Explanation of Significant Differences

Moss-American Superfund Site
Milwaukee, Wisconsin

November 2007

Introduction to the Site and Statement of Purpose

This Explanation of Significant Differences (ESD) describes a change in the remedy to address sediment contamination at the Moss-American site in Milwaukee, Wisconsin. The proposed actions in this document are taken pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C. §§ 9604, 9607 and 9622, and the National Contingency Plan (NCP). CERCLA Section 117(c) and 40 CFR § 300.435(c) (2) (i) of the NCP authorize the publishing of an ESD when the differences in the remedial action to be taken significantly change but do not fundamentally alter the remedy selected in the remedial decision. More fundamental changes would require preparation of an amendment to the remedial decision. The United States Environmental Protection Agency (U.S. EPA) is the lead agency and the Wisconsin Department of Natural Resources (WDNR) is the support agency for CERCLA activities at the site.

One feature of the Moss-American site selected remedy is management of contaminated sediments through construction of a new channel for the Little Menomonee River (the "River"). Most site sediment contamination has been accomplished through new channel construction, however, it is and has been neither possible nor appropriate to create new channel at all locations following the flow of the Little Menomonee River. For certain limited stretches of the Little Menomonee River, sediment clean-up objectives have been and will be accomplished through dredging and off-site disposal of contaminated sediment, not through new channel construction.

These changes do not fundamentally alter the previously selected remedy for the site as discussed in the September 27, 1990 Record of Decision (ROD). Therefore, a ROD amendment is not required and the change can be effected via this ESD. This ESD will become part of the administrative record file for the site, as noted in the NCP at 40 CFR § 300.825(a) (2). The 1990 ROD was issued prior to policy enactment calling for listing of remedial action objectives within the ROD.

The site administrative record file and site repositories may be found at:

U.S.EPA
Region 5, 7th floor
77 W. Jackson Blvd.
Chicago, IL 60604
Office hours: 8 am to 4:30 pm

WDNR
Southeast District Office
2300 N. Martin Luther King Drive
Milwaukee, Wisconsin 53212
Office hours: 7:45 am to 4:30 pm

Milwaukee Mill Road Public Library
6431 North 76th Street
Milwaukee, Wisconsin 53223 (Repository)
(414) 286-3088

Library hours:
Monday – Thursday 10:30 a.m. to 8:30 p.m.
Friday and Saturday 10:00 a.m. to 5:00 p.m.
(Closed Sunday)

Site History, Contamination, and Selected Remedy

The Moss-American site is located in the northwestern section of the City of Milwaukee and includes eighty-eight acres of a former creosoting facility and several miles of the Little Menomonee River and its adjacent floodplain soils. (See Figures 1-4 for site location and depiction). The former creosote operation was conducted on land bounded roughly by the intersection of Brown Deer and Granville Roads on the west, and Brown Deer and Ninety First Street on the east. After creosote operations ceased, twenty three acres of site land were purchased by the Union Pacific Railroad, which, until very recently, used this land as an automobile/light truck loading and storage area. Recent business conditions curtailed most of the vehicle storage/transfer function. Site zoning and industrial usage of this portion of the site remain intact. Milwaukee County owns the remainder of the land comprising the former creosote facility.

The Little Menomonee River flows approximately 6.5 miles downstream of the former creosoting facility to its confluence with the Menomonee River. Land along the floodplain corridor is owned primarily by the City of Milwaukee, County of Milwaukee and, to a much lesser extent, private owners.

Site creosote operations were conducted from approximately 1921 to 1976. Past site aerial photos shows that land usage patterns changed considerably over time. Photos from the 1930s to the 1950s indicate that the creosote plant operated in a relatively sparsely populated setting; and several farms surrounded the manufacturing operation. From the 1960s to the present, residential and commercial use of nearby property increased considerably, and agricultural and farming operations almost completely phased out. Industrial parks and multi-lane highways traverse the site setting. County owned land along the river corridor includes hiking and bicycle trails, identifying this land as recreational. These features had a direct bearing on site soil cleanup standards, and influenced sediment remediation to try to combine natural resource recovery along with sediment cleanup goals.

In 1921, the T. J. Moss Tie Company established a wood preserving facility on the site property. The plant preserved railroad ties, poles, and fence posts with creosote, a mixture of numerous

chemical compounds, derived from coal tar. While No. 6 fuel oil was also used, no evidence of pentachlorophenol use was found at the Moss-American site. Creosote plant operations often contain storage facilities for creosote and fuels; a boiler for making steam, heating the creosote and applying the creosote to the wood; areas for unloading and storing incoming timbers; rail cars for transporting the creosote; and a drying area for subsequent storage. Potential for release of materials exists throughout the storage, application, and drying processes. Prior to the enactment of CERCLA, U.S. EPA used Clean Water Act (CWA) funds to dredge a portion of the Little Menomonee River between Brown Deer and Bradley Roads in 1973, since it was evident that there was stream contamination due to site releases. Dredging spoils were placed east of the Little Menomonee River, and were subsequently addressed during the CERCLA remedial action.

Kerr-McGee purchased the facility in 1963 and changed the facility's name to Moss-American. The name was changed again in 1974 to Kerr-McGee Chemical Corporation - Forest Products Division. In 1998, the name of this company changed to Kerr-McGee Chemical LLC (KMC). Kerr-McGee Chemical LLC later split apart fossil fuel and inorganic mineral/chemical interests into separate firms. Tronox LLC is the successor to the former owner/operator which entered into the Consent Decree for the Remedial Design/Remedial Action (RD/RA) at the Site.

From 1921 to 1971, the facility discharged wastes to settling ponds that ultimately discharged to the Little Menomonee River. These discharges ceased when the plant diverted its process water discharge to the Milwaukee sanitary sewerage system. Production at the facility ceased in 1976.

In 1983, the facility was proposed for inclusion on the National Priorities List (NPL) pursuant to Section 105 of CERCLA. In 1985, U.S. EPA initiated a negotiation period with potentially responsible parties (PRPs) associated with the site to determine if they would conduct the Remedial Investigation/Feasibility Study (RI/FS). When those discussions did not result in a settlement, U.S. EPA conducted the RI/FS.

RI findings indicated that most of the site soil contamination was associated with former creosote processing areas. Poly-aromatic hydrocarbon (PAH) soil contamination was as high as 32,000 mg/kg. Benzene - toluene - ethyl benzene - xylene compounds (sometimes denoted as "BTEX" substances), also were detected in soils, ranging from 0.02 mg/kg to 17 mg/kg. Most soil contamination was within the upper 10 feet of soil.

The RI identified free product liquids associated with site groundwater. Contaminants, consisting chiefly of PAHs and BTEX compounds, were found principally in shallow monitoring wells. Little or no groundwater contamination was detected deeper than 20 feet below ground surface. The main plume of groundwater contamination was in the central portion of the former processing area, in a band approximately 600 feet across. Shallow groundwater at the site was believed to be discharging into the Little Menomonee River.

Sediment samples from the Little Menomonee River were collected and analyzed at intervals running from near Brown Deer Road to the confluence of the Little Menomonee River with the

Menomonee River, located some 6.5 miles downstream from the former creosote processing facility. While there was considerable variation in sample results, at least 12 sediment samples exceeded 100 mg/kg or greater of carcinogenic PAH (CPAH) compounds.

The FS was completed in May 1990. Pursuant to Section 117 of CERCLA, U.S. EPA published a notice of completion of the FS and released to the public a proposed plan for remedial action. After evaluation of public comment, U.S. EPA selected a remedy for the site documented in the Record of Decision (ROD) signed on September 27, 1990. The remedy addressed contaminated site soils, Little Menomonee River sediments, and site groundwater. Remedy components include:

- Excavation of highly contaminated site soils and treatment using thermal desorption.

- On-site disposal of treated and lower contaminated soils under an appropriate cover. Revegetation of the excavated areas.

- Removal and off-site disposal of highly contaminated sediments from the Little Menomonee River. Construction of a new channel in the vicinity of the Little Menomonee River and redirection of river flow into the new channel. Fill the dewatered existing channel with soils from the new channel excavation.

-Collection and biological treatment of the contaminated site groundwater.

U.S. EPA also developed a 1997 Explanation of Significant Differences, and a 1998 ROD Amendment. These two documents primarily discuss groundwater and soil management, and do not address contaminated sediments management.

Institutional Controls (IC) are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land or resource use. ICs have been adopted at the Moss American Site regarding soils management. Soils were cleaned up to industrial standards on the facility property, and ICs are in place to prevent non-industrial use of the property. The River sediment cleanup level was derived considering background CPAH concentrations and current and anticipated future recreational use of the River. The land around the River is currently owned by the local Milwaukee County, which plans to maintain recreational use of this property. As part of the Five Year (Remedy) Review process, U.S. EPA, WDNR, and Tronox are reviewing whether the institutional controls at the site are adequate, recorded where needed, and enforceable. They will consider whether ICs are needed on the former river channel.

In 1994, extractable quantities of free product liquid creosote were discovered several feet below the ground's surface in an approximately one acre location about 500 feet south of Brown Deer Road. The first remedial action taken, from 1995-1998, was to install extraction wells and storage tanks to collect about 1000 gallons of relatively concentrated liquids. Groundwater and

soils were then treated from 1999-2001. With these steps accomplished, it was then possible to address site sediments beginning in 2002, and to proceed with confidence that there would be minimal likelihood of recontaminating stream sediments from other site sources.

Basis for the Document

Little Menomonee River cleanup activities have been conducted in phases. The River was divided into five segments, increasing from the former T.J. Moss Tie Company facility. To date, the three segments and part of the fourth segment of the River closest to the former Moss American site have been cleaned up. Some portions of the remediated River have not been rerouted into a new channel in order to achieve site cleanup goals. Areas of the River underneath bridges, near some roads, near railroad bridges, and near valuable wetland habitat were not rerouted. In those areas, River remediation was limited to dredging and off-site disposal of contaminated sediments that exceeded the site cleanup level. Rerouting the River in those locations would have required excessive cost to replace or rebuild existing road and bridge infrastructure, and/or would have destroyed valuable environmental habitat. The Administrative Record file maintained for the Moss-American site makes clear that as early as preparation of the 1991 Remedial Design/Remedial Action Statement of Work, the agencies and the Settling Defendant recognized that it was neither possible nor desirable to reroute the Little Menomonee River throughout its entire length, given the presence of existing road and railroad bridges over the stream.

The sediment cleanup goal established for the Little Menomonee River is 15 mg/kg of carcinogenic PAH (CPAH) content. This site-specific value was developed by WDNR and was considered and accepted by all remedial action decree signatory parties. The cleanup value was derived by considering site CPAH background, the likelihood that CPAH sediment content may be affected by other emission factors as the stream flows through an urbanized area, and the relationship of sediment cleanup goals with the stream's floodplain. It is important that soil runoff events and stream flood events do not lead to cross-contamination of either floodplain soils or stream sediments.

Specific areas of the River not rerouted include:

- near a railroad bridge next to Bradley Road in the last hundred yards of Segment 1;
- around bridges over the stream at Good Hope Road and Fond du Lac Roads in Segments 2 and 3;
- near some high value wetlands in Segments 2 and 3; and
- approximately 1000' of sharp river bends in the vicinity of Mill Road at the beginning of Segment 4.

The remaining fourth and fifth segments of the River have not yet been cleaned up. In the remaining fourth segment of the River, CPAH sediment contamination is intermittent and significantly less than the River contamination closer to the former facility. Consequently,

complete rerouting of the River in the fourth segment would not be necessary or efficient to achieve the site cleanup goals. Instead, intermittent dredging of hot spot areas of contaminated sediments (above the CPAH cleanup goal) and off-site disposal of the contaminated sediments is planned for the fourth segment of the River. In the fifth segment of the River, only one sampling point approximately 300 feet south of the Silver Spring Road bridge revealed CPAH contamination in excess of the site CPAH cleanup goal of 15 mg/kg. Therefore no rerouting of Segment 5 is necessary or will be conducted.

Parts of the Administrative Records that support not re-routing portions of the Little Menomonee River include:

- Figure 7, from the 1990 ROD, which depicts "Permanent River Relocation". Routes for "Existing River Alignment" and "Proposed River Alignment" are depicted. In the vicinity of road and railroad bridges, only the existing alignment is depicted, thus not re-routing these portions of the River were anticipated in the decision document itself.

- Page 15 of the Responsiveness Summary to the 1990 ROD. In response to a comment expressing concern about wetlands impacts, U.S. EPA responded that "The preliminary analysis suggests that routing the river through areas of high quality wetlands might be avoided..."

- During development of the remedial design/remedial action Statement of Work (SOW) for the River remediation, it was recognized that total re-channeling of the Little Menomonee River would not be practical. Either existing bridges must be utilized, and existing river segments in the vicinity of road and railroad bridges maintained – or new bridges at new channel crossings would have to be built adding great additional costs to the work. Item 7g. of the SOW notes, "In portions of the channel of the Little Menomonee River which are not rechanelled (e.g., under bridges), Settling Defendant shall remove sediment containing total CPAH concentrations in excess of SQC (sediment quality criteria) or sediment background, whichever is greater." (See Figures 5-6 for examples of constraints imposed by road bridges where rerouting was not practicable).

Sampling data from Segments 4 and 5 of the River demonstrate the lack of CPAH contamination in most of Segment 5 and the intermittent and relatively low CPAH contamination in Segment 4. Most recent sampling data was derived from samples collected in December 2006, with results reported to U.S. EPA and WDNR by Tronox LLC in February 5, 2007 and May 23, 2007 correspondences.

Description of Significant Differences

The significant difference between the remedy as presented in the ROD and the action now proposed is that portions of the Little Menomonee River will not be re-routed as part of the River remediation. Portions of the River that will now not be re-routed include about 16,000 linear feet

of the approximately 6.5 miles of the River that runs from adjacent to the former production facility to the confluence with the Menomonee River. Protective measures for those areas not re-routed include: (1) no action for those areas of the River that already meet the River sediment cleanup goal (about 10,000 feet) and (2) dredging and off-site disposal of sediments that exceed the River cleanup goal (about 6,000 feet). This change will provide equivalent or better environmental protection (in the cases of preserving valuable wetland habitat) and will cost less to implement than the original remedy. This change will also allow the project to avoid time-consuming efforts, and allow the project to achieve cleanup objectives sooner than if the original remedy was implemented.

Support Agency Comments

The Wisconsin Department of Natural Resources supports this significant change at the Moss American Superfund site. WDNR indicated approval of the ESD content and direction in a November 5, 2007 letter to U.S. EPA.

Statutory Determinations

The revised remedy complies with the public participation portions of both the NCP at 40 CFR Section 300.435(c)(2)(i) and the statutory requirements of CERCLA Section 117(c), and satisfies the requirements of Section 121 of CERCLA, which are to protect human health and the environment; comply with ARARs; be cost effective; utilize permanent solutions and alternate treatment technologies to the maximum extent practicable; and satisfy the preference for treatment as a principal element of the remedy.

Public Participation Compliance

U.S. EPA, working in coordination with WDNR, shall issue an explanation of significant differences to Moss-American site remedial work, and shall make this explanation and supporting information available to the public via the administrative record and the information repositories (noted elsewhere in this document). In coordination with WDNR, U.S. EPA will ensure that a notice that briefly summarizes the explanation of significant differences, and provides basic reason for such differences, is published in a newspaper of local circulation. By so doing, U.S. EPA will meet the public participation requirements of NCP Section 300.435(c)(2)(i).

U.S. EPA has allocated funds for placing an enhanced display advertisement in a Milwaukee newspaper of general circulation following signature of this document. In coordination with WDNR, U.S. EPA will observe community reaction to the notice placed in the newspaper. If numerous questions or significant reaction from the public are forthcoming, U.S. EPA is prepared to open an official comment period, if necessary.

Approved by: Date:

for RK 11/28/07

Richard C. Karl, Director
Superfund Division

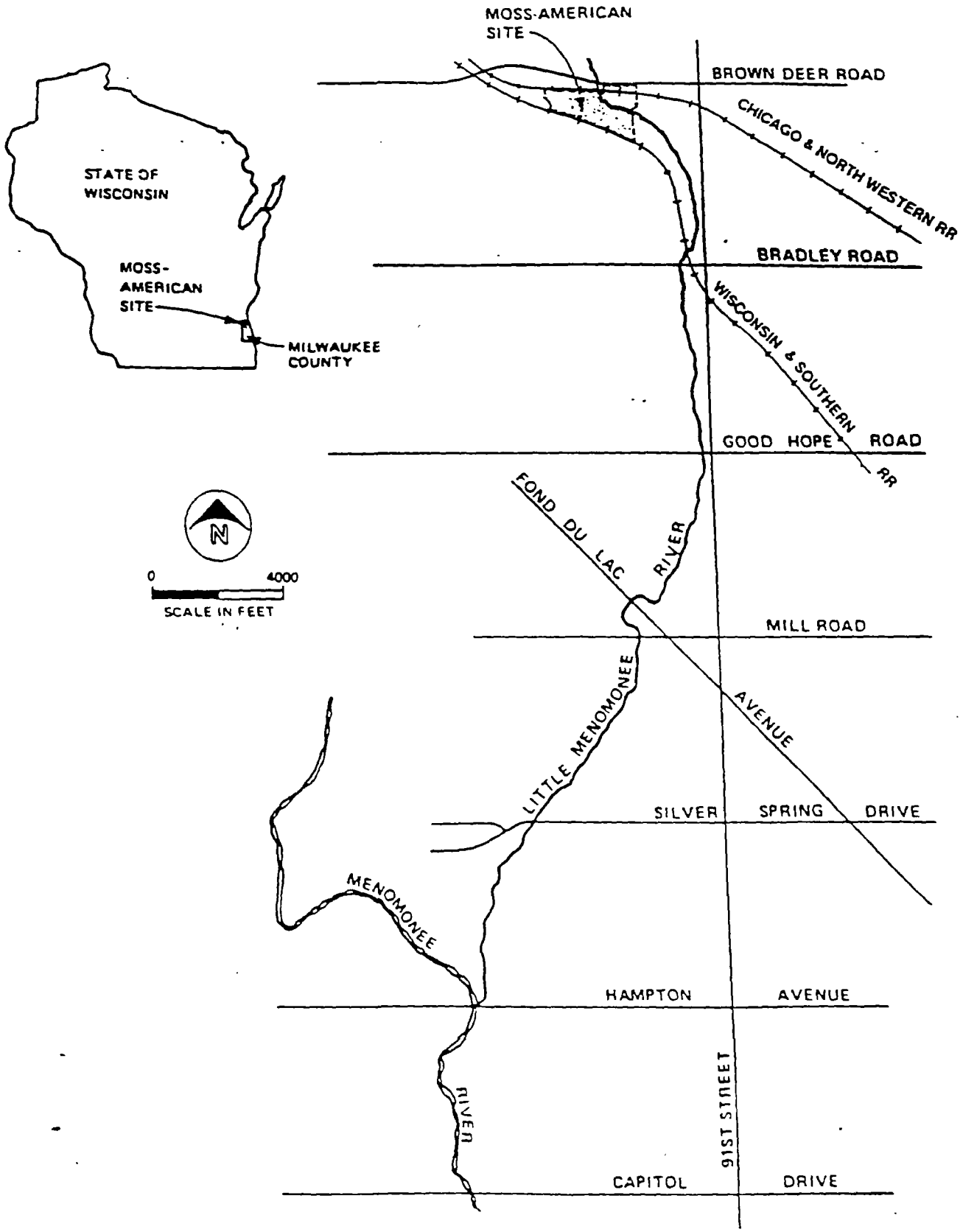


FIGURE 1
LOCATION MAP
MOSS-AMERICAN FS

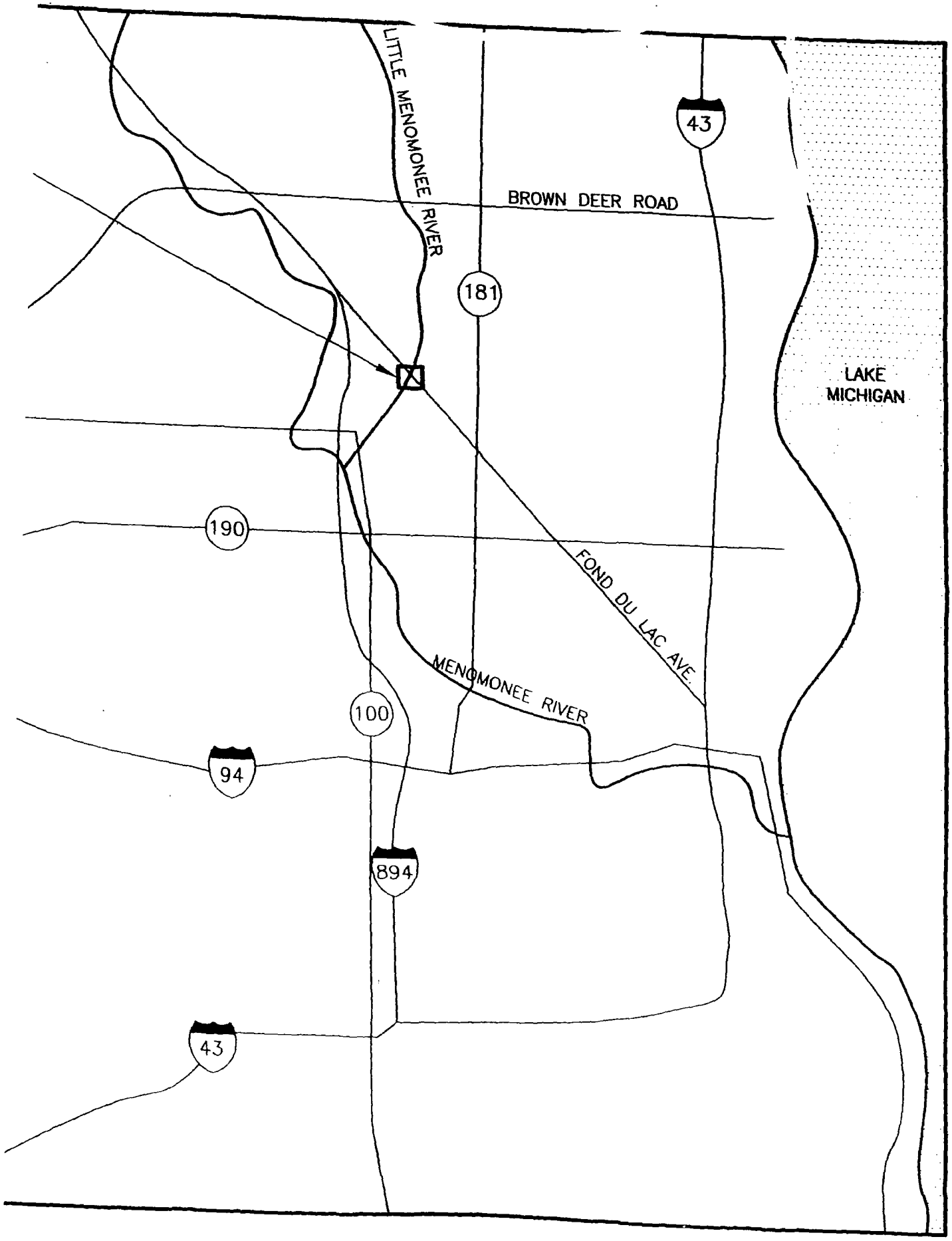
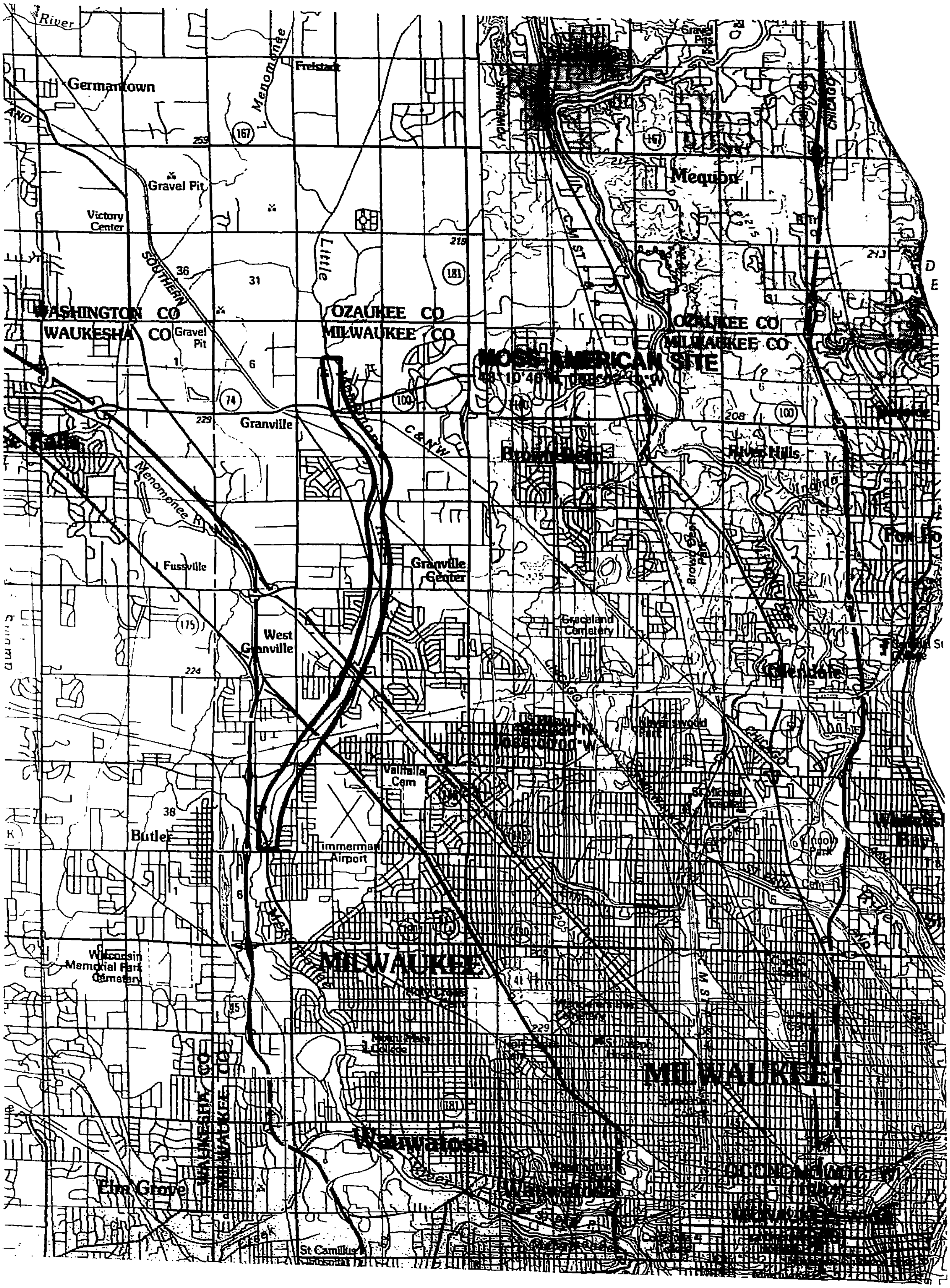

LITTLE MENOMONEE RIVER
43
BROWN DEER ROAD
181
LAKE
MICHIGAN
190
FOND DU LAC AVE.
MENOMONEE RIVER
100
94
894
43

FIGURE 2



Germantown
Freistadt
Gravel Pit
Victory Center
WASHINGTON CO
WAUKESHA CO
OZAUKEE CO
MILWAUKEE CO
MOSS-AMERICAN SITE
Mequon
Granville
Menomonee R
Fussville
Granville Center
West Granville
Graceland Cemetery
River Hills
Brown Deer Park
Valhalla Cem
Butler
Timmerman Airport
Wisconsin Memorial Park Cemetery
MILWAUKEE
Wauwatosa
Elm Grove
WAUKESHA CO
MILWAUKEE CO
St Camillus

FIGURE 3

FIGURE 4

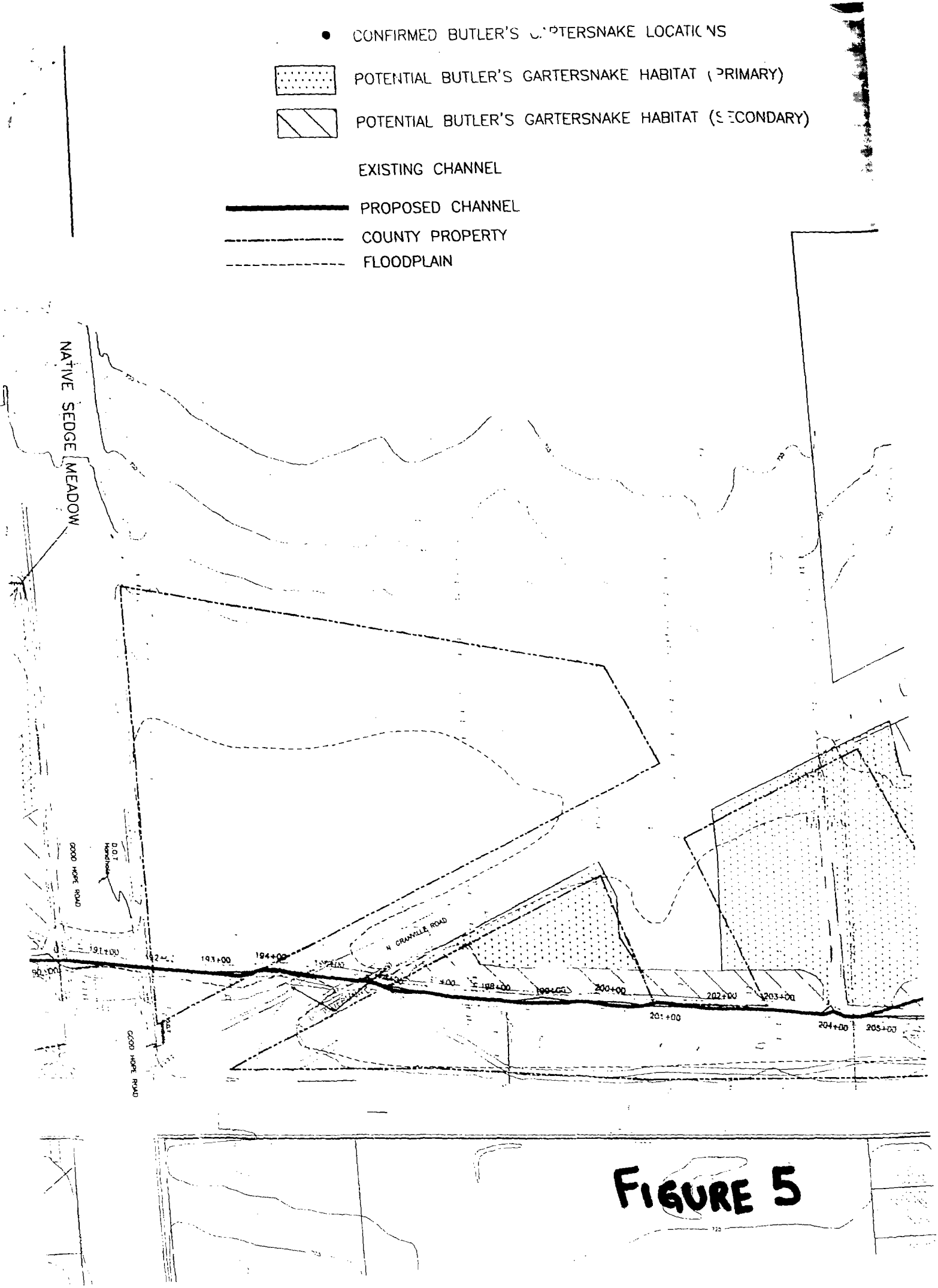

CONFIRMED BUTLER'S GARTERSNAKE LOCATIONS
POTENTIAL BUTLER'S GARTERSNAKE HABITAT (PRIMARY)
POTENTIAL BUTLER'S GARTERSNAKE HABITAT (SECONDARY)
EXISTING CHANNEL
PROPOSED CHANNEL
COUNTY PROPERTY
FLOODPLAIN
NATIVE SEDGE MEADOW
GOOD HOPE ROAD
D.O.T. Handhole
N GRANVILLE ROAD
191+00
192+00
193+00
194+00
198+00
199+00
200+00
201+00
202+00
203+00
204+00
205+00

FIGURE 5

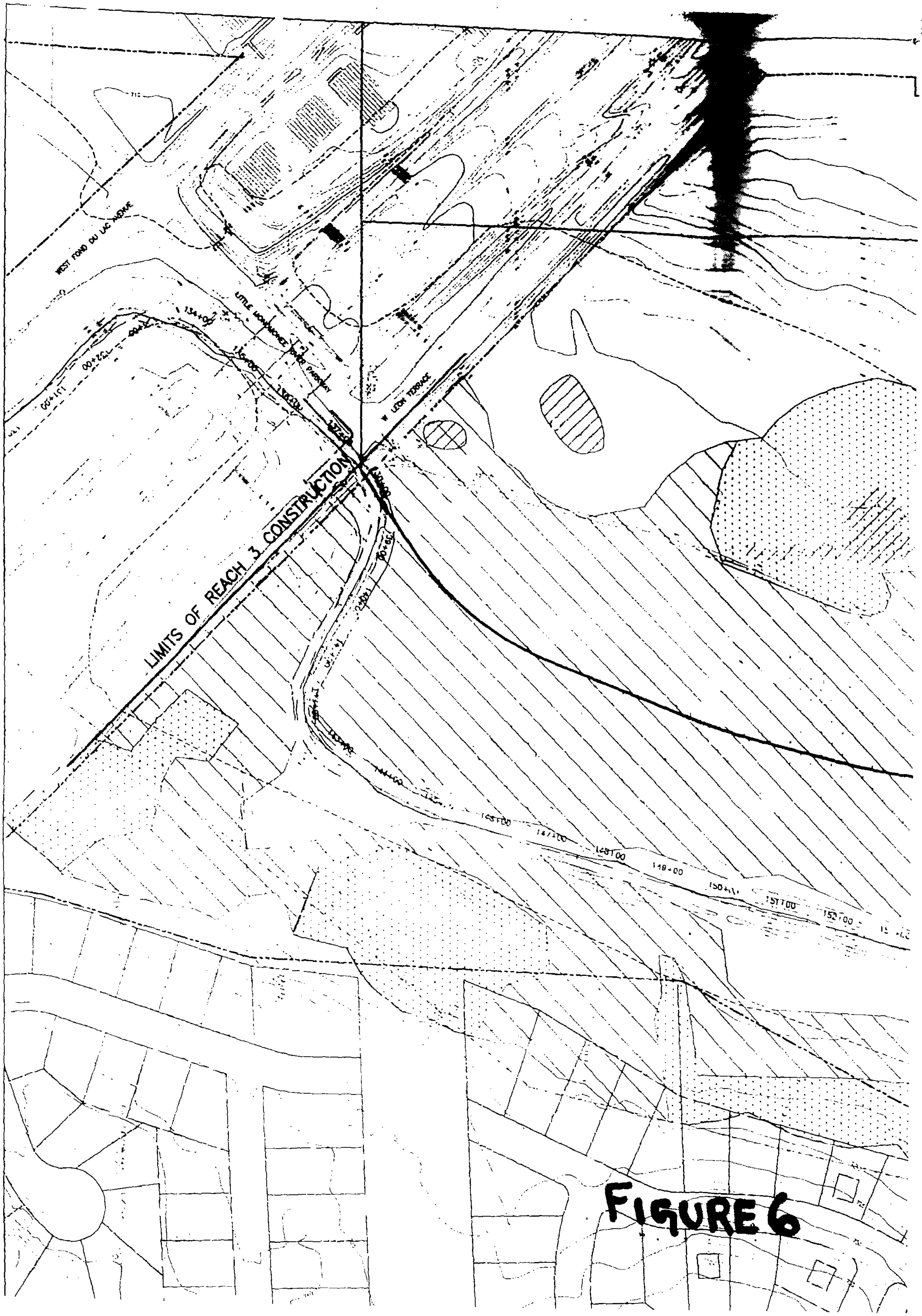

LIMITS OF REACH 3 CONSTRUCTION
WEST FOND DU LAC AVENUE
W LEON TERRACE
134+00
147+00
148+00
149+00
152+00

FIGURE 6

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Plymouth Service Center
1155 Pilgrim Rd.
Plymouth, Wisconsin 53073-4294
Telephone 920-892-8756
FAX 920-892-6638
TTY Access via relay - 711

November 5, 2007

Ms. Wendy Carney
USEPA REGION 5
77 West Jackson Boulevard
Mail Code: SR-6J
Chicago, IL 60604-3507

Subject: Concurrence with the Explanation of Significant Differences for the Moss-American Superfund Site

Dear Ms. Carney:

I am sending you this letter to document that the Wisconsin Department of Natural Resources has reviewed the Explanation of Significant Differences (ESD) for the Moss-American Superfund Site in Milwaukee, Wisconsin. We have concluded that we can concur with the approach selected by the U.S. Environmental Protection Agency. Specifically that approach is to not reroute the Little Menomonee River in areas adjacent to highway and railroad bridges. It is understood that these areas will be remediated through sediment dredging and off-site disposal.

The areas of the Little Menomonee River not rerouted include:

1. The railroad bridge near Bradley Road.
2. Highway bridges at Good Hope Road, Fond du Lac Avenue, West Leon Terrace, State Highway 145 and West Mill Road.
3. High value wetlands in Segments 2 and 3.
4. Segments 4 and 5.

We are hopeful that your staff will continue to work in close consultation with our staff during the implementation of the Record of Decision. We appreciate your efforts thus far and look foreword to working with you and your staff until the site is remediated. If you have any questions regarding this letter please contact Jim Schmidt at 414-263-8561.

Sincerely,

Mark F. Giesfeldt, P.E., Director
Remediation and Redevelopment Bureau