe County MI that *at any time* had Public Health Hazard Categories of 1-3 (only 1 site—Consolidated Packaging Corp.), the number of contaminant records in HazDat that exceeded health based-screening values was 107, as shown in Table 3-27. Most of the records were for the soil media group; water had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 20 of these records (19%), with the majority for the biota and soil media groups. The IJC critical pollutants that have been found at Monroe County, MI hazardous waste sites at concentrations exceeding health-based screening values are: PCBs, B(a)P, DDT and metabolites, dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3-28.

Further evaluation of the data for the Consolidated Packaging Corp. site was conducted by ATSDR in the health consultation listed in Table 3-26. This evaluation is discussed in the following subsection.

3.7.1.1 Consolidated Packaging Corp.

This 97-acre site, located on the east side of the city of Monroe, Monroe County, MI, was formerly occupied by a paper and paperboard plant that was in operation from 1898 through 1978. The plant structures have been demolished. The site includes seven lagoons formerly used for waste water disposal, storage, and treatment; these lagoons constitute a large proportion of the site. Overflow from the lagoons formerly flowed through drainage ditches into the nearby River Raisin. The site was originally wetlands, which were filled with various materials, including commercial and industrial wastes, prior to

construction of the plant. The site is bordered by a waste water treatment plant, a closed industrial landfill, and a residential area. The Raisin River flows east-southeast less than 200 feet north of the site, emptying into Lake Erie approximately 2 miles from the site. Another industrial facility is located on the opposite bank of the river, and two toxic waste sites associated with PCB and heavy metal contaminated sediments are slightly downstream on the opposite bank of the river. Information regarding this site is taken from the 1995 ATSDR health consultation.

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) because of the potential threat to human health from exposure to contaminants and incomplete monitoring data.

Contaminants of Concern in Completed Exposure Pathways: None identified. There were no data regarding concentrations of contaminants in surface soil; the shallowest soil samples were considerably deeper than the 3-inch depth recommended by ATSDR. Concentrations of many contaminants, including the IJC critical pollutants PCBs, B(a)P, lead, and mercury in soil and sediment exceeded health-based screening values, but further assessment indicated that trespassers were not likely to be exposed at levels of potential human health risk. The concentrations of PAHs including B(a)P were considered comparable to background concentrations in urban soil. The sediment in the lagoons is contaminated with the IJC critical pollutant PCBs. Children reportedly fished in the lagoons before they were fenced; fish and turtles have been seen in the drainage ditch. No data were available on contaminant concentrations in fish from the lagoons and ditch, but fish taken from the River Raisin near the site contained elevated concentrations of PCBs. The Consolidated Packaging Corporation is one (of many) possible sources for the PCB contamination of the fish. Groundwater at the site contains various contaminants, including PCBs, at concentrations above health-based screening values, but there are no producing wells. Groundwater flow, however, is towards the northeast, and is thought to discharge into the River Raisin.

Demographics: Not reported, but a residential area is adjacent to the site.

Public Health Outcome Data: Not reported.

Conclusions: This site may have contributed and may continue to contribute to the environmental burden of the IJC critical pollutants PCBs, lead, and mercury, and possibly B(a)P. Human on-site exposure does not appear to be occurring at levels of concern, but data for surface soil are not available, so there is uncertainty regarding this source of exposure. The site, however, has not been remediated, and PCBs have been detected at above health-based screening values in on-site groundwater that is thought to discharge to the River Raisin.

3.7.2 TRI Data for the River Raisin AOC

The TRI on-site chemical releases for Monroe County, MI are summarized in Table 3-28. Total on-site releases in 2001 were 16,700,032 pounds, the majority of which were released to air, followed by releases to soil. Very little was released to surface water.

Of the total on-site releases, 66,177 pounds (0.4%) were accounted for IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (to air), lead and lead compounds (primarily to land), mercury and mercury compounds (to air and land), and hexachlorobenzene (to air). The facilities that released these pollutants are listed in Table 3-29.

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

3.7.3 County Demographics and Health Status Data for the River Raisin AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in Monroe County MI is as follows:

Children 6 years and younger	13,834
Females aged 15-44	31,020
Adults 65 and older	16,222

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for Monroe County MI were as follows (indicators that were above the upper limit of the peer county range are bolded):

- Infant mortality (per 1,000 births)
 - post-neonatal infant mortality
- Death measures (per 100,000 population)
 - colon cancer
 - **coronary heart disease**
 - lung cancer
 - stroke

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

3.7.4.1 Hazardous Waste Sites

Only one hazardous waste site, the Consolidated Packaging Corporation, in Monroe County, MI has been assessed by ATSDR with a Public Health Hazard category in the range of 1-3. The soil and sediment at this site is contaminated with the IJC critical pollutants PCBs, B(a)P, lead, and mercury at concentrations that exceeded health-based screening values. On-site groundwater, contaminated with PCBs, may discharge into the River Raisin. The site is considered an Indeterminate Public Health Hazard (category 3) because monitoring data are inadequate to determine if chemicals in completed exposure pathways pose a public health hazard.

Issues for Follow-Up

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

3.7.4.2 TRI Data

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

3.7.4.3 County Demographics and Health Status Indicators

Vulnerable populations for Monroe County, MI, totaled 61,076. A few Monroe County health status indicators compared unfavorably with both U.S. indicators and with the median of peer county indicators. These included post-neonatal infant mortality, and deaths from various cancers (**colon** and lung), coronary heart disease, and stroke. Indicators that were higher than the upper limit of the range for peer counties are shown in bold type.

**Table 3-27. Waste Site Contaminants that Exceeded Health-Based Screening Values
River Raisin AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records							
			Air	Biota	Human Material	Other Media	Soil	Water	Total	
001336-36-3	POLYCHLORINATED BIPHENYLS	1		1				2	1	4
000050-32-8	BENZO(A)PYRENE	4						2		2
000072-54-8	DDD, P,P'	5		1						1
000072-55-9	DDE, P,P'	5		1						1
000050-29-3	DDT, P,P'	5		1						1
000060-57-1	DIELDRIN	6		1						1
007439-92-1	LEAD	8		1				2	2	5
007439-97-6	MERCURY	9		1				2	1	4
000118-74-1	HEXACHLOROENZENE	11		1						1
	Total IJC		0	8	0	0	0	8	4	20
000071-55-6	1,1,1-TRICHLOROETHANE							1		1
000075-34-3	1,1-DICHLOROETHANE							1	1	2
000106-46-7	1,4-DICHLOROENZENE							1		1
000091-57-6	2-METHYLNAPHTHALENE							2	1	3
000208-96-8	ACENAPHTHYLENE							1		1
007440-36-0	ANTIMONY							1		1
007440-38-2	ARSENIC							2	1	3
007440-39-3	BARIUM							2	2	4
000071-43-2	BENZENE								1	1
000056-55-3	BENZO(A)ANTHRACENE							2		2
000205-99-2	BENZO(B)FLUORANTHENE							2		2
000191-24-2	BENZO(GHI)PERYLENE							2		2
000207-08-9	BENZO(K)FLUORANTHENE							2		2
000100-51-6	BENZYL ALCOHOL								1	1
007440-41-7	BERYLLIUM							2	1	3
007440-43-9	CADMIUM			1				2	1	4
000057-74-9	CHLORDANE			1						1
007440-47-3	CHROMIUM			1				2		3
000218-01-9	CHRYSENE							2		2
007440-48-4	COBALT							2	1	3
007440-50-8	COPPER			1				2		3
000106-44-5	CRESOL, PARA-							2		2
000117-81-7	DI(2- ETHYLHEXYL)PHTHALATE							2		2
000053-70-3	DIBENZO(A,H)ANTHRACENE							2		2
000117-84-0	DI-N-OCTYL PHTHALATE							1		1
HZ0400-04-T	DIOXINS/FURANS, UNSPECIFIED							2		2
000076-44-8	HEPTACHLOR								1	1
001024-57-3	HEPTACHLOR EPOXIDE			1						1
000193-39-5	INDENO(1,2,3-CD)PYRENE							2		2
007439-96-5	MANGANESE							2	2	4
000091-20-3	NAPHTHALENE							1	1	2
007440-02-0	NICKEL			1				2	2	5
000086-30-6	N-NITROSODIPHENYLAMINE								1	1
000087-86-5	PENTACHLOROPHENOL							1		1
000085-01-8	PHENANTHRENE							2	1	3
007782-49-2	SELENIUM							2	1	3
000079-01-6	TRICHLOROETHYLENE								1	1
007440-62-2	VANADIUM							2		2
007440-66-6	ZINC			1				2	2	5
000132-64-9	DIBENZOFURAN							1	1	2
	Total Non-IJC		0	7	0	0	0	57	23	87
	Total		0	15	0	0	0	65	27	107

Table 3-28. 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 On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.007667447	No data	0	0	0.007667447	0	0.007667447
LEAD	8	3.79	No data	0	1160.5	1164.29	1	1165.29
LEAD COMPOUNDS	8	965	161	0	62622	63748	5911.75	69659.75
MERCURY	9	58	No data	0	0	58	0	58
MERCURY COMPOUNDS	9	879.6	1	0	313	1193.6	0.1	1193.7
HEXACHLOROBENZENE	11	13.6	0	0	0	13.6	0	13.6
Total IJC		1919.997667	162	0	64095.5	66177.49767	5912.85	72090.34767
1,2,4-TRIMETHYLBENZENE		24250	No data	0	0	24250	0	24250
1,3-BUTADIENE		90717	No data	0	0	90717	0	90717
AMMONIA		89097	980	0	0	90077	0	90077
ANTIMONY COMPOUNDS		250	No data	0	0	250	500	750
ARSENIC COMPOUNDS		406	1200	0	40000	41606	0	41606
BARIUM COMPOUNDS		8937	8800	0	1750000	1767737	0	1767737
BENZENE		137898	No data	0	0	137898	0	137898
BENZO(G,H,I) PERYLENE		3136.2	0	0	0	3136.2	0	3136.2
BERYLLIUM COMPOUNDS		48	0	0	12000	12048	0	12048
CERTAIN GLYCOL ETHERS		47598	No data	0	0	47598	0	47598
CHROMIUM		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		1524027	No data	0	0	1524027	0	1524027
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		9901000	No data	0	0	9901000	0	9901000
HYDROGEN FLUORIDE		551000	No data	0	0	551000	0	551000
MANGANESE		245	No data	0	461	706	53	759
MANGANESE COMPOUNDS		3279	6729	0	86000	96008	0	96008
METHANOL		27300	No data	0	0	27300	0	27300
METHYL ETHYL KETONE		24250	No data	0	0	24250	0	24250
METHYL ISOBUTYL KETONE		17250	No data	0	0	17250	0	17250
NAPHTHALENE		35053	No data	0	0	35053	0	35053
N-BUTYL ALCOHOL		30250	No data	0	0	30250	0	30250
NICKEL		635	No data	0	35	670	1901	2571
NICKEL COMPOUNDS		1019	863	0	59000	60882	6	60888
POLYCYCLIC AROMATIC COMPOUNDS		15693.5	0	0	39	15732.5	0	15732.5
SELENIUM COMPOUNDS		9000	2800	0	6900	18700	0	18700
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		777000	No data	0	0	777000	0	777000
TOLUENE		102089	No data	0	0	102089	0	102089
TRICHLOROETHYLENE		15000	No data	0	0	15000	0	15000
VANADIUM COMPOUNDS		6084	4200	0	175300	185584	0	185584
XYLENE (MIXED ISOMERS)		367313	No data	0	0	367313	0	367313
ZINC (FUME OR DUST)		121	No data	0	597	718	0	718
ZINC COMPOUNDS		6994	4528	0	130005	141527	72772	214299
Total Non-IJC		13877691.7	35491	0	2720672	16633854.7	91570	16725424.7
Total		13879611.7	35653	0	2784767.5	16700032.2	97482.85	16797515.05

Table 3-29. TRI Facilities Releasing IJC Critical Pollutants On-site 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

3.8 ROUGE RIVER AOC, WAYNE AND OAKLAND COUNTIES, MI

The Rouge River has four main branches primarily flowing through Wayne and Oakland Counties. It discharges 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 maps in the appendix).

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, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Tables 3-30 and 3-31, for sites that had public health hazard categories of 1-3 at some point during their assessment history. There are 16 sites altogether: 10 in Wayne County and 6 in Oakland County.

Table 3-30. Hazardous Waste Sites in Wayne County, MI

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
Carter Industrials, Inc.	2 (1992 HA)	Deleted Post SARA	MID980274179	Detroit
Ford Motor Co. Allen Park Clay Mine	3 (1994 HA)	Non NPL	MID980568711	Allen Park
Gratoit Trailer Park	2 (1999 HC)	---	MISFN0507941	Detroit
Joy Road Dump/Holiday Park/Holiday Nature Preserve	2 (2000 HC)	---	MISFN0507950	Westland
Lower Ecorse Creek Dump	1 (1993 HV) 4 (1995 HA)	Final	MID985574227	Wyandotte
Master Metals Inc. #2	2 (1997 HC)	Non-NPL	MID039108824	Detroit
Packard Plant	2 (1998 HC)	Non-NPL	MIR000037689	Detroit
Proposed Beard Street School	3 (2001 HC) 5 (2002 HC)	---	MIXCRA704000	Detroit
Wholesale Russell/Mack	2 (1997 HC)	Non-NPL	MIXCRA327000, MISFN0507878	
Old World Trade Center	2 (1997 HC)	Non-NPL	MI0001094465	Detroit

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

Table 3-31. Hazardous Waste Sites in Oakland County, MI

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
Cemetery Dump	3 (1988 HA) 4 (1992 HA)	Deleted Post SARA	MID980794663	Rose Center
Continental Aluminum Corp.	3 (2003 HC)	Non NPL	MI0001941699	New Hudson
Hi-Mill Manufacturing Co.	3 (1991 HA)	Final	MID005341714	Highland
J & L Landfill	3 (1989 HA) 4 (1993 HA) 5 (n.d. SR)	Final	MID980609440	Rochester Hills
Rose Township Dump	3 (1988 HA)	Final	MID980499842	Rose Township
Springfield Township Dump	3 (1988 HA)	Final	MID980499966	Davisburg

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, SR = Site Review and Update
 n.d. = no date provided

For hazardous waste sites in Wayne and Oakland Counties, MI that *at any time* had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health based-screening values was 1,582, as shown in Table 3-32. Most of the records were for the soil media group; the water media group had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 238 of these records, with the majority for the soil media group. The IJC critical pollutants that have been found at Wayne and Oakland County, MI hazardous waste sites at concentrations exceeding health-based screening values are: PCBs, PCDDs, B(a)P, DDT and metabolites, aldrin/dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3-33.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the table. These evaluations are discussed in the following subsections, in the same order as in Tables 3-30 and 3-31, with the Wayne County sites discussed first, followed by the Oakland County sites, which are relevant to Clinton River AOC as well as to the Rouge River AOC.

3.8.1.1 Carter Industrials, Inc.

This site is a former scrap metal yard in Detroit (Wayne County), which was found to be extensively contaminated with PCBs (from electrical capacitors and transformers salvaged at the site) and metals, including lead. The sewers that drain the site contain PCBs in their sediments, and drain into the Detroit River. As of 1992, PCB-contaminated surface soils from nearby properties had been piled on the Carter site, and the piles of waste had been covered. The site was fenced. The transformers and barrels containing PCBs were removed. Surface water runoff collection and activated carbon treatment had been installed. According to ATSDR, EPA estimated that the total amount of PCBs in the soils on the site

could be nearly 17 tons. Information regarding this site is taken from the 1992 ATSDR preliminary public health assessment and the 2003 EPA NPL fact sheet.

Category of Public Health Hazard: This site was categorized as a *Public Health Hazard* (category 2) because of the presence of hazardous substances on the site and the difficulty of maintaining site security.

Contaminants of Concern in Completed Exposure Pathways: Inhalation of PCB-contaminated fugitive dusts was considered a principal route of exposure because PCBs were found in particulates in rain gutters of nearby homes. However, the sampling appears to have been performed before the removal of PCB-contaminated soil from yards to the site, and the covering of the mounds of soil. PCBs also were found in the storm sewers that drain the site and empty into the Detroit River. The greatest concern, however, was for direct exposure of trespassers to the PCB-contaminated soil on-site. Nevertheless, blood samples from the surrounding residents, taken before any remediation of the site and surrounding area, did not indicate that exposures exceeded those of the general population.

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

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

Public Health Outcome Data: ATSDR noted that an evaluation of health outcome data will be conducted in future public health assessments of the site. 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, checked in 60 subjects, were higher than the then CDC level of concern of 25 :g/DL in 5 subjects, 3 of whom were 3 years or less in age, and were therefore unlikely to have been on the site.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutants PCBs and lead. As reported in the EPA fact sheet, extensive remediation of the site, including removal of the contaminated soils and disposal offsite in a TSCA landfill and cleanup of the sewer line, was conducted and completed in 1996. The site was deleted from the NPL in 1997. Thus, the site is no longer releasing or acting as a reservoir of contaminants.

3.8.1.2 Ford Motor Co. Allen Part Clay Mine

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

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) because additional information was needed to evaluate possible air exposure pathways, particularly with regard to past exposures to airborne carcinogenic PAHs.

Contaminants of Concern in Completed Exposure Pathways: None identified. Air monitoring, however, did not include analysis for PAHs, and carcinogenic PAHs were found at concentrations above health-based screening values in several on-site media including sediments, and a storm-water drain and treatment pond. Lead and cadmium concentrations also were elevated in on-site groundwater, but no completed exposure pathway exists. Carcinogenic PAHs may include B(a)P, an IJC critical pollutant, and lead is an IJC critical pollutant. Lead and B(a)P are IJC critical pollutants.

Demographics: Not reported for this non-NPL site.

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

- 1983 Cancer Study: The occurrence of cancer from 1973 to 1981 was evaluated in two census tracts comprised by the Snow Woods area of Dearborn. In comparison with rates for the City of Dearborn, Wayne County, and the tri-county area (Wayne, Oakland, and Macomb Counties), the only statistically significant excesses of cancer were brain cancer in both men and women and liver cancer in women. Comparisons were made by age and sex for the white population only, because the neighborhoods were predominantly white. Risk factors such as occupational history, smoking, alcohol use, and residential history were not taken into account.
- 1989 Cancer Study: This study was a follow-up and expansion of the 1983 study. The study included a total of 10 census tracts included in the communities of Snow Woods, Melvindale, and Allen Park, which surround the Allen Park Clay Mine, and considered cancer occurrence from 1973 to 1986. The comparison communities were the City of Dearborn (excluding Snow Woods) and Wayne County (excluding the three study communities). Methods of comparison were similar to the 1983 study, except that for the brain cancer cases, occupational, smoking, and residential histories were obtained from relatives by telephone interview. The total numbers of cancer cases for the study area were lower than expected based on rates for the comparison populations of City of Dearborn and Wayne County. The only higher-than-expected cancer rate was in Snow Woods residents, with 16 cases of brain cancer over the 14-year study period, versus 6 expected. Although histories for 2 of the 16 cases could not be determined, 9 of the 16 were found to have lived near the site for 20 years or more. All but one of the seven men with brain cancer smoked and five of the seven had worked in occupations with exposure to car engine exhaust for 3-42 years. However, only one of the women with brain cancer smoked and there was no consistent occupational history among the women.
- ATSDR Evaluation: ATSDR evaluated the two previous studies and concluded that the results indicate a consistent, higher-than-expected number of cases of brain cancer in the Snow Woods from 1973 to 1986. ATSDR evaluated the current information on the number of brain and liver cancers in the study communities from 1973 to 1990. An excess in brain cancer rates occurred in snow woods from 1973 to 1990, but liver cancer rates in the three study communities were comparable to those in Wayne County and the other surrounding counties, Macomb and Oakland. The excess brain cancers could not, however, be attributed to the Allen Park Clay Mine site, because no completed environmental and human exposure pathways were found for the site, and the information about potential pathways does not indicate that the site contaminants (e.g., lead and carcinogenic PAHs) are at concentrations that may be related to brain cancer.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutants B(a)P and lead, as well as other contaminants including cadmium. There are no known completed exposure pathways for human populations, however, and the elevated occurrence of brain tumors seen in one of the communities near the site is not attributable to site contaminants.

3.8.1.3 Gratiot Trailer Park

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

Category of Public Health Hazard: This site was categorized as a *Public Health Hazard* (category 2) because of the physical hazards from the trash, trailers, tanks, and other debris, and the lack of effective restriction of access. Also some contaminants in soil are present at concentrations high enough to be of concern, and abandoned buildings contain asbestos in amounts that require special removal, and probably contain lead paint.

Contaminants of Concern in Completed Exposure Pathways: Not explicitly discussed. Several contaminants were found in soil at levels above Michigan's health-based clean-up values. These contaminants included the IJC critical pollutants PCBs, lead, and B(a)P, and other contaminants such as arsenic, copper, and manganese. In general, trespassers were considered unlikely to be exposed to doses that would cause adverse health effects. If the site were developed for residential use, however, these contaminants might pose health risks. Groundwater was not sampled because it not considered useful for household purposes.

Demographics: Not reported for this non-NPL site.

Public Health Outcome Data: Not reported.

Conclusions: This soil at this site contains elevated concentrations of several IJC critical pollutants, but the site does not appear to be a major source of these contaminants, and migration off-site has not been investigated. Trespassers do not appear likely to experience exposures high enough cause adverse health effects. The physical hazards posed by the site are of greater concern.

3.8.1.4 Joy Road Dump/Holiday Park/Holiday Nature Preserve

The Joy Road/Holiday Park Dump is located in the City of Westland (Wayne County), where unauthorized and undocumented dumping of household waste occurred. Rainwater runoff flows from the property into Tonquish Creek, which empties into the Middle Branch of the Rouge River approximately 1 mile from the property. The information on this site was taken from the 2000 health consultation performed by ATSDR as part of a Brownfields project.

Category of Public Health Hazard: This site was categorized as a *Public Health Hazard* (category 2) because of the physicals hazards from the rubbish and waste coming to the surface and the lack of monitoring data.

Contaminants of Concern in Completed Exposure Pathways: None identified. Although soil in the dump areas contained the IJC critical pollutant lead, and also arsenic and copper, at concentrations above health-based screening values, no one is likely to be exposed to a degree that would be likely to result in adverse health effects. Mercury was also present in soil and surface water, but no ATSDR health-based screening values were available for those media.

Demographics: Not reported.

Public Health Outcome Data: Not reported.

Conclusions: This site is an area of a park where unauthorized dumping of household waste occurred. It is not likely to have contributed significantly to the environmental burden of IJC critical pollutants or other pollutants, and human populations are not exposed at levels likely to cause adverse effects on health.

3.8.1.5 Lower Ecorse Creek Dump

This site was originally wetlands along the Ecorse River, which drains into the Detroit River. The wetlands were filled with construction debris and other material prior to development. In 1995, the site consisted of 11 residential lots, covering approximately 2.25 acres, which were found to have blue soil and shallow groundwater, due to cyanide contamination. The blue cyanide compound was tentatively identified as ferric ferrocyanide or Prussian Blue dye. Eventually, the site involved approximately 16 residential lots. The information on this site was taken from the 1995 public health assessment conducted by ATSDR, from HazDat, and from the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: This site posed an *Urgent Public Health Hazard* (category 1) in the past. Following removal of contaminated soil and sealing of a basement to prevent seepage of contaminated groundwater, the site was considered to pose *No Apparent Health Hazard* (category 4). Subsequent to ATSDR's 1995 assessment, more soil contamination with cyanide contamination and also with arsenic and PAHs was discovered; eventually 3,000 cubic yards of contaminated soil were excavated and disposed of offsite.

Contaminants of Concern in Completed Exposure Pathways: In the past, humans were exposed to soil and basement air containing cyanide at concentrations of human health concern. In addition, shallow groundwater was contaminated with cyanide, and although not used as a source of household water, seeped into some of the basements at the site. Some other contaminants were found in site media at concentrations that exceeded health-based screening values, but ATSDR's evaluation focused on cyanide. Although runoff from the site and contaminated groundwater from the site could discharge into the Ecorse River, ATSDR concluded that there is no indication of site-related contamination of water or sediments in the river. The site has been remediated by removal and off-site disposal of contaminated soil.

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

Children 6 years and younger	1,685
Females aged 15-44	3,967
Adults 65 and older	2,501

Public Health Outcome Data: ATSDR evaluated the medical history of a resident of the site area whose parents were concerned that his health problems may have been due to exposure to cyanide at the site. ATSDR concluded there was no evidence of a connection between the health problems and his potential exposure to cyanide in the soil, air, and groundwater.

Conclusions: The primary contaminant at this site was cyanide, a non-IJC pollutant. This site is more relevant to the Detroit River AOC, a binational AOC not covered by this document, than to the Rouge River AOC. The site has been remediated by excavation and offsite disposal of the contaminated soil.

3.8.1.6 Master Metals Inc. #2

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

Category of Public Health Hazard: This site was categorized as a *Public Health Hazard* (category 2) because of very high concentrations of lead in surface soil on the property. Also, abandoned buildings on the property pose physical hazards from deterioration and partial collapse and from containers of laboratory chemicals labeled as sodium hydroxide pellets, hydrofluorosilic acid, carbon tetrachloride, nitric acid, formaldehyde, and other chemicals.

Contaminants of Concern in Completed Exposure Pathways: The IJC critical pollutant lead was found in very high concentrations, 10,000-100,000 ppm, in soil throughout the property. Trespassers and workers from the neighboring trucking operation who use the area for materials storage may, if spending a major portion of the day on the property, incidentally ingest enough lead from soil to exceed the amounts that cause minor adverse health effects in humans. Also cadmium levels in soil are high enough so that anyone spending a major portion of the day on the property might incidentally ingest cadmium doses from soil exceeding the ATSDR MRL or EPA RfD.

Demographics: Not reported, but a residential area is next to the site.

Public Health Outcome Data: Not reported.

Conclusions: This site may be contributing to the environmental burden of the IJC critical pollutant lead, as well as other contaminants including cadmium. As of 1997, no clean-up of the highly contaminated soil had been performed, and containers of hazardous chemicals were located in the deteriorating buildings on the site, which is not secure from trespassers, and a portion of which is in use by an adjacent firm for materials storage.

3.8.1.7 Packard Plant

The Packard Plant property is a complex of buildings in Detroit (Wayne County) that were used from 1907 to 1956 for automobile and truck manufacturing. Since 1960, the property has been used as an industrial park, but large sections are vacant and deteriorating, with trash accumulating. The information regarding this site is taken from the ATSDR 1998 health consultation, prepared as part of a Brownfields project.

Category of Public Health Hazard: This site was categorized as a *Public Health Hazard* (category 3) because of the physical hazards from the waste materials (including old tires and bundled plastic) and the decay of the buildings.

Contaminants of Concern in Completed Exposure Pathways: None identified. Lead-containing paint and asbestos-containing insulation are present in the buildings, and need to be handled properly during demolition or rehabilitation of the property to prevent exposure to workers or nearby residents. Concentrations of lead in soil were within the range typically found in urban areas near buildings the age of the Packard Plant buildings.

Demographics: Not reported.

Public Health Outcome Data: Not reported.

Conclusions: This site does not appear to be a significant contributor to environmental burdens of the IJC critical pollutants, or other pollutants.

3.8.1.8 Proposed Beard Street School/New Beard Elementary School

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

Category of Public Health Hazard: This site was originally categorized as an *Indeterminate Public Health Hazard* (category 3) because while subsurface soil samples contained contaminants at levels potentially of health concern, adequate data on surface soil were not available. The 2002 health consultation, based on the additional soil data obtained after the original assessment, and taking into account the physical barriers to exposure, concluded that the property poses *No Public Health Hazard* (category 5).

Contaminants of Concern in Completed Exposure Pathways: None. Contaminants formerly found in soil at concentrations exceeding health-based screening values included the IJC critical pollutants PCBs, B(a)P, and lead, and the non-IJC contaminant arsenic. Site remediation included removal of the existing surface soil, removal of remaining PCB-contaminated soil, and installation of a site cap on all areas of the site not covered by pavement or the school's slab foundation. The contaminants remaining in the soil under the cap/pavement/slab at concentrations exceeding health-based screening values were arsenic, B(a)P, and cyanide. ATSDR determined that no completed exposure pathways exist. The property is to be inspected regularly to ensure that the protective coverings remain effective. Groundwater in the area is rare and is not used for drinking. Further information about groundwater was not provided.

Demographics: Not reported.

Public Health Outcome Data: Not reported.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutants PCBs, B(a)P, and lead, as well as other contaminants including arsenic. The property is not large, however, and was not highly contaminated. Surface soil and PCB-contaminated soil has been removed and disposed off-site, and the soil has been covered with a cap, paving, or the foundation slab of the school. Thus, the site is not likely to result in human or environmental exposures to contaminants.

3.8.1.9 Wholesale Russell/Mack

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

Category of Public Health Hazard: This site was categorized as a *Public Health Hazard* (category 2) primarily because of food waste dumped on the property, which could present health risks from decay and the attraction of disease-carrying insects and rodents. In addition chemical contamination in one area of the property was of concern.

Contaminants of Concern in Completed Exposure Pathways: The IJC critical pollutant lead was present in soil at one location at concentrations high enough to be of concern from incidental ingestion if people frequently visited that area. The concentrations of the IJC critical pollutant B(a)P were elevated above health-based screening values and the maximum also was above the range typically found in urban areas, but the other values were not.

Demographics: Not reported. A block of condominiums is located nearby.

Public Health Outcome Data: None reported.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutants lead and B(s)P, but elevated soil concentrations were found primarily in one area of the property, and ATSDR concluded that the chemical contamination did not pose any imminent health hazard. Further evaluation of this contamination to determine its extent was recommended. The main concern was food waste dumped on the property.

3.8.1.10 Old World Trade Center

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

Category of Public Health Hazard: This site was categorized as an *Public Health Hazard* (category 2) because of the physical hazards posed by the collapsing building, broken glass, and other debris. In addition, although soil concentrations of contaminants did not present an imminent health hazard, they were considered to pose a potential long-term health hazard. Groundwater was not tested, but tends to be sparse and is not used for drinking water.

Contaminants of Concern in Completed Exposure Pathways: Not explicitly discussed. The soil concentrations of the IJC critical pollutants lead and B(a)P were in excess of health-based screening levels or clean-up criteria for commercial and industrial use, as well as for residential use, in several samples, including soil samples from inside a collapsing building.

Demographics: Not reported.

Public Health Outcome Data: None reported.

Conclusions: This site may contribute to the environmental burden of the IJC critical pollutants lead and B(a)P lead, but levels of contamination are not exceptionally high, and the barrels of chemicals have been removed.

3.8.1.11 Cemetery Dump

The 10-acre Cemetery Dump, located 0.5 miles south of Rose Center (Oakland County) is a former sand and gravel pit into which illegal dumping and burying of an estimated 250 barrels containing industrial toxic wastes occurred. These drums were excavated, along with the surrounding contaminated soil, and disposed of at a RCRA approved landfill in 1988. Information regarding this site is taken from the 1992 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: This site was originally categorized as an *Indeterminate Public Health Hazard* (category 3); that health assessment was not provided as a source for this document, and is not discussed in the 1992 health assessment. The 1992 health assessment concluded that the site poses *No (Apparent) Public Health Hazard* (category 4)

Contaminants of Concern in Completed Exposure Pathways: None. Several rounds of monitoring of residential wells, and of on-site monitoring wells, starting in 1981 and continuing through 1989 (post-remediation), have not detected elevated levels of contaminants. The IJC critical pollutant PCBs and lead were detected in the contents of some of the deteriorated drums and contaminated soil, but concentrations were not exceptionally high, and those materials were removed during remediation of the site.

Demographics: Approximately 1,000 people resided within 1 mile of the site.

Public Health Outcome Data: None reported.

Conclusions: Although the site history suggests that the site may have contributed to environmental burdens of hazardous chemicals including PCBs and lead, groundwater monitoring did not provide any evidence of migration of contaminants off-site, and the drums and surrounding contaminated soil have been remediated.

3.8.1.12 Continental Aluminum Company

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

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) because levels of chemical emission during possible high release events (odor

events) have not been determined, there is a potentially exposed population, and there is a plausible relationship between the health effects of concern to the community and the chemicals released by the facility.

Contaminants of Concern in Completed Exposure Pathways: None identified. Stack testing and air dispersion modeling performed by the Michigan Department of Environmental quality (MDEQ) indicates that emission of chlorine, hydrogen chloride, and hydrogen fluoride were below health-based screening levels for air. These data are not adequate, however, because concentrations during odor events may be higher. In addition, records of time of symptoms versus time of odor events are needed to evaluate the potential association. In addition, emissions data for other chemicals including the IJC critical pollutants PCDDs and PCDFs have not yet been provided for evaluation.

Demographics: Not reported. There are residential neighborhoods near the facility.

Public Health Outcome Data: Not reported. The community members reported health effects that appeared episodic, and thus possibly occurred during breaches of the pollution control devices of Continental Aluminum. These effects included irritation to the mucous membranes evidenced by nose bleeds, sore throat, coughing, difficult breathing, burning eyes, headache, and nausea. A metallic or varnish taste and burnt plastic odor also have been reported during odor events.

Conclusions: This site is not a hazardous waste site, but rather a facility that reports emissions to the TRI. Stack monitoring data were inadequate to fully assess whether contaminants are present in completed exposure pathways at concentrations that may be a health threat.

3.8.1.13 Hi-Mill Manufacturing Company

The Hi-Mill Manufacturing Company site is located on a 2.5-acre site west of the City of Highland (Oakland County), MI. It borders on a state recreation area and is adjacent to a pond and wetlands that may connect to Waterbury Lake. The company has been fabricating tubular aluminum, copper, and brass components for the air conditioning and refrigeration industries since 1946. Previous to 1983, the company deposited wastewater from pickling operations in an on-site seepage lagoon, and also used spray evaporation as a means of disposal. After October 1983, the waste disposal methods shifted to recycling rise water and off-site disposal of the remaining waste in a RCRA hazardous waste facility (after neutralization and storage in underground tanks. Following the discovery of elevated levels of chromium, aluminum, copper, nickel, and zinc in lagoon water and sludge, the contaminated water, sludge, and adjacent soil were removed, and the lagoon was filled with sand, and then the pickling operation was eliminated in 1988. The information regarding this site was taken from the 1991 preliminary health assessment conducted by ATSDR and from the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) because of the potential threat to human health from exposure to contaminants and inadequate data regarding the contaminant levels and duration of exposure.

Contaminants of Concern in Completed Exposure Pathways: No IJC critical pollutants were considered contaminants of concern at this site. Trichloroethylene at concentrations above the EPA drinking water standard was found in on-site wells used for the plant's drinking water and manufacturing processes at the plant. Although employees were given bottled water (because of complaints about the quality of the well water), even prior to the discovery of the trichloroethylene, the well water continued to be used for other purposes until the end of 1988, at which time, the wells were sealed, so inhalation and

dermal exposures were possible. Although groundwater concentrations of trichloroethylene and chromium in on-site monitoring of the shallow groundwater aquifer exceeded the EPA standard for drinking water, the shallow aquifer is not and has not ever been used for drinking water. Residential drinking water wells are not contaminated.

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

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

Public Health Outcome Data: None reported.

Conclusions: The main contaminants associated with this site were trichloroethylene and chromium. The site has been remediated by removal of the contaminated lagoon water and sludge and adjoining soil. The shallow groundwater aquifer remains contaminated but is not used as a source of drinking water. There appears to have been some contamination of the nearby pond and lake with metals, but there is no discernable impact.

3.8.1.14 J & L Landfill

The J & L Landfill is located in Avon Township (Oakland County), MI. There are several other landfills; two adjacent to the site and at least seven others within 0.5 miles of the site. The approximately 17-acre site was originally mined for sand and gravel. Starting in 1951, the pits were used for disposal of slag from steel manufacturing and other wastes, followed by dust from electric arc furnace operations. By 1980, the site had been filled to grade, and the landfill was closed. Approximately 455,000 cubic yards of material has been estimated for this landfill. Drainage ditches from the site eventually flow into the Clinton River, 1 mile northeast of the site. As of 1993, the landfill had no liner, and was covered with a clay cap that was not adequate. Subsequent remediation included installation of an improved cap, fencing, and restriction of groundwater use. The information regarding this site was taken from the 1993 ATSDR preliminary public health assessment, HazDat, and the 2003 EPA NPL fact sheet and RODs for this site.

Category of Public Health Hazard: This site was originally categorized by ATSDR (in a 1989 health assessment not provided for inclusion in this document) as an *Indeterminate Public Health Hazard* (category 3). The 1993 health assessment by ATSDR concluded that the site poses *No Apparent Public Health Hazard* (category 4), because no completed exposure pathway associated with the site results in an exposure that is likely to be of health concern, but some potential pathways, if they become complete in the future, could result in a hazard to public health. A subsequent ATSDR site review and update (not provided for inclusion in this document) concluded that the site poses *No Public Health Hazard* (category 5).

Contaminants of Concern in Completed Exposure Pathways: None. The landfill materials and ditches draining the site contained heavy metals, including the IJC critical pollutant lead, at above health-based screening values, but were not in completed exposure pathways at levels of concern for human health. Some contaminants found in on-site groundwater and surface water were also found upgradient of the site and therefore, were considered to have other sources; levels of contamination would

be of concern if the water were used for drinking water, but it is not. Fish in the Clinton River are contaminated with PCBs, but this contamination does not appear to be related to the site.

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

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

Public Health Outcome Data: None reported. Because there are no indications that humans have been significantly exposed to site-related contaminants, ATSDR concluded that an evaluation of health outcome data was not indicated.

Conclusions: This site does not result in exposure of humans to contaminants at levels that are considered hazardous to health. The site has been remediated through capping, fencing, and restriction of groundwater use. It is possible that in the past, this site has contributed to Clinton River burdens of heavy metals including the IJC critical pollutant lead.

3.8.1.15 Rose Township Dump

The Rose Township Dump (Rose Township/Demodé Road site) is a 110-acre site located in the northwest corner of Oakland County, MI. From 1966 to 1968, paint sludges and other wastes from Detroit area industries were discharged onto surface soil and into shallow lagoons, and drums containing wastes were left on the surface or buried. Dumping continued intermittently through 1971. Cleanup was initiated in 1971, and intensified in 1979-1980 with the removal of leaking and bulging drums. Additional drums of wastes plus about 20 cubic yards of PCB-contaminated soil were removed in 1985 and 1986. In 1988, ATSDR conducted a public health assessment, which is the source of much of the information presented here. Additional information, from the 2003 EPA NPL fact sheet for this site, indicates that starting in 1992, remediation by on-site incineration of soil, groundwater treatment, and soil vapor extraction of subsurface soils has occurred. EPA's 5-year review in 2002 found that complete capture of the groundwater plume is not occurring. Groundwater treatment may be continued for 10-30 years.

Category of Public Health Hazard: This site was categorized in 1988 by ATSDR as an *Indeterminate Public Health Hazard* (category 3) because the limited off-site monitoring precluded a determination of the public health impact.

Contaminants of Concern in Completed Exposure Pathways: Not explicitly discussed in the 1988 health assessment. ATSDR's concerns were for incidental ingestion and dermal exposure to contaminated surface water, soil, and sediment by trespassers engaged in recreational activities on site. The contaminants in soil at elevated concentrations included the IJC critical pollutants PCBs and lead, as well as other chemicals including arsenic and VOCs such as toluene and trichloroethylene. Some of these contaminants were found in surface water as well. On-site groundwater contained VOCs including toluene and vinyl chloride, and also PCBs. Although monitoring of nearby residential wells did not indicate contamination by site chemicals, testing did not include all site-related chemicals. The residents of Rose Township depend on groundwater for their drinking water. ATSDR was concerned about the possible contamination of fish with PCBs and lead, since marsh sediments were contaminated with these chemicals, but fish were not analyzed, and levels of contamination in sediment were not reported in the health assessment or in HazDat.

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

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

Public Health Outcome Data: None reported.

Conclusions: This site is likely to have contributed to the environmental burden of the IJC critical pollutants PCBs and lead, as well as other contaminants including VOCs. Data regarding off-site migration were incomplete, but surface water drains into marshes, wetlands, and the heads of two (unspecified) rivers via local streams, and into local lakes and ponds. As reported in the EPA fact sheet, extensive remediation of the site, including on-site incineration of soil, vapor extraction of subsurface soil, and groundwater extraction and treatment has largely eliminated releases of contaminants from the site, with the exception of groundwater. Complete capture of the groundwater plume was not occurring, but residential wells were not yet affected. Groundwater treatment is anticipated to continue for 10-30 years in order to reach clean-up goals.

3.8.1.16 Springfield Township Dump

This 4-acre site is located in Oakland County, approximately 35 miles northwest of Detroit, MI. Between 1966 and 1968, liquid wastes and sludges were dumped into an on-site pit, and approximately 1,500 drums of waste materials were also deposited on the site. Drum contents included paint sludges, solvents, PCBs, oils, and grease. In 1979-1980, the drums were removed and disposed of offsite. In 1983, approximately 711 tons of contaminated soil were removed for offsite disposal. Public access to the site is restricted by fencing, and there are no signs of trespassing. Further remediation has occurred since the time that ATSDR prepared its public health assessment. The information on this site is taken from the 1988 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet for this site.

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) because of the lack of monitoring data for a potential exposure pathway, consumption of potentially contaminated wildlife.

Contaminants of Concern in Completed Exposure Pathways: None identified. On-site soil was contaminated with the IJC critical pollutants PCBs and lead, as well as other contaminants including VOCs and cadmium. On-site sludges contained PCBs and dieldrin (1 sample). No completed exposure pathway exists for these media, and off-site monitoring indicated that migration to adjacent wetlands was not significant. On-site groundwater in the area of the former disposal pit was contaminated above EPA MCLs with trichloroethene and 1,1-dichloroethene, but off-site monitoring and domestic wells are not contaminated with site-related chemicals. Future migration to residential wells is possible based on the apparent direction of groundwater flow towards a cluster of residences northeast of the site. Given the potential for some of the site contaminants to bioaccumulate (e.g., PCBs), ATSDR was concerned about the lack of data regarding contaminant levels in tissues of game animals.

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

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

Public Health Outcome Data: None reported.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutants PCBs and lead, as well as other contaminants including VOCs, but off-site migration did not appear to be occurring in 1989. As reported in the EPA fact sheet, extensive remediation of the site, including on-site soil-washing and/or off-site disposal of about 12,000 cubic yards of PCB-laden soils, in-situ soil vapor extraction of VOCs from subsurface soils, onsite solidification of metals-laden soils, groundwater extraction and treatment, and installation of a soil cover and vegetation. The soil vapor extraction is expected to continue for 2-5 years and the groundwater treatment for another 2-5 years beyond the soil vapor extraction before cleanup levels are reached.

3.8.2 TRI Data for the Rouge River AOC

The TRI on-site chemical releases for Wayne and Oakland Counties (combined) are summarized in Table 3-33. Total on-site releases in 2001 were 24,621,119 pounds, the majority of which were released to air and land. Little was released to surface water. Wayne County accounted for 89% and Oakland County accounted for 11% of the total on-site releases.

Of the total on-site releases, 1,693,551 pounds (6.9%) was IJC critical pollutants. The IJC critical pollutants released were PCDDs and PCDFs (primarily to air), and PCBs (>1,000,000 pounds), lead and lead compounds (>400,000 pounds), mercury and mercury compounds, toxaphene, and hexachlorobenzene (primarily to land). The facilities that released these pollutants are listed in Table 3-34.

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

3.8.3 County Demographics and Health Status Data for the Rouge River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in the two counties of this AOC is shown in Table 3-35.

Table 3-35. County Demographic Profiles for the Rouge River AOC

Vulnerable population	Wayne County	Oakland County	Total for AOC
Children 6 years and younger	219,731	113,971	333,702
Females aged 15-44	454,698	261,556	716,254
Adults 65 years and older	248,982	134,969	383,951

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for the two counties relevant to the Rouge River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Wayne County, MI:

Infant mortality (per 1,000 births)

- **infant mortality**
- black infant mortality
- **neonatal infant mortality**
- **post-neonatal infant mortality**

Birth measures (as percent)

- **low birth weight**
- **very low birth weight**
- **premature births**
- unmarried mothers
- no care in first trimester

Death measures (per 100,000 population)

- **breast cancer (female)**
- colon cancer
- coronary heart disease
- **homicide**
- lung cancer
- stroke

Oakland County, MI:

Infant mortality (per 1,000 births)

- black infant mortality

Birth measures (as percent)

- none

Death measures (per 100,000 population)

- stroke

3.8.4 Summary and Conclusions for the Rouge River AOC

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

3.8.4.1 Hazardous Waste Sites

Wayne County: Seven of the 10 waste sites in Wayne County (reviewed in Sections 3.8.1.1 through 3.8.1.10) were assessed by ATSDR as part of Brownfields projects. For two of these sites, the major health concerns were not for chemical exposure. The remaining five sites all were contaminated with lead, and some were contaminated with B(a)P and one with PCBs. The extent of contamination—with lead—was high at only one of these sites, the Master Metals Inc. #2 site. Only one of the sites (Proposed Beard Street School) has been cleaned up.

The three hazardous waste sites (Carter Industrials, Inc.; Ford Motor Co. Allen Park Clay Mine; Lower Ecorse Creek) in Wayne County have been remediated through clean up or institutional controls. There is no evidence that human exposure to site-related contaminants is currently occurring at concentrations or doses that exceed health-based screening values.

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

Public health outcome data, available for the three hazardous waste sites, generally did not indicate unusual rates of health conditions, or did not indicate an association with site-related exposures.

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

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

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

Issues for Follow-Up

Master Metals Inc. #2: This former lead smelter had high lead concentrations in soil throughout the property. As of 1997, no cleanup of the soil had been performed, so this site may still be contributing to the environmental burden of lead. In addition, containers of hazardous chemicals were stored in the deteriorating buildings on the site.

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

3.8.4.2 TRI Data

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

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

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

3.8.4.3 County Demographics and Health Status Indicators

Wayne County (vulnerable populations 923,411) had an unusually large number of health status indicators that compared unfavorably with those of the U.S. and with the median of the peer counties, including infant mortality indicators, birth measures and death measures. Some (2-3) of the indicators in each of these three categories also were elevated above the upper limit of the peer county range.

In contrast, Oakland County (vulnerable populations 510,496) had only two health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties: these were black infant mortality and deaths from stroke. Neither was above the range of the peer counties.

**Table 3-32. Waste Site Contaminants that Exceeded Health-Based Screening Values
Rouge River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records							Total
			Air	Biota	Human Material	Other Media	Soil	Water		
053469-21-9	AROCLOR 1242	1	1				1	1		3
012672-29-6	AROCLOR 1248	1					1		1	2
011097-69-1	AROCLOR 1254	1					1	2		3
011096-82-5	AROCLOR 1260	1					1	1		2
001336-36-3	POLYCHLORINATED BIPHENYLS	1	1	6	1		6	21	4	39
003268-87-9	OCTACHLORODIBENZO-P-DIOXIN	2						1		1
HZ0400-02-T	POLYCHLORINATED DIBENZO-P-DIOXINS	2					1			1
000050-32-8	BENZO(A)PYRENE	4					2	26		28
HZ1500-02-T	PAHS (CARCINOGENIC)	4						1	1	2
000072-54-8	DDD, P,P'-	5		4			1	6	1	12
000072-55-9	DDE, P,P'-	5		4			1	5	1	11
000050-29-3	DDT, P,P'-	5		4				12	1	17
000309-00-2	ALDRIN	6		2				4		6
000060-57-1	DIELDRIN	6		4			1	7		12
007439-92-1	LEAD	8	1	3	1		10	36	15	66
007439-97-6	MERCURY	9		4			1	20	2	27
000118-74-1	HEXACHLOROENZENE	11		4				2		6
		Total IJC	3	35	2		27	145	26	238
000071-55-6	1,1,1-TRICHLOROETHANE							1	1	2
000075-34-3	1,1-DICHLOROETHANE							2	1	3
000075-35-4	1,1-DICHLOROETHENE								2	2
000120-82-1	1,2,4-TRICHLOROENZENE							2		2
000095-63-6	1,2,4-TRIMETHYLBENZENE							5		5
000095-50-1	1,2-DICHLOROENZENE							3		3
000156-59-2	1,2-DICHLOROETHENE, CIS-								1	1
000108-67-8	1,3,5-TRIMETHYLBENZENE							5		5
000541-73-1	1,3-DICHLOROENZENE							5		5
000106-46-7	1,4-DICHLOROENZENE							5	1	6
000120-83-2	2,4-DICHLOROPHENOL							2		2
000105-67-9	2,4-DIMETHYLPHENOL							2		2
000078-93-3	2-BUTANONE						2	4	3	9
000091-58-7	2-CHLORONAPHTHALENE							2		2
000095-57-8	2-CHLOROPHENOL							2		2
000091-57-6	2-METHYLNAPHTHALENE						1	14		15
000100-01-6	4-NITROANILINE							3		3
000083-32-9	ACENAPHTHENE							5		5
000208-96-8	ACENAPHTHYLENE							13		13
000067-64-1	ACETONE							2		2
056534-02-2	ALPHA CHLORDENE							1		1
007429-90-5	ALUMINUM			1			1	7	6	15
000120-12-7	ANTHRACENE							6		6
007440-36-0	ANTIMONY						3	19	1	23
007440-38-2	ARSENIC						8	34	10	52
001332-21-4	ASBESTOS						2			2
007440-39-3	BARIUM						4	25	11	40
000071-43-2	BENZENE						3	4	6	13
000056-55-3	BENZO(A)ANTHRACENE						2	21		23
000205-99-2	BENZO(B)FLUORANTHENE						2	19		21
000191-24-2	BENZO(GHI)PERYLENE							17		17
000207-08-9	BENZO(K)FLUORANTHENE						2	17		19
007440-41-7	BERYLLIUM							19	3	22
000085-68-7	BUTYL BENZYL PHTHALATE							10	1	11
007440-43-9	CADMIUM		1				9	29	9	48
000086-74-8	CARBAZOLE							14		14
000056-23-5	CARBON TETRACHLORIDE							2		2
000057-74-9	CHLORDANE			4						4
016887-00-6	CHLORIDE		1							1
HZ0400-01-T	CHLORINATED DIOXINS, UNSPECIFIED							1		1
007782-50-5	CHLORINE		2							2

**Table 3-32. Waste Site Contaminants that Exceeded Health-Based Screening Values
Rouge River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						
			Air	Biota	Human Material	Other Media	Soil	Water	Total
000108-90-7	CHLOROBENZENE					2	2	1	5
000124-48-1	CHLORODIBROMOMETHANE							1	1
000067-66-3	CHLOROFORM							1	1
000074-87-3	CHLOROMETHANE						2		2
007440-47-3	CHROMIUM		1			7	29	9	46
018540-29-9	CHROMIUM, HEXAVALENT					1	1	2	4
000218-01-9	CHRYSENE						15		15
012001-29-5	CHRYSOTILE ASBESTOS					1			1
005103-71-9	CIS-CHLORDANE					1	11	1	13
007440-48-4	COBALT						17	4	21
007440-50-8	COPPER			3		6	23	7	39
000095-48-7	CRESOL, ORTHO-						7		7
000106-44-5	CRESOL, PARA-					2	6	3	11
000098-82-8	CUMENE						5		5
000057-12-5	CYANIDE		2			1	37	13	53
000117-81-7	DI(2-ETHYLHEXYL)PHTHALATE					3	14	7	24
000053-70-3	DIBENZO(A,H)ANTHRACENE					2	18		20
073506-91-9	DICHLOROBROMOETHANE							1	1
000131-11-3	DIMETHYL PHTHALATE						3		3
000084-74-2	DI-N-BUTYL PHTHALATE						6		6
000117-84-0	DI-N-OCTYL PHTHALATE					1	11	1	13
001031-07-8	ENDOSULFAN SULFATE						4		4
000959-98-8	ENDOSULFAN, ALPHA						5		5
033213-65-9	ENDOSULFAN, BETA						5		5
000072-20-8	ENDRIN						5		5
007421-93-4	ENDRIN ALDEHYDE						3		3
053494-70-5	ENDRIN KETONE						5		5
000100-41-4	ETHYLBENZENE					2	6		8
000206-44-0	FLUORANTHENE						16		16
000086-73-7	FLUORENE						5		5
HZ0800-09-T	FOOD WASTE						1		1
HZ0900-25-T	FRIABLE ASBESTOS					1			1
000076-44-8	HEPTACHLOR						4	1	5
001024-57-3	HEPTACHLOR EPOXIDE			4			5		9
000087-68-3	HEXACHLOROBUTADIENE						2		2
000319-84-6	HEXACHLOROCYCLOHEXANE, ALPHA-					1	4	1	6
000319-85-7	HEXACHLOROCYCLOHEXANE, BETA-						2		2
000319-86-8	HEXACHLOROCYCLOHEXANE, DELTA-						4		4
000058-89-9	HEXACHLOROCYCLOHEXANE, GAMMA-					1	5	1	7
HZ1000-01-T	HYDROCARBONS, UNSPECIFIED						2	2	4
007647-01-0	HYDROCHLORIC ACID		2						2
007664-39-3	HYDROGEN FLUORIDE		2						2
000193-39-5	INDENO(1,2,3-CD)PYRENE					2	15		17
007439-89-6	IRON					1	4	4	9
001332-37-2	IRON OXIDE					1			1
001305-78-8	LIME					1	1	1	3
007439-95-4	MAGNESIUM			1			1	2	4
007439-96-5	MANGANESE					3	26	14	43
HZ0900-01-T	METALS N.O.S.			1			5	4	10
000072-43-5	METHOXYCHLOR						5		5
000099-87-6	METHYL-4-(1- METHYLETHYL)BENZENE						1		1
000075-09-2	METHYLENE CHLORIDE						2	4	6
000091-20-3	NAPHTHALENE					1	12	1	14
007440-02-0	NICKEL			3		6	19	7	35
000086-30-6	N-NITROSODIPHENYLAMINE						2	1	3
000103-65-1	N-PROPYL BENZENE						5		5
029082-74-4	OCTACHLOROSTYRENE			2					2

**Table 3-32. Waste Site Contaminants that Exceeded Health-Based Screening Values
Rouge River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records							
			Air	Biota	Human Material	Other Media	Soil	Water	Total	
HZ0700-09-T	ORGANOBROMINES, UNSPECIFIED			1					1	
HZ1500-03-T	PAHS (NON-CARCINOGENIC)							1	3	4
HZ2100-16-T	PARTICULATES		2	1				1	1	5
000087-86-5	PENTACHLOROPHENOL							1	2	3
000085-01-8	PHENANTHRENE			1				20	1	22
000108-95-2	PHENOL							4		4
130498-29-2	POLYCYCLIC AROMATIC HYDROCARBONS							4		4
HZ1000-51-T	POLYCYCLIC ORGANIC MATTER							1	1	2
000129-00-0	PYRENE							15		15
007782-49-2	SELENIUM						3	14	4	21
HZ1900-02-T	SEMIVOLATILE ORGANIC COMPOUNDS N.O.S.							1		1
007440-22-4	SILVER						4	14	3	21
007440-23-5	SODIUM							4	2	6
000100-42-5	STYRENE						1	2		3
HZ0400-03-T	TCDD EQUIVALENTS			1						1
000127-18-4	TETRACHLOROETHYLENE							3		3
007440-28-0	THALLIUM						1	18	2	21
000108-88-3	TOLUENE						2	7	1	10
HZ2100-13-T	TOTAL SUSPENDED PARTICULATES (TSP)		1							1
005103-74-2	TRANS-CHLORDANE							10		10
000079-01-6	TRICHLOROETHYLENE							4	4	8
007440-62-2	VANADIUM						2	22	7	31
000075-01-4	VINYL CHLORIDE								2	2
HZ1900-01-T	VOLATILE ORGANIC COMPOUNDS N.O.S.		2	1				1		4
001330-20-7	XYLENES, TOTAL						2	7		9
007440-66-6	ZINC			3			8	29	13	53
000132-64-9	DIBENZOFURAN							12		12
MEDEXP-00-0			9	9	1		10	20	27	76
			2	3				6	4	15
		Total Non-IJC	27	39	1		119	931	227	1344
		Total	30	74	3		146	1076	253	1582

Table 3-33. 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 On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
POLYCHLORINATED BIPHENYLS	1	95	0	0	1247638	1247733	1974	1249707
DIOXIN AND DIOXIN-LIKE COMPOUNDS (PCDDs and PCDFs)	2	0.003542994	0	0	0.0001764	0.003719394	0.0001764	0.003895794
LEAD	8	490.28628	1	0	6	497.28628	26664.5571	27161.84338
LEAD COMPOUNDS	8	18281.872	1036.8	0	405710.3	425028.972	961000.165	1386029.137
MERCURY	9	354.9	0	0	0	354.9	877.4	1232.3
MERCURY COMPOUNDS	9	428.633	0.003	0	13492.8	13921.436	6163.2	20084.636
TOXAPHENE	10	39	0	0	1690	1729	825	2554
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
1,2-DICHLOROPROPANE		144	0	0	6529	6673	3180	9853
1,3-BUTADIENE		1390	0	0	0	1390	0	1390
1,4-DIOXANE		1469	0	0	60633	62102	29549	91651
2,4-DINITROPHENOL		1566	0	0	65046	66612	31712	98324
2,4-DINITROTOLUENE		1381	0	0	57203	58584	27871	86455
2,6-DINITROTOLUENE		229	0	0	9959	10188	4850	15038
2-ACETYLAMINO-FLUORENE		1195	0	0	49468	50663	29128	79791
2-CHLORO-1,1,1,2-TETRAFLUOROETHANE		28416	0	0	0	28416	0	28416
4,6-DINITRO-O-CRESOL		1359	0	0	56960	58319	33291	91610
4-NITROPHENOL		273	0	0	11712	11985	5704	17689
5-NITRO-O-TOLUIDINE		229	0	0	9959	10188	4850	15038
ACRYLAMIDE		212	0	0	9035	9247	4402	13649
ACRYLONITRILE		1342	5	0	34014	35361	19976	55337
ALUMINUM (FUME OR DUST)		2765	5	0	0	2770	18211	20981
ALUMINUM OXIDE (FIBROUS FORMS)		0	0	0	11515	11515	2803	14318
AMMONIA		211276	9433	0	0	220709	9358	230067
ANTHRACENE		4317	0	0	0	4317	0	4317
ANTIMONY		88	7200	0	0	7288	327150	334438
ANTIMONY COMPOUNDS		0	0	0	35010	35010	10994	46004
ARSENIC COMPOUNDS		0	0	0	2339396	2339396	1156116	3495512
ASBESTOS (FRIABLE)		0	0	0	137504	137504	21683	159187
BARIUM		0	0	0	0	0	96500	96500
BARIUM COMPOUNDS		112907	2283	0	90151	205341	1136062	1341403
BENZENE		87323	120	0	11829	99272	5826	105098
BENZO(G,H,I)PERYLENE		639.655761	0	0	1089	1728.655761	636.1001	2364.755861
BERYLLIUM COMPOUNDS		0	0	0	14185	14185	391	14576
BIPHENYL		1229	0	0	0	1229	0	1229
BROMOMETHANE		141	0	0	6036	6177	2941	9118
BUTYRALDEHYDE		7808	0	0	0	7808	37	7845
CADMIUM COMPOUNDS		750	0	0	72994	73744	351920	425664
CERTAIN GLYCOL ETHERS		957900	0	0	0	957900	41613	999513
CHLORDANE		5	0	0	277	282	219	501
CHLORINE		1934	328	0	0	2262	0	2262
CHLOROMETHANE		283	0	0	12120	12403	5905	18308
CHLOROPHENOLS		151	0	0	6364	6515	3097	9612
CHROMIUM		256	33	0	0	289	30133	30422
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANVAAL REGION)		1780	264	0	325546	327590	556647	884237
COBALT COMPOUNDS		250	5	0	0	255	5	260
COPPER		5884	260	0	8	6152	37276	43428
COPPER COMPOUNDS		961	2292	0	56804	60057	215557	275614
CREOSOTE		5787	0	0	0	5787	0	5787
CRESOL (MIXED ISOMERS)		1312	0	0	0	1312	0	1312
CUMENE		6666	0	0	0	6666	5	6671

Table 3-33. 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 On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
CYANIDE COMPOUNDS		505	0	0	8045	8550	3405	11955
CYCLOHEXANE		52195	0	0	0	52195	0	52195
DI(2-ETHYLHEXYL) PHTHALATE		374	0	0	14950	15324	7553	22877
DIAMINOTOLUENE (MIXED ISOMERS)		8	90	0	5	103	0	103
DIBENZOFURAN		6022	0	0	0	6022	0	6022
DIBUTYL PHTHALATE		372	0	0	15711	16083	7662	23745
DICHLOROMETHANE		26866	0	0	13652	40518	6650	47168
DIETHANOLAMINE		4123	0	0	0	4123	0	4123
DIISOCYANATES		1576	0	0	33275	34851	52956	87807
DIMETHYL PHTHALATE		291	0	0	12366	12657	6027	18684
DIMETHYLAMINE		1135	128	0	0	1263	0	1263
ETHYLBENZENE		337881	2	50	13003	350936	6599	357535
ETHYLENE		82199	0	0	0	82199	0	82199
ETHYLENE GLYCOL		13893	23200	0	119538	156631	292823	449454
ETHYLENE OXIDE		7083	240	0	11	7334	0	7334
FORMALDEHYDE		300	0	0	0	300	0	300
FREON 113		349	0	0	15165	15514	7384	22898
HEPTACHLOR		0	0	0	23	23	0	23
HEXACHLOROETHANE		542	0	0	12560	13102	6120	19222
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		3871400	0	0	0	3871400	0	3871400
HYDROGEN FLUORIDE		237010	0	0	0	237010	0	237010
ISODRIN		0	0	0	19	19	15	34
ISOPROPYL ALCOHOL (MANUFACTURING, STRONG-ACID PROCESS ONLY,NO SUPPLIER)		250	0	0	0	250	3559	3809
MALEIC ANHYDRIDE		19	0	0	0	19	0	19
MANGANESE		2027	33	0	0	2060	15529	17589
MANGANESE COMPOUNDS		15399	1588	0	112364	129351	3497278	3626629
METHACRYLONITRILE		50	0	0	0	50	0	50
METHANOL		213913	5	0	5	213923	104	214027
METHYL ETHYL KETONE		175935	0	0	22559	198494	18968	217462
METHYL IODIDE		532	0	0	23136	23668	11267	34935
METHYL ISOBUTYL KETONE		266696	0	0	17568	284264	9322	293586
METHYL METHACRYLATE		1559	0	0	64735	66294	31535	97829
METHYL TERT-BUTYL ETHER		147376	0	0	0	147376	10	147386
NAPHTHALENE		29917	0	0	17710	47627	4560	52187
N-BUTYL ALCOHOL		751522	18828	0	0	770350	10	770360
N-HEXANE		88473	0	0	0	88473	51	88524
NICKEL		7262	36	0	0	7298	32019	39317
NICKEL COMPOUNDS		5883	443	0	3959913	3966239	2151900	6118139
NITRATE COMPOUNDS		267	110000	0	0	110267	639367	749634
NITRIC ACID		3767	0	0	9947	13714	58031	71745
NITROBENZENE		152	0	0	6469	6621	3151	9772
N-METHYL-2-PYRROLIDONE		306052	5	0	14361	320418	25222	345640
N-NITROSODIETHYLAMINE		229	0	0	9959	10188	0	10188
N-NITROSOPIPERIDINE		286	0	0	12453	12739	6065	18804
P-CHLOROANILINE		203	0	0	17425	17628	8513	26141
PHENANTHRENE		1941	0	0	0	1941	0	1941
PHENOL		3134	0	0	12243	15377	26056	41433
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

Table 3-33. 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 On-site Releases	Total Off-site Releases	Total On- and Off-site Releases
STYRENE		15913	240	0	5	16158	870	17028
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		309917	0	0	0	309917	0	309917
TERT-BUTYL ALCOHOL		307	0	0	0	307	0	307
TETRACHLORO-ETHYLENE		382	0	0	0	382	0	382
TOLUENE		535035	9	0	13384	548428	12353	560781
TOLUENE DIISOCYANATE (MIXED ISOMERS)		338.5	0	0	18	356.5	0	356.5
TOLUENE-2,4-DIISOCYANATE		10	0	0	0	10	0	10
TRANS-1,3-DICHLOROPROPENE		147	0	0	6372	6519	3115	9634
TRICHLORFON		235	0	0	8313	8548	5251	13799
TRICHLOROETHYLENE		11611	0	0	11949	23560	6254	29814
TRICHLOROFLUORO-METHANE		365	0	0	15568	15933	7571	23504
TRIETHYLAMINE		27855	3104	0	0	30959	1500	32459
URETHANE		1000	0	0	0	1000	24018	25018
VANADIUM (EXCEPT WHEN CONTAINED IN AN ALLOY)		58	0	0	0	58	10095	10153
VANADIUM COMPOUNDS		235	157	0	2968	3360	78003	81363
VINYL ACETATE		27569	0	0	0	27569	0	27569
VINYLDENE CHLORIDE		250	0	0	0	250	0	250
XYLENE (MIXED ISOMERS)		1874810	0	50	44538	1919398	22257	1941655
ZINC (FUME OR DUST)		757	0	0	249242	249999	33827	283826
ZINC COMPOUNDS		139458	8491	0	14622	162571	26293044	26455615
	Total Non- IJC	11597393.46	189072	100	11141001.8	22927567.26	39000301.6	61927868.86
	Total	11617181.15	190109.80	100	12813727.9	24621118.86	40000272.92	64621391.78

Table 3-34. TRI Facilities Releasing IJC Critical Pollutants On-site for the Rouge River AOC

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
Wayne County, MI	24	GM MCG ORION ASSEMBLY	48055GNRLM4555G	ORION
		GM PONTIAC ASSEMBLY CENTER	48058GMCTR8200P	PONTIAC
		AUTOALLIANCE INTL. INC.	48134MZDMT1MAZD	FLAT ROCK
		CARMEUSE LIME	48218DTRTL25MAR	RIVER ROUGE
		CARMEUSE LIME INC.	48217DTRTL310FO	DETROIT
		DCI AEROTECH	48238DCRTC7515L	DETROIT
		DETROIT EDISON RIVER ROUGE POWER PLANT	48218DTRTD1BELA	RIVER ROUGE
		DETROIT EDISON-TRENTON CHANNEL POWER PLANT	48183DTRTD4695W	TRENTON
		FORD MOTOR CO. DEARBORN ASSEMBLY PLANT	48121FRDM23001M	DEARBORN
		FORD MOTOR CO. LIVONIA TRANSMISSION PLANT	48150FRDMT36200	LIVONIA
		FORD MOTOR CO. MICHIGAN TRUCK PLANT	48184FRDMT38303	WAYNE
		FORD MOTOR CO. WAYNE ASSEMBLY	48184FRDMT37625	WAYNE
		FORD MOTOR CO. WAYNE INTEGRAL STAMPING	48184FRDMT37500	WAYNE
		GM PT ROMULUS ENGINE	48174GMCCP36880	ROMULUS
		GMC MLCG HAMTRAMCK ASSEMBLY	48211CDLLC2500E	DETROIT
		MARATHON ASHLAND PETROLEUM L.L.C.	48217MRTHN1300S	DETROIT
		MCLAREN PERFORMANCE TECHS.	48152MCLRN32233	LIVONIA
		NATIONAL STEEL CORP. GREATLAKES OPS.	48229GRTLKNO1QU	ECORSE
		PERMA-FIX OF MICHIGAN INC.	48192PRMFX18550	BROWNSTOWN
		ROUGE STEEL CO.	48121RGSTL3001M	DEARBORN
		TOWER AUTOMOTIVE PRODS. CO. INC.	48170TWRMT43955	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			
Oakland County, MI	1	GM MCG ORION ASSEMBLY	48055GNRLM4555G	ORION

Table 3-34. TRI Facilities Releasing IJC Critical Pollutants On-site for the Rouge River AOC

IJC Critical Pollutant	Number of Facilities	Facility Name	TRIF ID	City
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

3.9 CLINTON RIVER AOC, OAKLAND AND MACOMB COUNTIES, MI

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

3.9.1 Hazardous Waste Sites Relevant to the Clinton River AOC

ATSDR has evaluated the data for hazardous waste sites in Oakland and Macomb Counties, MI, and reached conclusions regarding the public health threat posed by these sites. These conclusions, along with information regarding the type and location of the site, and the date and type of assessment document, are summarized in Tables 3-36 (Oakland County, from Section 3.9.1 Rouge River Area of Concern) and Table 3-37 (Macomb County), for sites that had public health hazard categories of 1-3 at some point during their assessment history. Oakland County is relevant to both the Rouge River AOC and the Clinton River AOC. The table for Oakland County is repeated here for convenience.

Table 3-36. Hazardous Waste Sites in Oakland County, MI

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
Cemetery Dump	3 (1988 HA) 4 (1992 HA)	Deleted Post SARA	MID980794663	Rose Center
Continental Aluminum Corp.	3 (2003 HC)	Non NPL	MI0001941699	New Hudson
Hi-Mill Manufacturing Co.	3 (1991 HA)	Final	MID005341714	Highland
J & L Landfill	3 (1989 HA) 4 (1993 HA) 5 (n.d. SR)	Final	MID980609440	Rochester Hills
Rose Township Dump	3 (1988 HA)	Final	MID980499842	Rose Township
Springfield Township Dump	3 (1988 HA)	Final	MID980499966	Davisburg

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, SR = Site Review and Update
 n.d. = no date provided

Table 3-37. Hazardous Waste Sites in Macomb County, MI

Site Name	Public Health Hazard Category	EPA NPL Status	Site ID	City
G & H Landfill	3 (1989 HA) 3 (1992 HA)	Final	MID980410823	Utica
Liquid Disposal, Inc.	3 (1987 HA) 3 (n.d. SR)	Final	MID067340711	Utica
South Macomb Disposal Authority	3 (1989 HA) 2 (1995 HA)	Final	MID069826170	Macomb Township

2 = Public Health Hazard, 3 = Indeterminate Public Health Hazard
 HA = Public Health Assessment, SR = Site Review and Update
 n.d. = no date provided

For hazardous waste sites in Oakland and Macomb Counties (combined) that *at any time* had Public Health Hazard Categories of 1-3, the number of contaminant records in HazDat that exceeded health based-screening values was 926, as shown in Table 3-38. Most of the records were for the water media group; the soil media group had the next highest number of records.

The IJC Great Lakes critical pollutants accounted for 143 (15%) of these records. The IJC records were most numerous for the soil and water media groups. The IJC critical pollutants that have been found at Oakland County and Macomb County hazardous waste sites at concentrations exceeding health-based screening values are: PCBs, TCDD, B(A)P, DDT and metabolites, aldrin/dieldrin, lead, mercury, and hexachlorobenzene. Details are provided in Table 3-39.

Further evaluation of the data for the sites with Public Health Hazard Categories of 1-3 was conducted by ATSDR in the Public Health Assessment and other health-related documents listed in the table. The evaluations for Oakland County, MI were already discussed in Sections 3.8.11 through 3.8.16. The evaluations for waste sites in Macomb County are discussed in the following subsections.

3.9.1.1 G & H Landfill

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

Category of Public Health Hazard: This site was categorized as an *Indeterminate Public Health Hazard* (category 3) in a 1989 public health assessment by ATSDR because of the potential threat to human health from exposure to contaminants at concentrations that may result in adverse health effects. The 1992 public health assessment concluded that the conclusions drawn in the original assessment do not need to be changed.

Contaminants of Concern in Completed Exposure Pathways: None. Contaminants of concern included the IJC critical pollutants PCBs and lead, and other contaminants such as VOCs, including the BTEXs and chlorinated VOCs, and PAHs (concentrations of B(a)P or carcinogenic PAHs were not reported). Exposure on-site was considered unlikely (except for remediation workers), because the site was fenced. The 1989 health assessment was concerned that nearby residents and business might be exposed through the use of contaminated groundwater for potable and non-potable purposes and through the consumption of fish and game from the Clinton River area, and that monitoring was not adequate to assess the potential hazard. Fish (carp) in the Clinton River have high PCB levels, but there are other sources of pollution in addition to the G & H Landfill. Additional monitoring data taken into account in the 1992 health assessment did not indicate the need for any significant change in these conclusions. Since that time, nearby residences and small businesses have been switched to the municipal water supply, and the site has undergone remediation through construction of a cap, a slurry wall, and application of a groundwater extraction and treatment system, which will operate for at least 30 years (starting in 1999).

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

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

Public Health Outcome Data: A 1982 health outcome study that investigated infant mortality, low birth weight, age-adjusted death rates from cancer, heart disease, stroke, and accidents in Selby Township (where the G & H Landfill is located) with State and County rates found that rates in Selby Township were either comparable or lower than in the comparison populations.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutants PCBs and lead, as well as other contaminants including VOCs, in the past. Remediation of the site aimed at physically and hydraulically containing the contaminants onsite has been instituted, which should minimize release of contaminants and exposure of humans.

3.9.1.2 Liquid Disposal, Inc.

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

Category of Public Health Hazard: In the 1987 health assessment, this site was categorized as an *Indeterminate Public Health Hazard* (category 3) because of the threat to human health from potential exposure to contaminants in soils and leachate in recreation areas near the site. A subsequent site review and update (not provided for inclusion in this document) reached the same conclusion regarding category of public health hazard.

Contaminants of Concern in Completed Exposure Pathways: None. Contaminants in on-site soil included the IJC critical pollutants PCBs and lead. On-site groundwater contained the IJC critical pollutant aldrin, and VOCs at above the health-based screening concentrations. Although onsite exposure was prevented by fencing, ATSDR was concerned about exposure of humans using nearby recreational areas, because of potential offsite migration of contaminants. More recently, the site has been remediated by solidification of highly contaminated soil and debris with concrete, construction of an underground slurry wall, clay cap, and extraction wells, and soil replacement and revegetation of wetlands and other adjoining areas. EPA has determined that there is, as of 1998, no indication that contaminants are being released from the site.

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

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

Public Health Outcome Data: Not reported, but this site is located in Shelby Township, the subject of a 1982 public health outcome assessment summarized in Section 3.9.1. Conclusions were that rates of infant mortality and low birth weight, and age-adjusted death rates from cancer, heart disease, stroke, and accidents in Selby Township were either comparable or lower than the State and County rates.

Conclusions: This site probably contributed to the environmental burden of the IJC critical pollutants PCBs, aldrin, and lead, as well as other contaminants including VOCs, in the past. It has been fenced and remediated, so that it is no longer releasing contaminants into the environment.

3.9.1.3 South Macomb Disposal Authority

This approximately 159-acre site is located in Macomb Township, Macomb County, MI. It consists of two adjacent former municipal landfills. Approximately 680,000 cubic yards of municipal wastes were disposed of in one landfill, followed by approximately 1,200,000 cubic yards of wastes in the other landfill. On-site groundwater and leachate are contaminated with organic and inorganic chemicals. The leachate formerly discharged from the landfill to McBride Drain, which flowed to the North Branch of the Clinton River. Information on this site is taken from the 1995 ATSDR public health assessment, HazDat, and the 2003 EPA NPL fact sheet.

Category of Public Health Hazard: In the 1989 health assessment (not provided for inclusion in this document) ATSDR categorized this site as an *Indeterminate Public Health Hazard* (category 3). In the 1995 health assessment, ATSDR categorized this site as a *Public Health Hazard* (category 2) because of exposures to contaminated environmental media have occurred, may potentially be occurring, and may occur in the future.

Contaminants of Concern in Completed Exposure Pathways: Contaminants present in residential wells at levels exceeding health based screening concentrations in 1983-1990 included the IJC critical pollutant lead (detected infrequently), as well as other contaminants including VOCs, ammonia, nitrates, cadmium, and arsenic. Comparison of estimated ingested doses or inhalation or dermal exposures (as appropriate depending on the chemical) with doses or exposures at which adverse health effects occur indicated that arsenic was present at levels that associated with increased cancer risk. Thus,

completed exposure pathways (ingestion, inhalation, and dermal exposure to residential well water) have occurred in the past. Bottled water was supplied to 12 residences during 1983-1988, and some residences were connected to the municipal water system in 1988, but as of 1995, about nine residences were not connected. Monitoring data did not indicate contamination of their wells through 1995, but future contamination is a concern, as the leachate collection system reportedly does not capture the entire plume. Some leachate controls were in place, as well as a slurry wall on the north side to contain and collect contaminated groundwater. Additional remedial action was underway as of 2003.

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

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

Public Health Outcome Data: The evaluation of health outcome data for two individuals, and of a “death survey” conducted by area residents, by an ATSDR physician did not provide any clear connections between reported adverse health effects and possible exposure to landfill contamination, but did not provide adequate information to fully assess health outcomes that may be related to the site.

Conclusions: This site may have contributed to the environmental burden of the IJC critical pollutant lead, as well as other contaminants including VOCs, ammonia, cadmium, and nitrates. In addition, these contaminants were present in residential wells at levels exceeding health-based screening values. Some leachate controls were in place as of 1995, but did not capture the entire plume, so there is concern for future contamination of residential wells. Additional remedial action is underway.

3.9.2 TRI Data for the Clinton River AOC

The TRI on-site chemical releases for Oakland and Macomb Counties (combined) are summarized in Table 3-39. Total on-site releases in 2001 were 3,580,901 pounds, primarily released to air. Very little was released to surface water or land. Oakland County accounted for 76% and Macomb County accounted for 24% of the total on-site releases.

Only 298.7 pounds (0.008 %) of the total on-site releases were accounted for by IJC critical pollutants. The IJC critical pollutants released were lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3-40.

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

3.9.3 County Demographics and Health Status Data for the Clinton River AOC

The demographic profile, from the 2000 U.S. Census, for vulnerable populations living in the two counties of this AOC is shown in Table 3-41. Macomb County has much larger vulnerable populations than does Ottawa County.

Table 3-41. County Demographic Profiles for the Maumee River AOC

Vulnerable population	Ottawa County	Macomb County	Total for AOC
Children 6 years and younger	3160	72321	75481
Females aged 15-44	7746	168445	176191
Adults 65 years and older	6710	107651	114361

According to the 2000 HRSA community health status reports, health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties for the two counties relevant to the Clinton River AOC were as follows (indicators that were above the upper limit of the peer county range are bolded):

Oakland County:

Infant mortality (per 1,000 births)

- black infant mortality

Birth Measures (as percent)

- none

Death measures (per 100,000 population)

- stroke

Macomb County:

Infant mortality (per 1,000 births)

- white infant mortality

Birth measures (as percent)

- none

Death measures (per 100,000 population)

- **breast cancer (female)**
- colon cancer
- **coronary heart disease**
- lung cancer
- stroke

3.9.4 Summary and Conclusions for the Clinton River AOC

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

3.9.4.1 Hazardous Waste Sites

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

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

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

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

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

Issues for Follow-Up

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

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

3.9.4.2 TRI Data

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

Only 298.7 pounds (0.008 %) of the total on-site releases were accounted for by IJC critical pollutants. The IJC critical pollutants released were lead and lead compounds (primarily to air and land), and mercury and mercury compounds (primarily to air). The facilities that released these pollutants are listed in Table 3-40.

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

3.9.4.3 County Demographics and Health Status Indicators

Oakland County (vulnerable populations 510,496) had only two health status indicators that compared unfavorably with those of the U.S. and also with the median of the peer counties: these were black infant mortality and deaths from stroke. Neither was above the range of the peer counties.

Macomb County (vulnerable populations 348,417) had several health status indicators that compared unfavorably with those of the U.S. and with the median of the peer counties, including white infant mortality, and deaths from **breast cancer**, colon cancer, **coronary heart disease**, lung cancer, and stroke. The indicators that also were elevated above the upper limit of the peer county range are shown in bold.

**Table 3-38. Waste Site Contaminants that Exceeded Health-Based Screening Values
Clinton River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						Total
			Air	Biota	Human Material	Other Media	Soil	Water	
053469-21-9	AROCLOR 1242	1				1	1		2
012672-29-6	AROCLOR 1248	1				1		1	2
011097-69-1	AROCLOR 1254	1				1	2		3
011096-82-5	AROCLOR 1260	1				1	1		2
001336-36-3	POLYCHLORINATED BIPHENYLS	1		6		4	7	6	23
000050-32-8	BENZO(A)PYRENE	4				2	4		6
000072-54-8	DDD, P,P'-	5		3		1	1	1	6
000072-55-9	DDE, P,P'-	5		4		1		1	6
000050-29-3	DDT, P,P'-	5		4			2	1	7
000309-00-2	ALDRIN	6		2				1	3
000060-57-1	DIELDRIN	6		3		1	1		5
007439-92-1	LEAD	8		2		7	20	26	55
007439-97-6	MERCURY	9		3		2	7	8	20
000118-74-1	HEXACHLOROENZENE	11		3					3
		Total IJC	0	30	0	22	46	45	143
000071-55-6	1,1,1-TRICHLOROETHANE						1	1	2
000075-34-3	1,1-DICHLOROETHANE		4			1		4	9
000075-35-4	1,1-DICHLOROETHENE							2	2
000120-82-1	1,2,4-TRICHLOROENZENE							2	2
000095-50-1	1,2-DICHLOROENZENE						1		1
000107-06-2	1,2-DICHLOROETHANE		2					3	5
000156-59-2	1,2-DICHLOROETHENE, CIS-							1	1
000540-59-0	1,2-DICHLOROETHYLENE					3	2	7	12
000078-87-5	1,2-DICHLOROPROPANE		4						4
000106-46-7	1,4-DICHLOROENZENE							3	3
000078-93-3	2-BUTANONE					2	3	5	10
000091-57-6	2-METHYLNAPHTHALENE					1			1
000100-02-7	4-NITROPHENOL					2		2	4
000067-64-1	ACETONE						1		1
007429-90-5	ALUMINIUM			1		1	2	6	10
007664-41-7	AMMONIA							2	2
000120-12-7	ANTHRACENE						1		1
007440-36-0	ANTIMONY					2	3	5	10
007440-38-2	ARSENIC					7	16	22	45
007440-39-3	BARIUM					3	4	10	17
000071-43-2	BENZENE					5	3	23	31
000056-55-3	BENZO(A)ANTHRACENE					2	4		6
000205-99-2	BENZO(B)FLUORANTHENE					2	4		6
000207-08-9	BENZO(K)FLUORANTHENE					2	4		6
000111-44-4	BIS(2-CHLOROETHYL) ETHER							1	1
000085-68-7	BUTYL BENZYL PHTHALATE						1		1
007440-43-9	CADMIUM					7	12	16	35
000057-74-9	CHLORDANE			3					3
016887-00-6	CHLORIDE		1						1
HZ0700-06-T	CHLORINATED FLUOROCARBONS							2	2
007782-50-5	CHLORINE		2						2
000108-90-7	CHLOROENZENE					4	4	3	11
000124-48-1	CHLORODIBROMO- METHANE							1	1
000067-66-3	CHLOROFORM							3	3
007440-47-3	CHROMIUM					8	14	18	40
018540-29-9	CHROMIUM, HEXAVALENT					1		2	3
005103-71-9	CIS-CHLORDANE					1	2	1	4
007440-50-8	COPPER			2		3		2	7
000106-44-5	CRESOL, PARA-					2		2	4
000117-81-7	DI(2- ETHYLHEXYL)PHTHALATE			1		7	14	16	38

**Table 3-38. Waste Site Contaminants that Exceeded Health-Based Screening Values
Clinton River AOC**

CAS No.	Chemical Name	IJC Tracking Number	Number of Records						Total	
			Air	Biota	Human Material	Other Media	Soil	Water		
000053-70-3	DIBENZO(A,H) ANTHRACENE					2	1		3	
073506-91-9	DICHLOROBROMOETHANE							1	1	
000084-74-2	DI-N-BUTYL PHTHALATE					2	1	2	5	
000117-84-0	DI-N-OCTYL PHTHALATE					1			1	
000060-29-7	ETHYL ETHER							2	2	
000100-41-4	ETHYLBENZENE					3	6	5	14	
000206-44-0	FLUORANTHENE						2		2	
001024-57-3	HEPTACHLOR EPOXIDE			3					3	
000319-84-6	HEXACHLOROCYCLO- HEXANE, ALPHA-					1		1	2	
000058-89-9	HEXACHLOROCYCLO- HEXANE, GAMMA-					1	1	1	3	
HZ1000-01-T	HYDROCARBONS, UNSPECIFIED							4	4	8
007647-01-0	HYDROCHLORIC ACID		2						2	
007664-39-3	HYDROGEN FLUORIDE		2						2	
000193-39-5	INDENO(1,2,3-CD)PYRENE					2	2		4	
HZ0900-18-T	INORGANICS, N.O.S.			2					2	
007439-89-6	IRON							5	5	
001332-37-2	IRON OXIDE					1			1	
001305-78-8	LIME					1	1	1	3	
007439-95-4	MAGNESIUM			1			1	2	4	
007439-96-5	MANGANESE					3	7	16	26	
HZ0900-01-T	METALS N.O.S.			1			3	4	8	
000074-82-8	METHANE							2	2	
000075-09-2	METHYLENE CHLORIDE					2	7	20	29	
000091-20-3	NAPHTHALENE					1		1	2	
007440-02-0	NICKEL			2		5	5	10	22	
014797-55-8	NITRATE							4	4	
000086-30-6	N- NITROSODIPHENYLAMINE							1	1	
029082-74-4	OCTACHLOROSTYRENE			1					1	
HZ2100-16-T	PARTICULATES		2	1				1	1	5
000087-86-5	PENTACHLOROPHENOL					2	1	3	6	
000085-01-8	PHENANTHRENE						1		1	
000088-99-3	PHTHALIC ACID						2	2	4	
130498-29-2	POLYCYCLIC AROMATIC HYDROCARBONS					3	8	4	15	
HZ1000-51-T	POLYCYCLIC ORGANIC MATTER							1	1	2
000129-00-0	PYRENE							1	1	
007782-49-2	SELENIUM					2	4	4	10	
007440-22-4	SILVER					3	3	2	8	
000100-42-5	STYRENE						2	2	4	
000127-18-4	TETRACHLOROETHYLENE							2	2	
007440-28-0	THALLIUM					1	4	1	6	
000108-88-3	TOLUENE		4			3	6	11	24	
000079-01-6	TRICHLOROETHYLENE					3		15	18	
000075-69-4	TRICHLOROFLUORO- METHANE		4						4	
007440-62-2	VANADIUM					2	3	3	8	
000075-01-4	VINYL CHLORIDE					1		14	15	
HZ1900-01-T	VOLATILE ORGANIC COMPOUNDS N.O.S.		2	1					3	
001330-20-7	XYLENES, TOTAL		4			3	8	9	24	
007440-66-6	ZINC			2		5	5	13	25	
MEDEXP-00-0			9	13		6	21	29	78	
			2	5			4		11	
		Total Non-IJC	44	39	0	125	212	363	783	
		Total	44	69	0	147	258	408	926	

Table 3-39. 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 On- site Releases	Total Off- site Releases	Total On- and Off-site Releases
LEAD	8	22.59128	0	0	1	23.59128	386.5	410.09128
LEAD COMPOUNDS	8	263.102	0	0	0	263.102	4993.931	5257.033
MERCURY	9	0	0	0	0	0	0.1	0.1
MERCURY COMPOUNDS	9	12	0	0	0	12	0	12
	Total IJC	297.69328	0	0	1	298.69328	5380.531	5679.22428
XYLENE (MIXED ISOMERS)		1341515	0	0	0	1341515	0	1341515
CERTAIN GLYCOL ETHERS		392474	0	0	0	392474	1117	393591
N-BUTYL ALCOHOL		383820	0	0	0	383820	0	383820
TOLUENE		265481	0	0	0	265481	5728	271209
ETHYLBENZENE		246208	0	0	0	246208	250	246458
METHYL ISOBUTYL KETONE		206587	0	0	0	206587	750	207337
N-METHYL-2-PYRROLIDONE		143360	0	0	0	143360	8800	152160
1,2,4-TRIMETHYLBENZENE		132910	0	0	0	132910	0	132910
METHYL ETHYL KETONE		128487	0	0	0	128487	6250	134737
METHANOL		124179	0	0	0	124179	0	124179
TRICHLOROETHYLENE		40553	0	0	0	40553	0	40553
HYDROCHLORIC ACID (1995 AND AFTER 'ACID AEROSOLS' ONLY)		34000	0	0	0	34000	0	34000
AMMONIA		33772	0	0	0	33772	0	33772
2-CHLORO-1,1,1,2- TETRAFLUOROETHANE		28416	0	0	0	28416	0	28416
N-HEXANE		18038	0	0	0	18038	0	18038
STYRENE		14121	0	0	0	14121	0	14121
TRIETHYLAMINE		6629	0	0	0	6629	1500	8129
NICKEL		5314	36	0	0	5350	1810	7160
DICHLOROMETHANE		4464	0	0	0	4464	0	4464
NICKEL COMPOUNDS		3572	262	0	0	3834	112920	116754
NITRIC ACID		3683	0	0	0	3683	0	3683
ETHYLENE GLYCOL		3482	0	0	0	3482	0	3482
SULFURIC ACID (1994 AND AFTER 'ACID AEROSOLS' ONLY)		2994	0	0	0	2994	0	2994
CYANIDE COMPOUNDS		2771	5	0	0	2776	250	3026
MANGANESE COMPOUNDS		1696	70	0	0	1766	49793	51559
ZINC COMPOUNDS		1484	152	0	8	1644	289202	290846
METHYL TERT-BUTYL ETHER		1444	0	0	0	1444	0	1444
1,1-DICHLORO-1-FLUOROETHANE		1020	0	0	0	1020	250	1270
SODIUM NITRITE		962	0	0	5	967	316	1283
CHROMIUM COMPOUNDS (EXCEPT CHROMITE ORE MINED IN THE TRANSVAAL REGION)		943	5	0	0	948	76607	77555
MANGANESE		790	33	0	0	823	3965	4788
ALUMINUM (FUME OR DUST)		750	5	0	0	755	18211	18966
CHLORINE		505	0	0	0	505	0	505
DIISOCYANATES		350	0	0	0	350	14301	14651
CUMENE		301	0	0	0	301	0	301
NITRATE COMPOUNDS		299	0	0	0	299	156184	156483
FORMALDEHYDE		298	0	0	0	298	0	298
TERT-BUTYL ALCOHOL		295	0	0	0	295	0	295
COPPER COMPOUNDS		270	10	0	0	280	7465	7745
COBALT COMPOUNDS		250	5	0	0	255	5	260
DIETHANOLAMINE		255	0	0	0	255	0	255
PROPYLENE		250	0	0	0	250	0	250
COPPER		181	0	0	8	189	5011	5200
CHROMIUM		120	33	0	0	153	3968	4121
1,2-BUTYLENE OXIDE		149	0	0	0	149	0	149
NAPHTHALENE		106	0	0	0	106	0	106
CYCLOHEXANE		91	0	0	0	91	0	91
BUTYL ACRYLATE		78	0	0	0	78	0	78
BENZENE		77	0	0	0	77	0	77
TOLUENE-2,4-DIISOCYANATE		76	0	0	0	76	0	76
DICYCLOPENTADIENE		33	0	0	0	33	0	33
BARIUM COMPOUNDS		22	0	0	0	22	85718	85740
METHYL METHACRYLATE		16	0	0	0	16	0	16
TOLUENE-2,6-DIISOCYANATE		16	0	0	0	16	0	16

Table 3-39. 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 On- site Releases	Total Off- site Releases	Total On- and Off-site Releases
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 3-40. TRI Facilities Releasing IJC Critical Pollutants On-site for the Clinton River AOC

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