

# **PREASSESSMENT SCREEN FOR THE NEASE CHEMICAL SITE**

## **I. Action:**

Preassessment Screen (PAS) on the Nease Chemical Site (Nease Site or Site), Columbiana and Mahoning Counties, Ohio by the Ohio Environmental Protection Agency (Ohio EPA) and United States Department of the Interior (DOI), (collectively, the Trustees, or the Natural Resource Trustees).

## **II. Authority:**

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended, 42 U.S.C. 9601 et seq., the Oil Pollution Act of 1990 (OPA), 33 U.S.C. 2701 et seq., and the Federal Water Pollution Control Act (FWPCA), as amended, 33 U.S.C. 1251 et seq., authorize the Federal Government and States to recover, on behalf of the public, damages for injuries to natural resources and their supporting ecosystems, belonging to, managed by, appertaining to, or otherwise controlled by the Federal Government or a State.

Pursuant to 42 U.S.C. §9607(f)(2)(A), the President has designated federal natural resource trustees in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.600 and through Executive Order 12580, dated January 23, 1987. Pursuant to the NCP, the Secretary of the DOI acts as a trustee for natural resources and their supporting ecosystems, managed by, or controlled by or appertaining to the DOI. In this matter, the U.S. Fish and Wildlife Service (Service) is acting on behalf of the Secretary of the DOI as trustee for the natural resources under its jurisdiction.

In accordance with 42 U.S.C. 9607(f)(2)(B) and the NCP, the Governor of Ohio designated the Director of Ohio EPA as the natural resource trustee of Ohio on June 30, 2011. Ohio EPA acts on behalf of the public as trustees for natural resources, including their supporting ecosystems, within the boundary of the State of Ohio or belonging to, managed by, controlled by, or appertaining to the State of Ohio. The Ohio EPA has or shares trusteeship over ground water, surface water, and biological trust resources at the Nease Site.

## **III. Requirement and Purpose:**

Federal regulations at 43 C.F.R. § 11.23(a) require Natural Resource Trustees to complete a PAS and make a determination as to whether a NRDA shall be carried out at a site, before assessment efforts are undertaken pursuant to the regulations. This document fulfills that requirement for the Nease Site and follows the structure of Federal Regulations at 43 C.F.R. Part 11.

The purpose of this PAS is to provide a rapid review of the readily available information on releases of hazardous substances and potential impacts on natural resources at the Nease Site for which the DOI and/or Ohio EPA may assert trusteeship under section 107(f) of CERCLA.

## **IV. Information on the Site and on the discharge or release (43 C.F.R. §11.24 (a)):**

The former Nease Chemical facility is located in Columbiana County, Ohio, about 2 ½ miles

northwest of the town of Salem. The Site includes the former Nease facility (44 acres); portions of the adjoining former Crane-Deming facility (35 acres); and the underlying areas where ground water and soil gas are contaminated. Run-off contamination from the former Nease facility via a tributary draining the facility areas (Feeder Creek) has also impacted surface water and floodplain/ wetland areas and associated biota in Middle Fork Little Beaver Creek (MFLBC), extending the Site into Mahoning County.

From 1961 until 1973, the Nease facility was owned and operated by the Nease Chemical Company as a chemical manufacturing plant producing specialty chemicals, including pesticides, fire retardants and household cleaning compounds. Waste handling facilities included air scrubbers and a multiple pond system for neutralization and treatment of acidic wastes. Following notification from Ohio EPA of wastewater violations, Nease agreed in a Consent Judgment in 1973 to discontinue manufacturing operations until a new waste water permit could be obtained. Subsequently, Nease decided to close the facility, decommissioned and removed most of the buildings and manufacturing equipment in 1974 and 1975.

In December 1977, the assets of Nease Chemical Company (including the non-operational Salem facility) were acquired and the company merged with Ruetgers Chemicals, Inc. to form Ruetgers-Nease Chemical Company, Inc. (now known as Rütgers Organics Corporation or "ROC"). ROC has never operated at the Site. Since 1982, ROC has cooperated with Ohio EPA and U.S. EPA to address the Site<sup>1</sup> through the process.

The Site was added to the National Priorities List (NPL) on September 30, 1983.

In 1998 ROC acquired the neighboring Crane-Deming pump manufacturing facility property. It is the Trustees' understanding that in 2005, ROC agreed to sell part of the Crane-Deming property to Quaker Realty, a subsidiary of MAC Trailer Manufacturing, Inc. After various assignments involving Quaker Realty, the Columbiana County Port Authority and MAC Trailer Manufacturing, in 2011 Quaker Realty received the Port Authority's interest in the Crane-Deming property. MAC Trailer Manufacturing, Inc. now manufactures flatbed trailers in the former Crane-Deming facility.

#### **1. Time, quantity, duration and frequency of the discharge or release:**

The former Nease facility has been determined to be the source of hazardous substances released to the underlying aquifers, as well as Feeder Creek, MFLBC and the surrounding ecosystem. (Figures showing the Site location and Site features are provided in Appendices A & B)

During the 12-year operational period of the former Nease facility, products and chemical intermediates were stored and/ or disposed on site. Five unlined ponds (designated Ponds 1, 2,

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<sup>1</sup> U.S. EPA has divided the Nease Site into three operable units (OUs) in 2003, for the remedial process. OU 1 addresses non-time critical removal actions that were constructed in the mid-1990s. The removal actions included installation and maintenance of surface water and sediment control structures and construction and operation of two shallow ground water collection systems. OU 2 comprises soils, source areas, ground water contamination, and more recently soil gas on the Site. OU 3 comprises Feeder Creek, a small creek that drains the former plant, and Middle Fork of Little Beaver Creek (MFLBC), which receives flow from the former chemical manufacturing facility.

3, 4 and 7) were used for the treatment and storage of acidic plant wastes or lime slurries from the neutralization of acidic wastes. Starting in 1969 and continuing to 1973, neutralized liquids were discharged to the Salem Waste Water Treatment Plant (WWTP) after settling in the ponds. Violations of the waste water standards<sup>2</sup> were documented during this period, terminating in discontinuation of the manufacturing operations, per a 1973 Consent Judgment with Ohio EPA.

Waste from plant processes were stored in 55-gallon drums, which were buried on-site. In depositions, former Nease employees stated that prior to 1968 drummed wastes were buried in an area referred to as Exclusion Area A. During plant operations, sludge/ soil was removed from Pond 7 and deposited in an area immediately southwest of Pond 7. Although drums, some contaminated soil and liquids in the ponds have been removed, chemical contamination remains in the surface soil and soil/fill within the ponds, acting as a source of ground water contamination and a potential source to surface water contamination.<sup>3</sup> Dense non-aqueous phase liquid (DNAPL) has been observed in ground water down gradient of the former waste Ponds 1 and 2. More recently in 2006, other DNAPL source areas have been identified on the south side of the former facility, impacting ground water (and soil gas); these releases have migrated off-property to the south and east of the former Nease facility.

The former Nease facility is on a topographical high. Surface water drainage flows via Feeder Creek, a small creek that originates from the contaminated former manufacturing process areas, to the main surface water body in the area, MFLBC<sup>4</sup>. During and after the operation of the chemical plant, the waste ponds and contaminated soil were a source of contamination to the creeks<sup>5</sup>. A site-specific "fingerprint" chemical, mirex, as well as associated chemicals such as photomirex and kepone, was detected in Feeder Creek in surface water and sediment, and in MFLBC floodplain soil, sediment and biota such as fish and wildlife. (Figures showing the contamination detected in the different media are provided in Appendix C) Mirex has been detected in fish, in multiple sampling events conducted in MFLBC from 1987 to 2005 from river mile (RM) 36.7 downstream of the former Nease facility to RM 1.9, the furthest extent sampled. Mirex was also detected in wildlife (raccoons and opossums) trapped close to the former Nease facility and along MFLBC. Mirex was detected in beef fat and in milk fat of cattle sampled in 1989 from dairy farms located along MFLBC.

In 1987, the Ohio Department of Health<sup>6</sup> (ODH) issued a fish consumption advisory for 27.7 miles of MFLBC between State Route Alternate 14 and Allen Road (at RM 36.7 where Feeder Creek entered MFLBC) to State Route 11 Bridge near Elkton, Ohio (RM 9.05), due to mirex contamination. From March 1988 to February 2011, ODH expanded the advisory to include a contact advisory against wading and swimming in MFLBC.

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<sup>2</sup> These historic waste water permitted releases (and current waste water permitted releases) are quite separate (upgradient) from mirex contamination run-off from the former Nease facility that reached MFLBC via Feeder Creek.

<sup>3</sup> U.S. EPA plans to address remediation of the source areas through the CERCLA process.

<sup>4</sup> MFLBC extends over approximately 40.6 river miles (RM). MFLBC originates upstream of the former Nease facility, flows north for about five (5) miles, then turns and flows southeastward through Lisbon, Ohio and eventually joins other tributaries to form Little Beaver Creek, which flows into the Ohio River near East Liverpool, Ohio.

<sup>5</sup> Facility run-off has been a source of contamination to surface water, but ground water discharge has not been found to be a significant source of contaminants into the creek.

<sup>6</sup> ODH also documented mirex in the blood of individuals in the community in sampling conducted in 1990 and 1996.

Unpermitted releases of hazardous substances have thus been documented in buried drum disposal areas referred to as Exclusion Areas A and B; Former Ponds 1 and 2; Former Ponds 3, 4 and 7; at multiple locations on the site, as well as the Overburden Aquifer and the Middle Kittanning Sandstone (MKS) aquifer; Feeder Creek surface water and sediment; MFLBC sediment; MFLBC floodplain soil; MFLBC biota (fish; wildlife and cattle).

Releases began in the 1960s and continue to date. Volatile organic compounds, semi-volatile organic compounds and pesticides, including mirex, have been identified in the releases.

Other unpermitted releases (RCRA violations): Violations, in 2004, of the Resource Conservation and Recovery Act (RCRA), since returned to compliance, were documented in site inspections by Ohio EPA staff. An accidental spill of plant treatment influent in June 2004 also resulted in the release of approximately 20,000 gallons contaminated with VOCs and mirex on the southeast side of the former facility. While the release did not reach surface water, it may have impacted ground water, and it is likely that spilled material infiltrated ground water. It is expected that the release area will be addressed as part of the remedy for Operable Unit (OU) 2.

## **2. The hazardous substances released:**

Based on sampling conducted between 1983 to 2008 by ROC; Ohio EPA; Ohio Department of Health (ODH); Ohio Department of Natural Resources (ODNR); and Agency for Toxic Substances and Disease Registry (ATSDR), site-related contamination has been detected in media (surface water, sediment, floodplain soil/ wetlands) , and biota (fish, cattle, wildlife) in Feeder Creek and MFLBC and in the surrounding floodplain areas. Contaminated ground water, soil, and soil gas contamination have been detected on and extend beyond the former Nease facility boundaries. A detailed sampling timeline documenting the hazardous substance release is provided in the 1996 Remedial Investigation Report; the 2004 Endangerment Assessment Report (EA); the 2005 and 2008 OU 2 and OU 3 Feasibility Studies, respectively, and the Pre-Design Investigation reports.

Hazardous substances released include but are not limited to: chlorinated benzene compounds; chlorinated ethenes; mirex, photomirex, kepone, and other synthetic pesticides; and other organic chemicals.

Selected hazardous substances and their Chemical Abstract Service (CAS) Registry numbers detected in ground water; surface water; sediments; and/ or biota at the Nease Site are shown below in Table 1. A more comprehensive list of hazardous substances detected in all site-related media is provided in the EA.

Table 1: Selected list of hazardous substances released at the Nease Site

CHEMICAL NAME	CAS Registry Number	CHEMICAL NAME	CAS Registry Number
Acetone	67-64-1	Benzo(a)anthracene	56-55-3
Benzene	71-43-2	Benzo(a)pyrene	50-32-8
Carbon tetrachloride	56-23-5	Benzo(b)fluoranthene	205-99-2
Chlorobenzene	108-90-7	Benzo(k)fluoranthene	207-08-9
Chloromethane	74-87-3	Bis(2-ethylhexyl)	117-81-7



		phthalate	
Chloroform	67-66-3	Dibenz(a,h)anthracene	53-70-3
1,2-dichlorobenzene	95-50-1	Fluoranthene	206-44-0
1,1-dichloroethene	75-34-3	Fluorene	86-73-7
1,2-dichloroethene	156-60-5	Hexachlorobutadiene	87-68-3
1,2-dichloroethane	107-06-2	Hexachloroethane	67-72-1
Ethylbenzene	100-41-4	Indeno(1,23)pyrene	193-39-5
Hexachlorobenzene	118-74-1	Naphthalene	91-20-3
Tetrachloroethene	127-18-4	N-nitrosodiphenylamine	86-30-6
Trichloroethylene	79-00-5	Pyrene	129-00-0
1,1,2,2-tetrachloroethane	79-34-5	Mirex	2385-85-5
1,1,2-trichloroethane	79-00-5	Photomirex	39801-14-4
Toluene	108-88-3	Kepone	143-50-0
Xylene(s (mixed))	1330-20-7	beta-HCH	319-85-7
		Dieldrin	60-57-1
		Endrin	72-20-8

### 3. History of the current and past use of the Site:

The Nease facility operated from 1961 to 1973; chemicals manufactured included mirex, diphenyl-sulphone, chloramines B, benzene sulphonic acid, methoxychlor, and hexachloroethylene. Chloroform, tetrachloroethylene, trichloroethane, benzene, toluene and xylene were among the chemicals used in the manufacturing process.

The on-site ponds were decommissioned by Nease in December 1975; liquids from the ponds were neutralized and discharged to the Salem Waste Water Treatment Plant. The ponds (with the exception of Pond 3) were coated with lime and filled with soil from other areas of the facility. The majority of the buildings and facility equipment were removed during the decommissioning activities.

The former Nease facility property is currently inactive. The only building remaining on-property houses the on-site waste water treatment system.

An industrial plant is located immediately to the east-northeast of the former Nease facility. Historically this was occupied by the Crane-Deming Pump Company. More recently, the property has been occupied by MAC Trailer Manufacturing, Inc., a manufacturer of flat-bed trucks.

### 4. Relevant operations occurring on or near the Site:

The Nease facility is located in a relatively rural area northwest of the City of Salem. From 1961 until 1973, the Nease plant produced specialty chemicals, such as pesticides, fire retardants, household cleaning compounds and other chemical products. Raw materials and finished products were stored in warehouses, bulk storage, tanks and 55-gallon drums which were buried on-site at the plant. Five unlined ponds were used for the treatment and storage of acidic plant wastes or lime slurries from the neutralization of acidic wastes.

The Salem Wastewater Treatment Plant (WWTP) is located approximately 2,400 feet east of the former Nease facility, and about 0.7 RM upstream of the former Nease facility. The Salem WWTP handled pre-treated wastewater from the Nease Chemical starting in 1969 for approximately 4 years. Sludge beds at the WWTP were sampled during the RI showed mirex at concentrations ranging from 0.02 to 0.9 mg/kg.

**5. Additional hazardous substances potentially released from the Site:**

At this time the Trustees have not identified additional hazardous substances released from the Site other than those identified in the EA.

**6. Potentially responsible parties:**

Rütgers Organics Corporation (ROC)  
201 Struble Road  
State College, PA 16801

**V. Damages excluded from liability under CERCLA (43 C.F.R. §11.24 (b)):**

The release of hazardous substances listed in Table 1 did not occur wholly before enactment of CERCLA, nor the 1977 amendments to the Federal Water Pollution Control Act (FWPCA). Injuries to natural resources from the release did not occur wholly before enactment of CERCLA, nor the 1977 amendments to the FWPCA.

Injuries resulting from the release of hazardous substances listed in Table 1 did not result from the application of a pesticide product registered under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, 7 U.S.C. 136.

Injuries resulting from the releases of hazardous substances listed in Table 1 did not result from any federally permitted release as defined in section 101(10) of CERCLA.

No exclusion from damages is applicable to this site, pursuant to CERCLA and the FWPCA.

**VI. Preliminary identification of pathways [43 C.F.R. §11.25(a)]:**

Hazardous substances were released from the former Nease facility during the operational period and are still continuing. The releases have impacted ground water resources and migrated through run off from Feeder Creek downstream to MFLBC, to impact surface water, bed and bank sediments and biological resources (sediments, fish and biota) in the MFLBC floodplain. Injuries to trust resources are the result of both the direct and indirect effects of hazardous substances through the direct contact, ground water, surface water, particulate movement, and food chain pathways. In addition, hazardous substances are present at concentrations sufficient to cause toxicity to food organisms as detailed in the EA for the Site. This injures trust resources indirectly by reducing the ability of MFLBC and the surrounding ecosystem to provide the supporting services required by trust resources.

**VII. Exposed areas [43 C.F.R. §11.25(b)]; Exposed water estimates [43 C.F.R. §11.25(c)]; Estimates of concentrations [43 C.F.R. §11.25(d)]:**

Hazardous substances have been released and spread from the Exclusion Areas and former ponds (1, 2, 3, 4, and 7) on the former facility to the Overburden Aquifer and the Middle Kittanning Sandstone Aquifer. Contamination has also spread to Feeder Creek surface water and sediment; MFLBC sediment; MFLBC floodplain soil; and MFLBC biota (fish; wildlife and cattle) as detailed below.

- Exclusion Area A covering approximately 1.3 acres, is where chemicals and wastes were handled. Approximately 115 drums and 5,500 cubic yards of soil were removed by ROC from this area in 1982 and 1983. Contamination has impacted shallow overburden ground water in this area<sup>7</sup>.
- Exclusion Area B covers approximately 0.25 acres; historically vegetation has been limited in this area. Approximately 700 cubic yards of soil were removed from this area (in 1982 and 1983). Even after the soil removal activities, mirex was detected at 17.8 mg/kg<sup>8</sup> in the upper 6 inches of soil in this area. In more recent sampling conducted in 2009, mirex was detected at 1,400 mg/kg within the 0 to 12 inch range of soil depth in proximity to Exclusion Area B
- Former Ponds 1 and 2: During facility operations, Ponds 1 and 2 covering approximately 1.5 acres were used for waste water neutralization until 1975, when they were decommissioned by draining and filling with soil from other on-facility areas and lime. Contamination has impacted ground water below Ponds 1 and 2 and shallow ground water is being collected and treated by a collection system. 560,000 lbs of organic chemical mass is estimated to be present in Ponds 1 and 2, with 385,000 lbs in the till below the base<sup>9</sup>. Total VOCs concentrations from pond soil borings range up to 53,519 mg/kg, with PCE being a primary constituent at 38,000 mg/kg. SVOCs are found at concentrations as high as 10,924 mg/kg, with diphenyl sulphone and 1,2-dichlorobenzene having the highest concentrations. Mirex has been found at up to 938 mg/kg. NAPL has been observed in overburden and bedrock monitoring wells immediately down gradient of these ponds.
- Former Ponds 3, 4 and 7: Former Ponds 3, 4 and 7 cover approximately 2.9 acres, 1.3 acres and 0.8 acres, respectively. The sludge in Pond 3 was not covered reportedly due to low bearing strength when decommissioned in 1975; Ponds 4 and 7 were covered with soil from other areas on-facility. Contamination is relatively lower in these ponds compared to Ponds 1 and 2; the estimated organic chemical mass is around 900 lbs in Pond 3, 725 lbs in Pond 4 and 9919 lbs in Pond 7.
- Ground water: In broad terms, the hydrogeologic units at the Site consist of an overburden (fill, silt/clay glacial till with discrete discontinuous sand zone) and transition bedrock aquitard (Washingtonville Shale and associated coal seam and underclay); and

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<sup>7</sup> Shallow ground water from Exclusion Area A as well as former Ponds 1 and 2 is collected and treated by a collection trench and aggregate drain (system LCS-1), under the 1993 Orders with U.S. EPA.

<sup>8</sup> U.S. EPA's risk-based cleanup standard for mirex in soil at the former facility is 1 mg/kg, based on protection of ecological receptors. A range of species (meadow vole; short-tailed shrew; raccoon; red fox; march wren; red-tailed hawk) were considered in back-calculating a soil concentration that would result in a hazard quotient of one based on food chain modeling. The clean-up standard is also protective of human health. Refer to the OU2 FS for additional details.

<sup>9</sup> See Table 2-1 in the OU 2 Feasibility Study for a summary of the estimated organic mass in each pond.

the Middle Kittanning Sandstone (MKS) bedrock aquifer<sup>10</sup>. The aquifer is separated into two flow regimes (i) flowing east/ northeast towards MFLBC and (ii) flowing south/ southeast in the southern portion of the former Nease facility.

The combined contaminated plumes cover a land area of over 73 acres<sup>11</sup> or 3,190,000 ft<sup>2</sup> of high yielding aquifers (the Overburden and the MKS Aquifers). The aquifers have become unusable for potable use purposes, with contamination above the maximum contaminant limits (MCLs). DNAPL areas have been observed in the east/ northeast and the south/ southeast flow regimes.

- Surface water and sediment: Site-related contamination has been detected in Feeder Creek (during the 1990 RI and in 1996 investigations) and MFLBC (sampled in 1990; in 1993-1995; and in 2005) and associated wetlands.<sup>12</sup> Mirex was detected in Feeder Creek surface water (but not in MFLBC surface water). Feeder Creek and MFLBC sediment are also contaminated by mirex releases, and act as a source for on-going mirex uptake by fish and other aquatic biota.
  - Mirex was detected in surface water in Feeder Creek at concentrations ranging from 0.0304 µg/L to 0.362 µg/L; this exceeded the mirex AWQC of 0.00011 µg/L for the Ohio River Basin. Sediment in Feeder Creek contained mirex at concentrations ranging from 0.38 mg/kg to 129 mg/kg.
  - Mirex was detected in MFLBC sediment in the most downstream location sampled, RM 1.9; the highest concentrations were between RM 31 and RM 37.6. The maximum mirex concentration detected in sediment was 2.03 mg/kg in the 2005 sampling event, followed by 1.68 mg/kg in the 1990 sampling event.<sup>13</sup> The sediment mirex concentrations have thus not significantly changed spatially or quantitatively over time.
  - Elevated mirex concentrations have been detected in the wetlands delineated at the former Nease facility; ground water in some of these areas has been contaminated by VOCs. (A map showing the wetland areas is provided in Appendix D)
- MFLBC Floodplain/ wetland: RI samples (collected in 1990; 1991; 1993; 1995) as well as sampling conducted in 2005 and 2006 have documented mirex deposition in floodplain/ wetland areas. The maximum concentration in floodplain soil (6.65 mg/kg<sup>14</sup> at RM 35.5) generally corresponds to the areas with the highest sediment concentrations (RM 31 to RM 37.6). Mirex deposition is mainly surficial (in the 0-6" and 6" to 12" depth),

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<sup>10</sup> The deeper bedrock units present below the MKS, appear, based on the Remedial Investigation, to be hydraulically isolated from the contaminated aquifers.

<sup>11</sup> This acreage may increase; the extent of the southeast contaminated plume has not yet been delineated to baseline.

<sup>12</sup> Although wetland areas were not explicitly sampled, there are 8.3 acres of jurisdictional wetlands (as defined in the Corps of Engineers, Wetland Delineation Manual, Wetlands Research Program Technical Report Y-87-1) on the former Nease facility, several of which have been sampled; VOCs and mirex were detected in several of the wetlands in the former facility property.

<sup>13</sup> U.S. EPA has selected a remediation goal of 0.5 mg/kg for mirex in MFLBC sediment.

<sup>14</sup> U.S. EPA has selected a remediation goal of 1.0 mg/kg for floodplain soil.



and concentrations decrease with depth.

See the discussion below for impacts on biological resources (wildlife) grazing in the floodplain<sup>15</sup>:

- Biota (Wildlife): Mirex was detected in wildlife (raccoons and opossums) trapped close to the former Nease facility and along MFLBC. Mirex was detected in blood in raccoons and opossums at a maximum of 5.9 µg/L and 8.9 µg/L, respectively. Mirex was detected in fat in raccoon and opossum at a maximum of 39.9 µg/kg and 52.7 µg/kg, respectively.
- Biota (Fish): Mirex has been detected in fish (fillet and whole body) in multiple sampling events conducted in MFLBC starting in 1987; the most recent sampling event for which the data have been reviewed was in 2005<sup>16</sup>. The highest concentration of mirex detected (in fish fillet) was 1.82 mg/kg in the 1990 sampling; this is in contrast to the FDA action level of 0.1 mg/kg. Mirex contamination has migrated downstream of where Feeder Creek enters MFLBC, at RM 36.7. In the 1987 sampling, mirex was not detected below RM 17.5. However in the most recent sampling in 2005, mirex has been detected in fish in sampling down to RM 1.9. However the gross mass of mirex contamination does not appear to have migrated significantly: the highest concentration in fish (fillet) in the 2005 sampling (1.64 mg/kg) was found within one (1) RM of the 1990 maximum detection. Whole body fish (which are a food source for upper trophic level ecological receptors) have higher concentrations than fish fillet samples; the maximum concentration of mirex detected was 6.2 mg/kg in the 1990 sampling.

#### **VIII. Potentially affected resources [43 C.F.R. §11.25(e)]**

##### **(1) Natural resources for which the Trustees may assert trusteeship under CERCLA have been or are likely to have been adversely affected by the discharge or release:**

The following natural resources and their supporting ecosystems have been, or potentially have been, affected: Geologic resources, ground water, surface water (including bed, bank and shoreline sediments) and biological resources including fish, migratory birds; fish-eating birds, wading birds, water fowl and fish-eating mammals in MFLBC. The following services to the public have or potentially have been affected: sport fishing, hunting, bird watching, navigation, boating, tourism, parks, forests, waterways, and a healthy ecosystem.

Migratory bird species in MFLBC include, but are not limited to, Canada goose (*Branta canadensis*), common merganser (*Mergus merganser*), cooper's hawk (*Accipiter cooperii*), great blue heron (*Ardea herodias*), mallard duck (*Anas platyrhynchos*), mourning dove (*Zenaidura macroura*), northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), sharp-shinned hawk (*Accipiter striatus*), and wood duck (*Aix sponsa*). Numerous species of migratory Neotropical songbirds inhabit the area seasonally.

Fish species found in MFLBC include but are not limited to yellow perch (*Perca flavescens*), pumpkinseed (*Lepomis gibbosus*), white crappie (*Pomoxis annularis*), gizzard shad (*Dorosoma*

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<sup>15</sup> Mirex was also detected in beef fat and in milk fat in cattle from dairy farms located along MFLBC. Mirex concentrations ranged up to 0.2 mg/kg in milk fat and 1.75 mg/kg in beef fat.

<sup>16</sup> The Trustees are reviewing the results of the fish sampling conducted in 2010.

*cepedianum*), carp (*Cyprinus carpio*), brown bullhead (*Ictalurus nebulosus*), smallmouth bass (*Micropterus dolomieu*), log perch (*Percina caprodes*), freshwater drum (*Aplodinotus grunniens*), white suckers (*Catostomus commersoni*), johnny darter (*Etheostoma nigrum nigrum*), greenside darter (*Etheostoma blennioides*), rainbow darter (*Etheostoma caeruleum*), northern hogsucker (*Hypentelium nigricans*), golden redhorse (*Moxostoma erythrurum*), and stonecat madtom (*Noturus flavus*).

Two state endangered plant species, prairie tick-trefoil and pale straw sedge, were identified in the MFLBC corridor. Nine State threatened plant species and 14 State potentially threatened plant species were also identified in MFLBC. Three State endangered and three State special interest bird species have been documented in the MFLBC corridor. A State endangered amphibian, the hellbender, and a State special interest species, the wavy-rayed lamp mussel have also been documented in the MFLBC corridor.<sup>17</sup> The state endangered river otter was also observed in the study area. MFLBC is also within the historic range of the endangered Indiana bat (*Myotis sodalis*).

## **(2) Preliminary estimate (of the services of resources identified as potentially affected):**

Below is a preliminary estimate. Additional, more refined (value-to-value and value-to-cost) economic analysis may be conducted to scale the injury to compensatory restoration.

Ground water: Two aquifers have been impacted by releases from the site: (i) the Overburden Aquifer (including the transition aquifer) and (ii) the Middle Kittanning Sandstone (MKS) Aquifer. The area of the contaminated plume is based on the size of the volatile organic compound (VOC) plume information in the 2007 Baseline Technical Memorandum. The total extent of VOC contamination will be updated as data are collected for the remedial design.

Surface water and biological resources: Site-related contamination has impacted over 40 river miles of surface water (Feeder Creek and MFLBC) and associated wetlands and floodplain.

- The Site is located entirely within the Ohio River Basin; therefore Basin ambient water quality standards are applicable. Mirex was detected in surface water in Feeder Creek at concentrations ranging from 0.0304 µg/L to 0.362 µg/L, exceeding the mirex AWQC of 0.00011 µg/L.
- Mirex has been detected in wildlife/ biota in the MFLBC floodplain/ wetland areas. The floodplain/ wetland area within the area targeted by U.S. EPA for remediation is approximately 331 acres (from RM 37.6 to RM 31); this acreage does not include the extensive wetland/ floodplain in Egypt Swamp (from RM 29 to RM 24). Mirex has been detected in the floodplain down to RM 21.6, and there was one (10 µg/kg) detection of mirex at RM 7.
- Fish advisories have been issued for MFLBC and fish collected to the most downstream location sampling (RM 1.9) have mirex above the State's unrestricted fish consumption level (0.2 mg/kg) and the FDA action level (0.1 mg/kg).

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<sup>17</sup> The state threatened, endangered and special concern species information is based on an ODNR search of the Natural Heritage Data Services Inventory of threatened and endangered species for a three-mile wide corridor along MFLBC from Salem to East Liverpool, Ohio in 1994.

### **IX. Preassessment Screen Determination:**

Based upon a review of readily available data and an evaluation of the preassessment determination criteria, summarized in this document, the Trustees have reached the following conclusions:

- Releases of hazardous substances have occurred;
- Natural resources for which the trustees may assert trusteeship under CERCLA and FWPCA have been adversely affected by the discharge of release of hazardous substances;
- The quantity and concentration of the released hazardous substances are sufficient to potentially cause injury to natural resources;
- Data sufficient to pursue an assessment are readily available or likely to be obtained at a reasonable cost;
- Response actions planned will not sufficiently remedy the injury to natural resources without further action

The Trustees hereby determine that further investigation and assessment is warranted and should be carried out at this site in accordance with Federal Regulations at 43 C.F.R. Part 11, Subparts C and E. The Trustees further determine that current information indicates that there is a reasonable probability of making a successful natural resources damage claim pursuant to Section 107 of CERCLA and Section 311 of FWPCA and that all criteria and requirements in 43 C.F.R. Part 11, generally, and 43 C.F.R. §11.24 and §11.25, specifically, have been satisfied.

The information provided and conclusions made in this PAS shall be used to direct further investigations and assessments and is not intended to preclude consideration of other natural resources later found to be affected or other parties found to be responsible for releases.

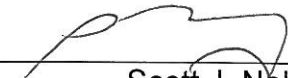
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Tom Melius, Regional Director  
U.S. Fish and Wildlife Service, Region 3  
Authorized Official for the Department of  
the Interior

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Date

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Scott J. Nally, Director  
Ohio Environmental Protection Agency

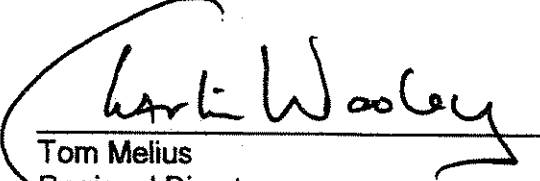
8/25/11  
Date

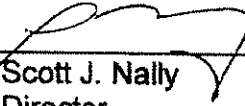
receipt of this notice, please provide a written response indicating whether you intend to participate in the assessment. Please send your response to the following individuals representing the Trustees:

Kimberly Gilmore  
Staff Attorney  
United States Department of the  
Interior  
Office of the Solicitor  
Three Parkway Center, Rm 385  
Pittsburgh, PA 15220  
e-mail address:  
[kimberly.gilmore@sol.doi.gov](mailto:kimberly.gilmore@sol.doi.gov)

Ann Fischbein  
Staff Attorney  
Ohio EPA, Legal Section  
P.O. Box 1049  
Columbus, Ohio 43216-1049  
e-mail address:  
[ann.fischbein@epa.ohio.gov](mailto:ann.fischbein@epa.ohio.gov)

If you have questions regarding this notice, please contact Ms. Gilmore at 412-937-4017 or Ms. Fischbein at 614-728-1833.

*for*  
  
Tom Melius  
Regional Director  
USFWS, Region 3

  
Scott J. Nally  
Director  
Ohio EPA

Attachment

cc: Kimberly Gilmore, DOI  
Dave Devault, FWS  
Kevin Tloczynski, FWS  
Mary Knapp, FWS

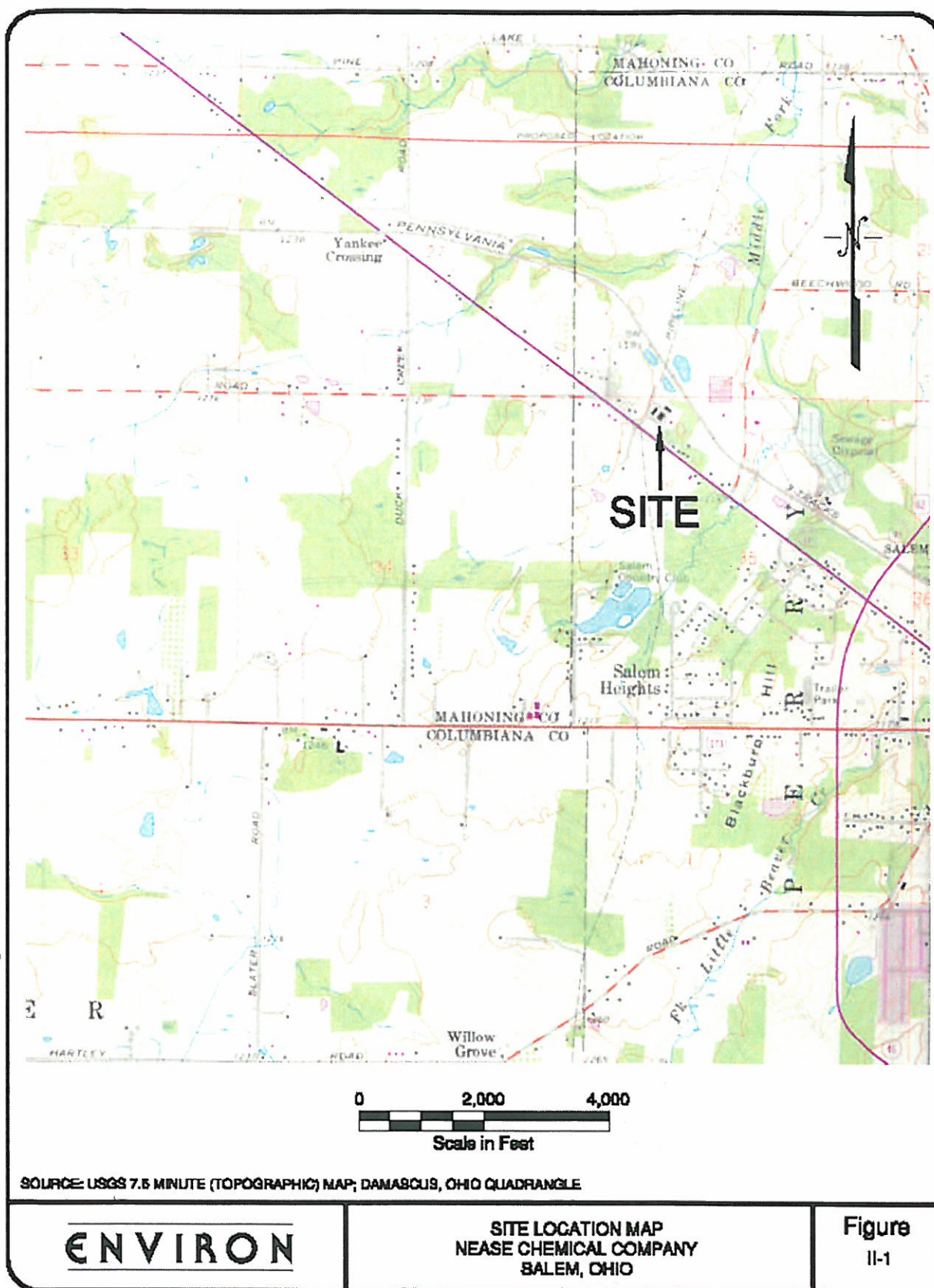
Tim Kern, Ohio AGO  
Ann Fischbein, Ohio EPA  
Brian Tucker, Ohio EPA  
Kurtis Herlocher, Ohio EPA  
Sheila Abraham, Ohio EPA

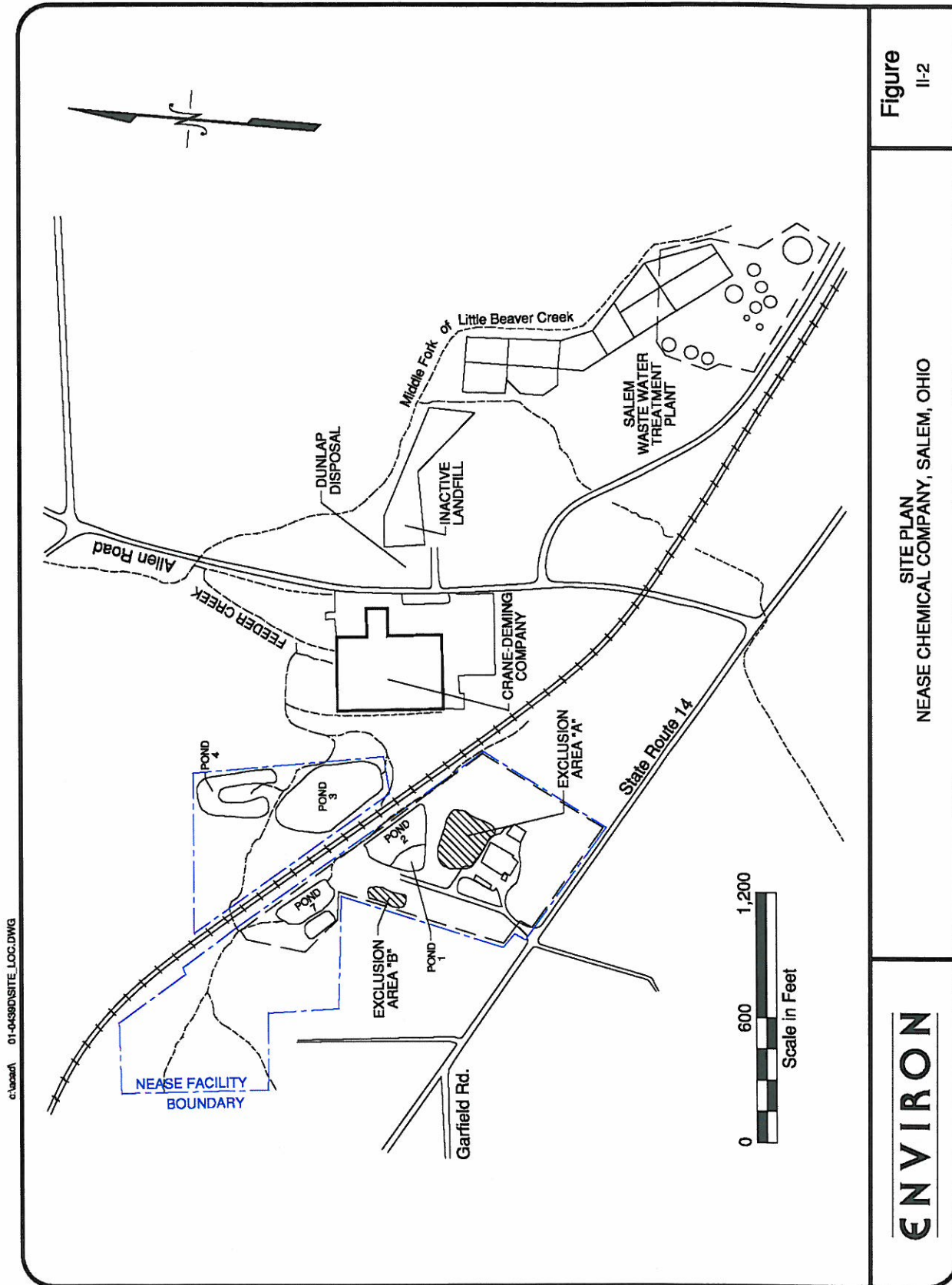
## Appendix A

2004 Endangerment Assessment  
for the  
Nease Chemical Site

Figures II-1 & II-2





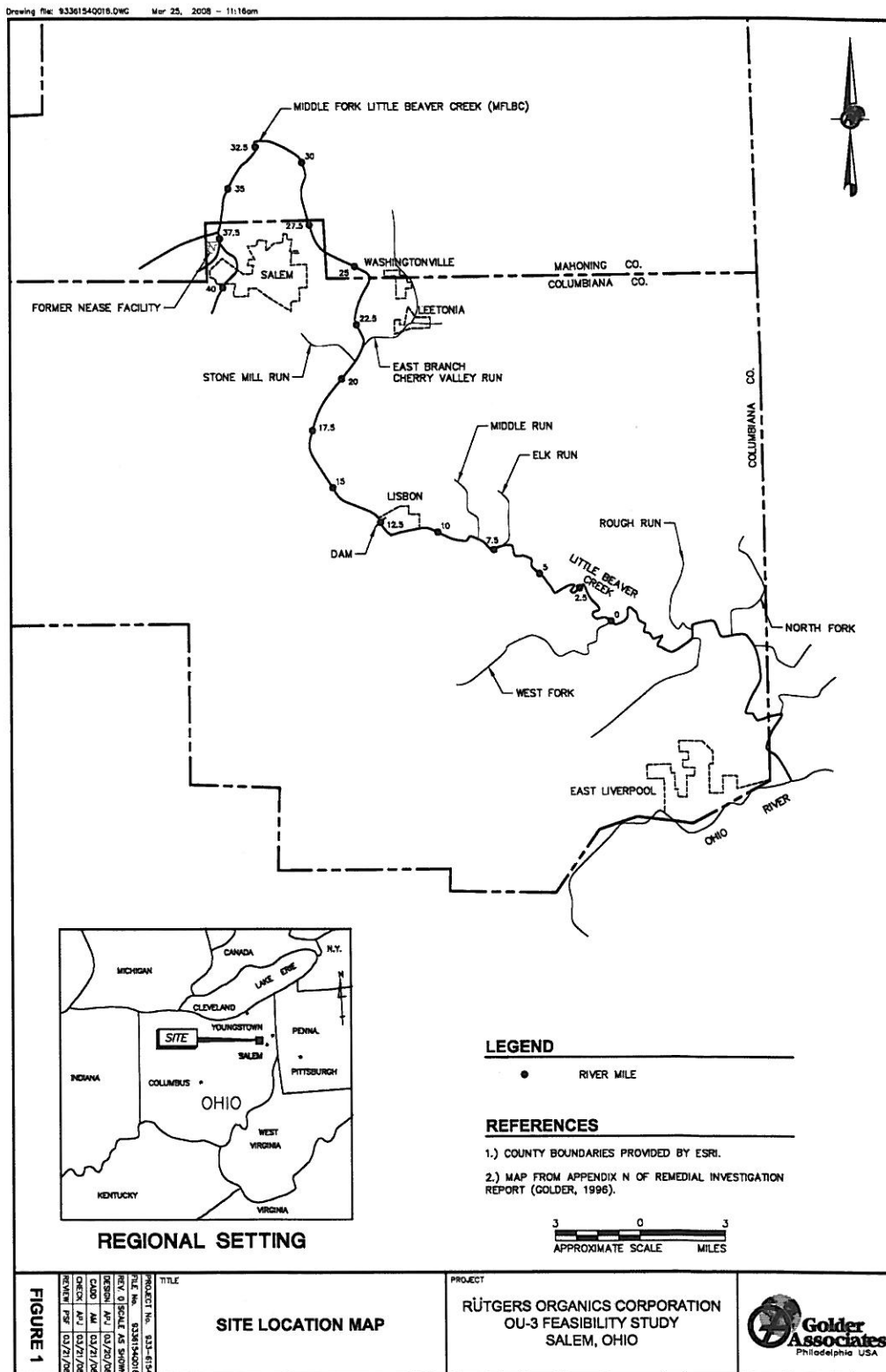


## Appendix B

Rütgers Organics Corporation

OU-3 Feasibility Study

Figure 1



## Appendix C

Rütgers Organics Corporation

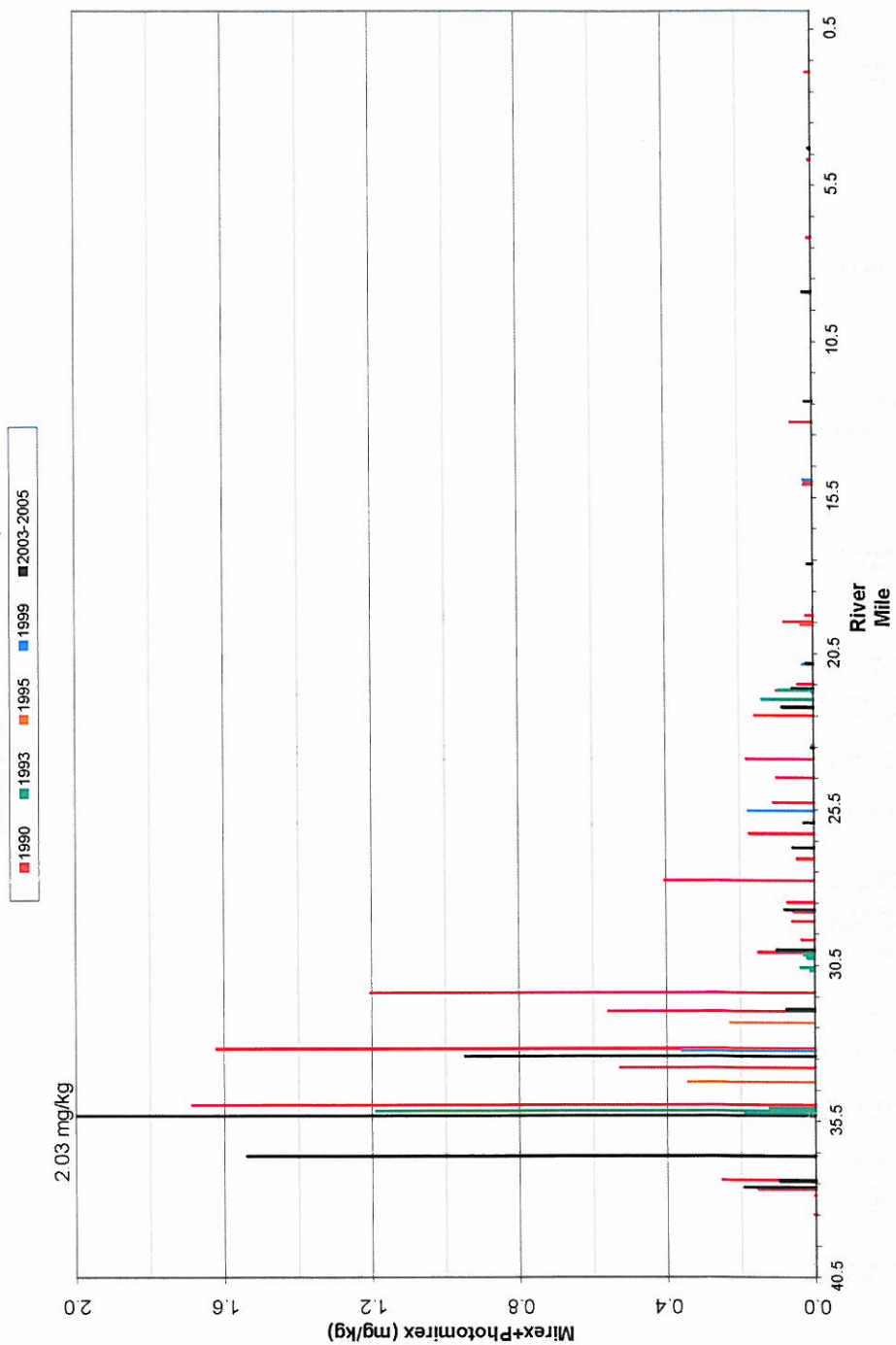
OU-3 Feasibility Study

Figures 20, 27-28, 30, 32



933-6154

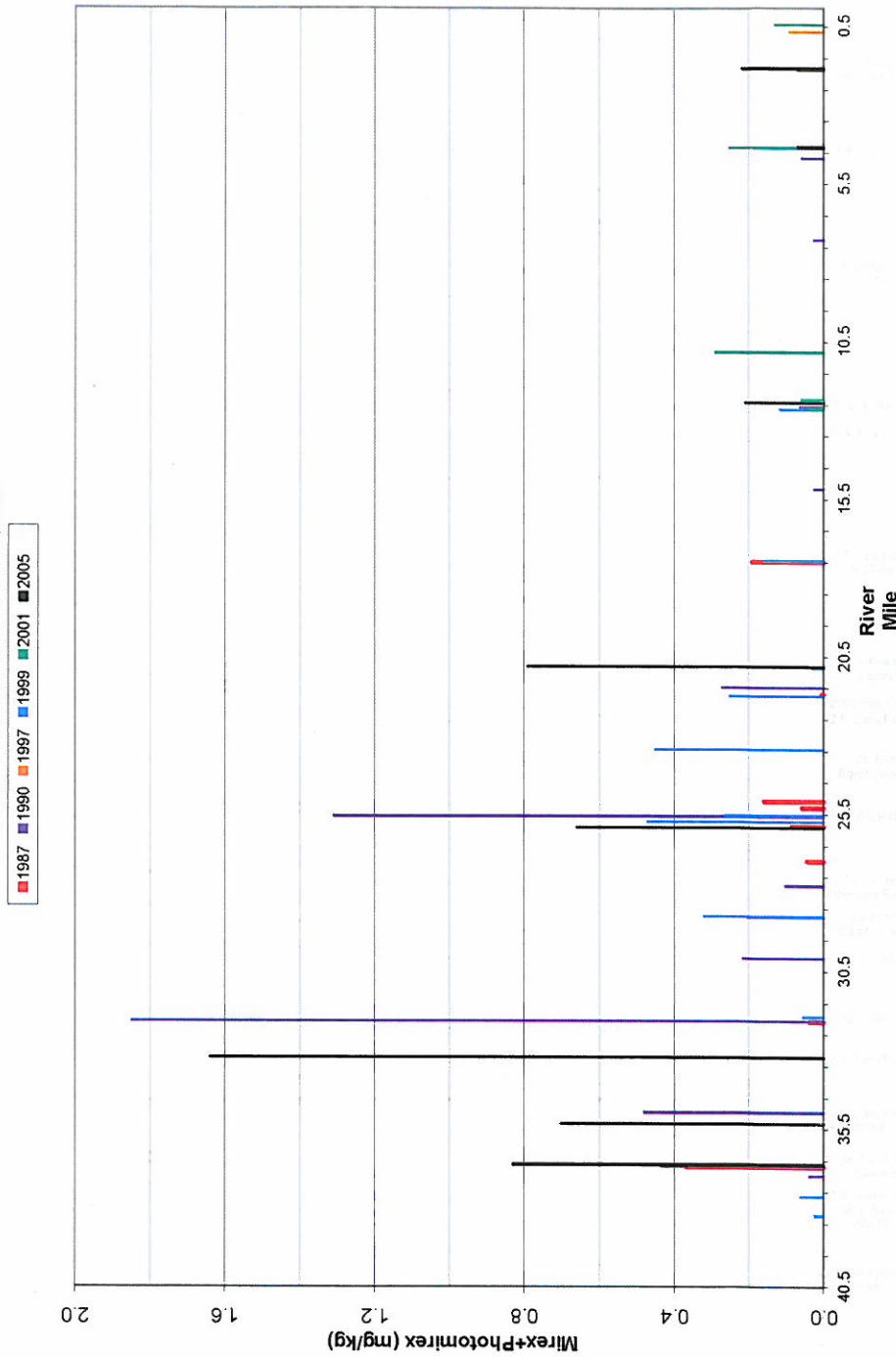
**Figure 20**  
**Sediment Mirex Results: All Sampling Events Combined**  
**Middle Fork Little Beaver Creek, Ohio**



June 2008

933-6154

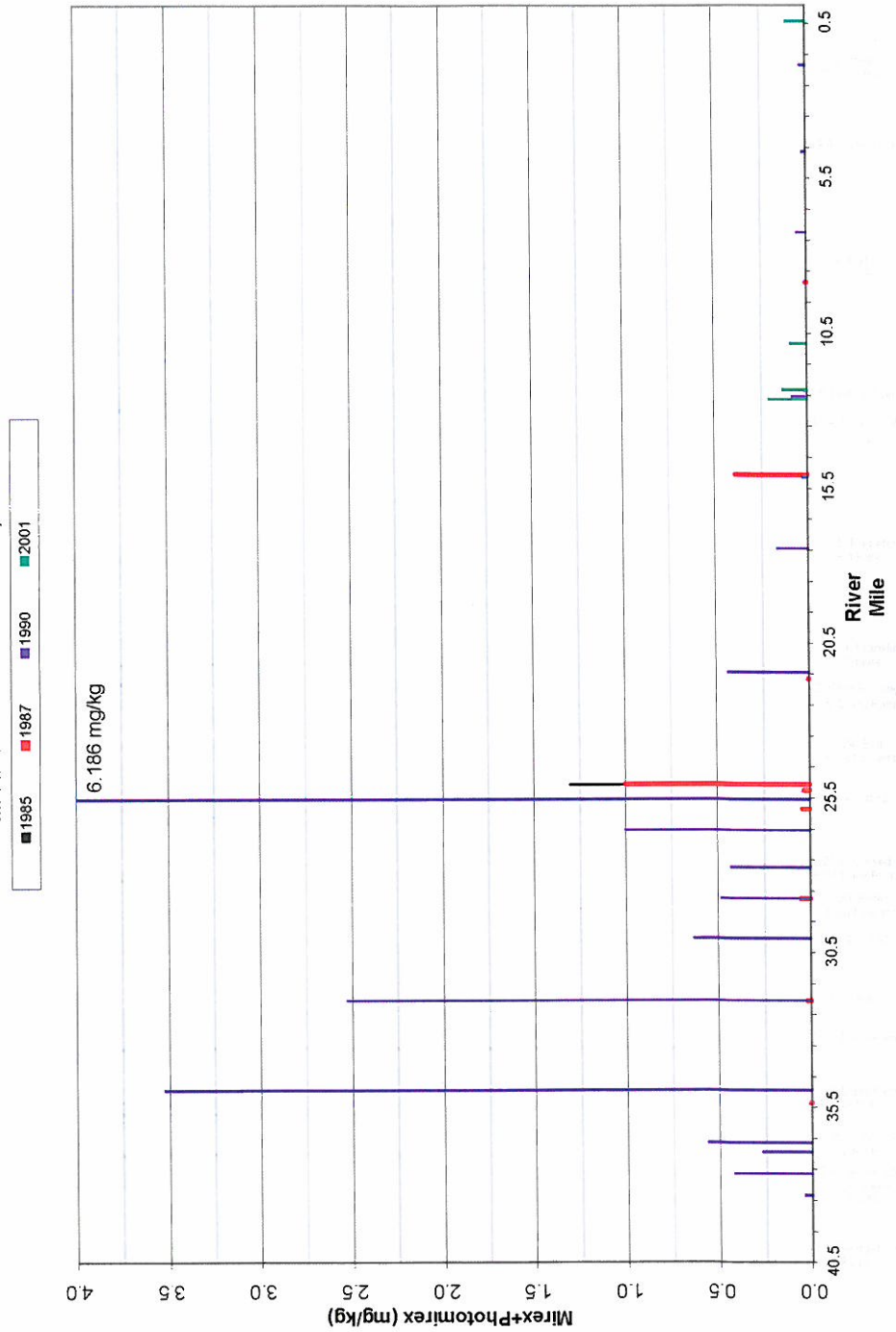
**Figure 27**  
**Fish Tissue Mirex Results – Fillet Samples from All Sampling Events**  
**Middle Fork Little Beaver Creek, Ohio**



June 2008

933-6154

**Figure 28**  
**Fish Tissue Mirex Results – Whole Body Samples from All Sampling Events**  
**Middle Fork Little Beaver Creek, Ohio**

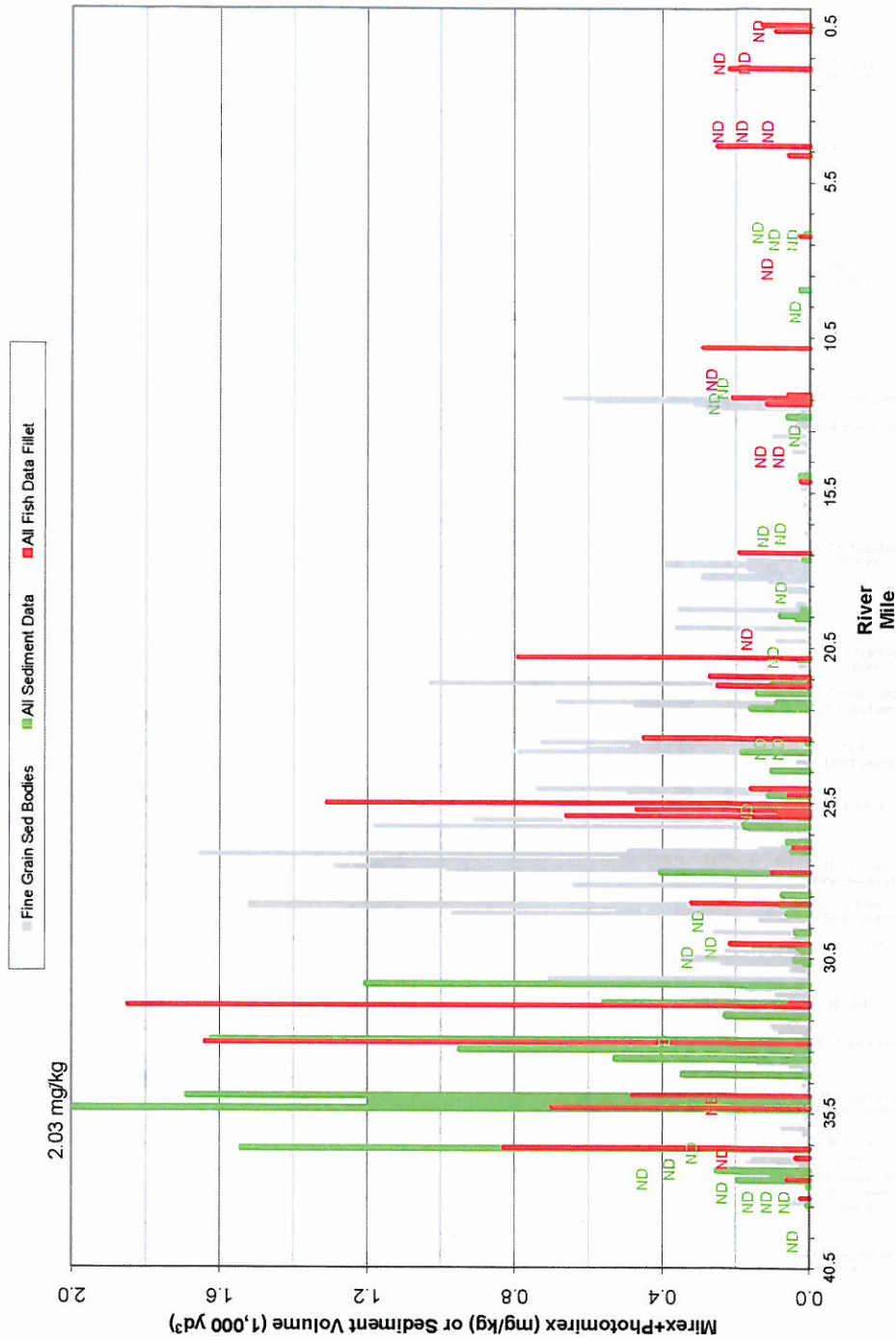


June 2008

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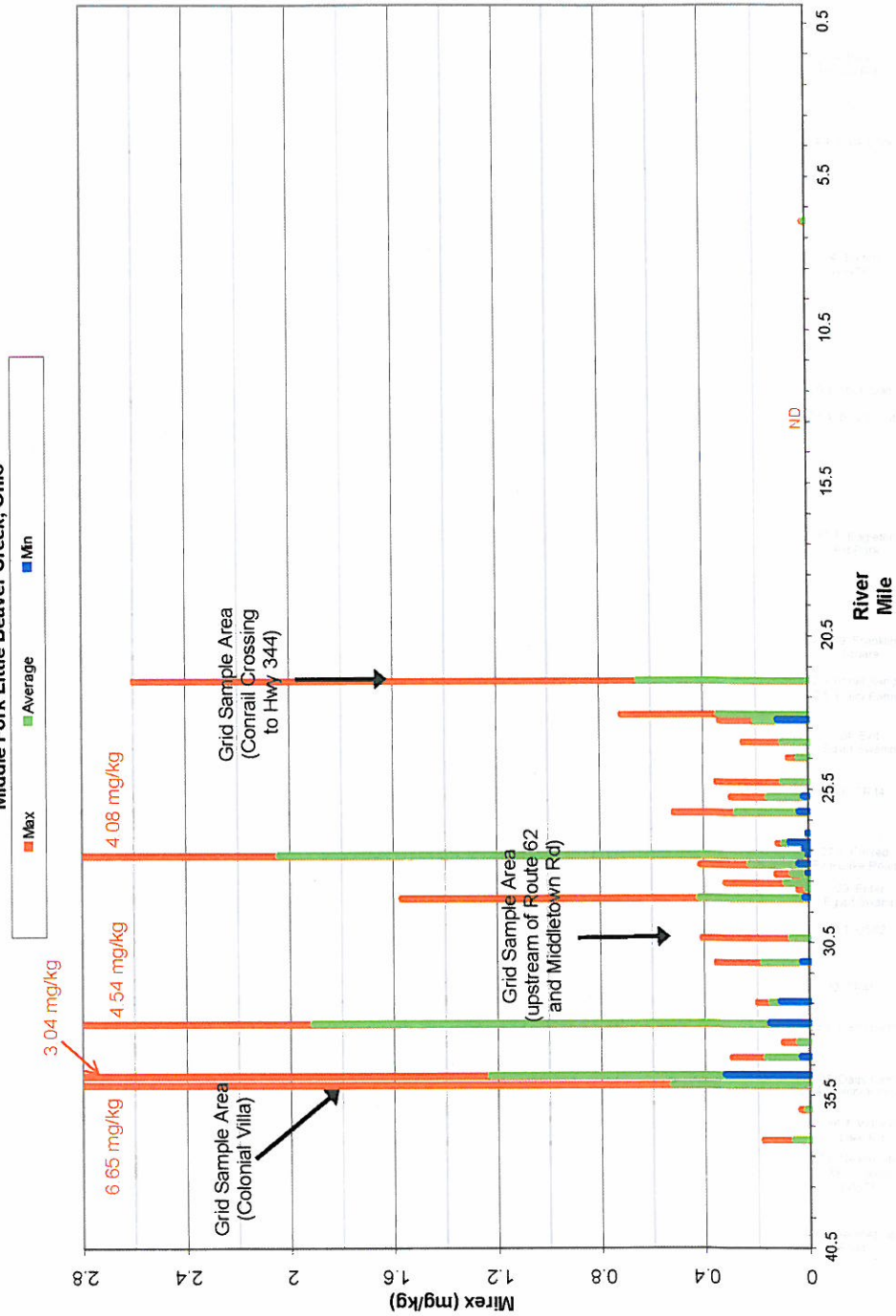
**Figure 30**  
**All Sediment and Fish Mirex Results with Fine Grain Sediment Body Volumes**  
**Middle Fork Little Beaver Creek, Ohio**

June 2008



933-6154

**Figure 32**  
**Floodplain Soil Mirex Results (1990-2005)**  
**Middle Fork Little Beaver Creek, Ohio**



June 2008



## Appendix D

Rütgers Organics Corporation

OU-2 Feasibility Study

Appendix K Figure

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