Pollution Risk Services

Foth & Van Dyke

Sheboygan River and Harbor Superfund Site
Phase II

Floodplain Pre-Design Investigation Results

April 2005

Prepared for
United States Environmental Protection Agency
Region 5
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Floodplain Pre-Design Investigation Results
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FLOODPLAIN PRE-DESIGN INVESTIGATION RESULTS

1.0 OVERVIEW

Floodplain pre-design investigation activities associated with Phase II of the Sheboygan River and Harbor Superfund site were performed in the fall of 2004 to determine the degree and extent of PCB impact in floodplain soils. This pre-design investigation included the sampling and analysis of PCBs in soils as well as a critical habitat evaluation to identify existing high quality ecological habitat. This report presents the results of floodplain investigation activities. The critical habitat evaluation results are provided in Section 2.0 while the PCB results are summarized in Section 3.0. Copies of the analytical reports are provided in *Floodplains Chemical Data Reports*, PRS, 2005.

Sampling associated with this investigation was performed in general accordance with the approved Field Sampling Plan (2004). Laboratory testing associated with this investigation was performed in general accordance with the approved Quality Assurance Project Plan (2004). Additional samples not specifically listed in the Field Sample Plan were collected and analyzed for PCBs to aid in the assessment.

Please note, sample duplicates were averaged to obtain a composite result. This composite result is provided in the tables in Section 3.0. For samples with no detectable levels of PCBs, the results are reported at one-half of the detection limit and these were used in the statistical evaluation.

URS **Memorandum**

To:	Jeff Danko and Weldon Bosworth URS Corporation	From:	Ben LePage Katie Eberhart
		Office:	Fort Washington, PA
cc:	Ceil Mancini		
		Date:	September 30, 2004

Subject: Field Report for the Critical Habitat Reconnaissance, Sheboygan River, Village of Kohler, Wisconsin
URS Project No. 41683412.0601

This memorandum presents the findings of the critical habitat reconnaissance conducted by URS Corporation (URS) of six floodplain areas on the Sheboygan River, near the Village of Kohler, Wisconsin. URS ecologists B. LePage and K. Eberhart conducted the field reconnaissance between August 30 and September 2, 2004. Work was completed in accordance with the technical proposal (Plan) of June 25, 2004. The scope of the investigation included:

1) A request to the Wisconsin Department of Natural Resources (WDNR) to conduct a search of their Natural Heritage Inventory (NHI) database for state-listed threatened and endangered plant and animal species and critical habitats, in the vicinity of the project area; and

2) A site reconnaissance to document and characterize the existing ecological conditions, cover types and potential for critical habitats within the project area.

The six floodplain areas (FPR-3, FPL-4, FPR-5, FPR-6, FPR-7 and FPL-8 [FPR = Floodplain right side of bank looking downstream; FPL = Floodplain left side of bank looking downstream]; Figure 1), which are the focus of this investigation were identified following a Remedial Investigation (RI) and an Alternative Specific Remedial Investigation (ASRI 1995; ROD 2000). The results of these investigations concluded that the floodplain soils in these areas contained elevated soil PCB concentrations and are therefore subject to remedial actions. Since these remedial actions have the potential to disturb the floodplain habitat, a critical habitat survey of these floodplain areas was requested prior to the initiation of remedial activities to ensure protection for threatened and endangered species that may occur in the project areas.

A description of the study site, methodology, results of the WDNR request and field survey and conclusions to support the findings are summarized below.

STUDY SITE

The six floodplain areas are located along an approximately 2-mile length of the Sheboygan River (Figure 1). The westernmost floodplain habitat is located just downstream of the confluence of the Sheboygan and Onion Rivers and the easternmost area is located approximately 1/3 mile downstream of the Riverbend Dam. This stretch of the Sheboygan River extends from the Town of Sheboygan Falls to the Village of Kohler. Agricultural, urban, residential, recreational and industrial land use is present both upstream and downstream of the study areas. Aerial photographs of the region (wetlandsfws.er.usgs.gov/wtlnds/viewer.htm) indicate that a matrix of riparian broad-leaved deciduous

forest habitat interspersed with patches of scrub-shrub and grassy meadow habitats occurs along most of the length of the Sheboygan River between the Town of Sheboygan Falls and the City of Sheboygan. A summary of the habitats associated with each floodplain area and size is provided in Table 1. The locations of these areas relative to one another and dominant vegetation cover types encountered in each area are illustrated in Figure 2.

METHODS

URS was asked to identify the presence of critical habitat in the study area and a clear definition of "critical habitat" was deemed to be important for this study. URS followed the definition of critical habitat that is provided in the Endangered Species Act [(US Code, Title 16, Chapter 35, Section 1532 (5)(A)-(C)], because the Wisconsin Endangered Species Act (Chapter 29, Section 29.604 (April, 1996)] does not include a definition for this term.

The Endangered Species Act (ESA) defines critical habitat as *"(5)(A) The term "critical habitat" for a threatened and endangered species means (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management consideration or protection; and (ii) specific areas outside of the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species. (B) Critical habitat may be established for those species now listed as threatened or endangered for which no critical habitat has heretofore been established as set forth in subparagraph (A) of this paragraph. (C) Except in those circumstances determined by the Secretary, critical habitat shall not include the entire geographical area, which can be occupied by the threatened and endangered species."* (http://endangered.fws.gov/esa.html#Lnk03).

Given that the identification of critical habitat is based on the presence of threatened and endangered species and/or habitat essential to the conservation of those species, URS requested a search of the WDNR NHI database and the United States Fish and Wildlife Service (US FWS) (Green Bay Office) records for a listing of the threatened and endangered plant and animal species that have been reported within and in the vicinity of the study areas. The results of the WDNR NHI database search and US FWS request are provided in Appendix A.

A summary of the threatened and endangered resources that were identified within or near the study site, their status, preferred habitat and whether potential habitat is present in the study area is presented in Tables 2 and 3. The results of the US FWS search indicated that there were no listed species present in the study areas. Based on the NHI database results and habitat preferences of the species identified by WDNR, a list of the threatened and endangered species that could be supported in wooded floodplain forests that characterize the study areas was narrowed to three species; the red-shouldered hawk (*Buteo lineatus*), piping plover (*Charadrius melodus*) and forked aster (*Aster furcatus*).

Following review of these three species, as well as their habitat requirements, URS ecologists were better positioned to identify these species and recognize the habitats capable of supporting these species. The critical habitat surveys were conducted between August 30 and September 2, 2004. The survey areas were accessed by foot from local roads and by canoe from the river. This approach varied from the Plan,

but provided more detail of the site environmental conditions. All data were recorded in a field notebook and photographic documentation of each area was performed.

Naturally occurring communities and vegetation cover types were recorded and the dominant trees, shrubs and saplings, herbaceous and woody vine species were documented to the lowest taxonomic level possible. Regional floras and plant keys were used to confirm the identification of plants.

In addition to an evaluation of critical habitat, URS employed the Wildlife Habitat Appraisal Procedure (WHAP; http://www.tpwd.state.tx.us/conserve/whap/whap.html) to evaluate the overall quality of wildlife habitat in the six study areas. WHAP was selected as an assessment tool because it provides baseline data for habitat conditions for specific areas and results can be obtained quickly. Habitat in each study area was evaluated for:

(1) Site potential (substrate quality);

(2) Temporal development of the existing successional stages;

(3) Uniqueness and relative abundance;

(4) Vegetation species diversity;

(5) Vertical vegetation stratification;

(6) Additional structural diversity components; and

(7) Condition of existing vegetation.

These variables provide a measure of the key components that contribute to the ecological conditions of the evaluated tracts and overall suitability for wildlife. This method assumes (1) vegetation structure (species composition and physiognomy) are sufficient to define habitat suitability for wildlife, (2) a positive relationship exists between vegetation diversity and wildlife species diversity and (3) vegetation composition and primary productivity directly influence population densities of wildlife species. As such, WHAP indirectly considers natural and anthropogenic disturbance within each area and how these impacts might affect the quality of wildlife habitat. An evaluation key allows the user to select the conditions that best describe each of the seven biological habitat components. A value is associated with each condition and these values are summarized to obtain a final score. A perfect score (i.e., highest-quality wildlife habitat) is 100 and the lowest possible score is 2.

Wildlife surveys were conducted to determine whether habitat supported listed threatened and endangered species of birds identified by WDNR. A series of bird surveys were conducted over the three-day survey period. Observations lasting approximately 20 minutes were made at several locations within each study area throughout the day. Observation points were selected from a variety of locations within each study area to maximize opportunities to observe all possible types of birds known to inhabit and use the area resources. Evidence for animal presence and use of the study areas was determined through direct observation and identification of the animals, and indirectly through observation and identification of tracks, nests, calls and scat.

In addition, the following resources were consulted to assess the existing environmental conditions and potential for critical habitat within the project area prior to conducting the fieldwork. Sources of information included:

- United States Geological Survey (USGS) topographic maps (Sheboygan Falls 7.5 minute quadrangle);
- Federal Emergency Management Agency (FEMA) flood hazard map (FEMA, 1991);
- United States Department of the Interior, Fish and Wildlife Service; and
- National Wetland Inventory (NWI) maps.

RESULTS

Two primary habitats are identified during the critical habitat surveys; Floodplain Forest and Pasture/Maintained Grasslands. The following provides a description of each of these habitats. A summary of the habitats associated with each floodplain area and size is provided in Table 1.

The field survey found that the study areas serve as active floodplains, which are generally narrow and constrained by local topography. Habitats vary and include mature and medium-age broad-leaved deciduous forests, scrub-shrub and meadows (Table 1). Forest structure is generally complex and includes several strata. Snags, brush piles and fallen logs that provide wildlife habitat are present on some sites. Flooding during the 2004 growing season is evident in each study area (Appendix B, Photos 14-16). Drift lines, piled woody debris, sediment deposits, and scours and matted vegetation indicate prior flooding. Based on debris lodged in trees, the floodwaters were approximately 7 to 10 feet higher than water levels in the river at the time of the survey.

Rocket Roll

Floodplain Forest

Floodplain Forest as defined by WDNR (www.dnr.state.wi.us/org/land/er/communities/descriptions.htm) and also known as broad-leaved deciduous forest is a lowland hardwood forest community that occurs along larger rivers that flood periodically. Forest of this type is prevalent in southern Wisconsin and is the dominant habitat present in the study areas. For descriptive purposes, we have chosen to differentiate between the Floodplain Forests that occur immediately adjacent to the river on the natural elevated levees and those that occur landward of the levees in the lower portions of the floodplains. We refer to these forests as riparian forests and floodplain forests, respectively.

Riparian Forest - These forested areas differ from adjacent floodplain forest habitat by vegetative structural complexity, but include many similar plant species. In general, well-developed riparian forest borders most of the length of this 2-mile stretch of the Sheboygan River (Appendix B, Photos 1-13). Except for areas along the river that had been previously cleared, the canopy is predominantly closed. In most cases, canopy species such as black willow (*Salix nigra*) (Appendix B, Photo 7) and black maple (*Acer nigrum*) are 1+ m in diameter at breast height (dbh), while many individuals of green ash (*Fraxinus pennsylvanica*), bitternut hickory (*Carya cordiformis*) and bur oak (*Quercus macrocarpa*) range from 30 to 60 cm dbh. Many of the large trees encountered are estimated to be greater than 50 years old based on their dbh. Although red maple (*Acer rubrum*), box elder (*Acer negundo*), beech (*Fagus grandiflora*), paper birch (*Betula papyrifera*), basswood (*Tilia americana*) and white pine (*Pinus strobus*) are also present, they are significantly smaller in size (<30 cm dbh) and limited in number. Shrubs and herbaceous cover beneath the canopy are generally limited.

Floodplain Forest - Vegetation within the floodplain forest is composed of a mosaic of cover types including broad-leaved deciduous forest, scrub-shrub and grassy meadow (Appendix B, Photos 1-13).

Floodplain forests lacked the structural complexity observed in the riparian forests and tend to contain larger numbers of invasive shrub and herbaceous species. The broad-leaved deciduous forests are generally composed of open-canopied assemblages of green ash, bitternut hickory, box elder and bur oak. Understory shrubs and shrubs dominating the scrub-shrub habitats include hawthorn (*Crataegus crus-galli*), buckthorn (*Rhamnus cathartica*), northern prickly ash (*Zanthoxylum americanum*) and Tartarian honeysuckle (*Lonicera tartarica*). Densities of these species range from solitary individuals to large dense mixed and monospecific patches.

The composition of the understory/groundcover varied according to light availability. Where light levels are low, groundcover is relatively absent versus open canopy areas where groundcover is dense and speciose. In addition, species composition of the groundcover varied depending on available soil moisture. In moist areas the groundcover consists of grasses, and species such as Virginia creeper (*Parthenocissus quinquefolia*), sweet coltsfoot (*Petasites palmatus*), meadow horsetail (*Equisetum pratense*) and false Solomon's seal (*Smilacina stellata*) are commonly encountered. In drier areas where scrub-shrub and meadows are present the vegetation is dominated by late summer-early fall blooming plants that include Canada goldenrod (*Solidago canadensis*), daisy fleabane (*Erigeron annuus*), Queen Anne's lace (*Daucus carota*), yarrow (*Achillea millefolium*), butter and eggs (*Linnaria vulgaris*), motherwort (*Leonardus cardiaca*), wild bergamot (*Monarda fistulosa*), tall coneflower (*Rudbeckia laciniata*) and several species of grasses. Areas disturbed by natural (e.g., flooding) or anthropogenic factors in all parts of the floodplain are dominated by reed canary grass (*Phalaris arundinacea*), stinging nettle (*Urtica dioica*), wood nettle (*Laportea canadensis*) and dame's rocket (*Hesperis matronalis*) (Appendix B, Photo 13). An inventory of the dominant plant species identified in each floodplain area is provided in Table 4.

Pasture and Maintained Grassland

Area FPL-4 is comprised largely of an active horse pasture (Appendix B, Photo 4). With the exception of additional weedy species located at the edge of the forest, the structure and composition of the riparian forest is similar to that of the other study areas. Vegetation identified in the pastures included common knotgrass (*Polygonum aviculare*), yellow foxtail (*Setaria glauca*), dandelion (*Taraxacum officinale*), common plantain (*Plantago major*) and white clover (*Trifolium repens*).

Maintained grass and meadow is present in FPL-8 (Appendix B, Photo 12). The structure and composition of the riparian forest in this area is similar to that of the other study areas.

Wildlife Observations

Wildlife observations were focused on avifauna, given the potential for use of the wooded habitats and the river mudflats by the red-shouldered hawk and the piping plover, respectively. However, the presence of mammals, amphibians and herpetofauna was also noted. White-tailed deer (*Odocoileus virginianus*) were the only mammals observed directly, while raccoon (*Procyon lotor*) were identified indirectly by tracks. No amphibians were observed, but painted turtles (*Chrysemys picta*) were seen basking on logs in the Sheboygan River.

Eighteen bird species were observed using the resources of the six-floodplain areas (Table 5). It is important to note that the list documents observations for a limited period of time and is not a comprehensive list of all species that may occur in the study area. The seasonal distribution, breeding

status and habitat type preferred by each species observed and as documented by the WDNR (WDNR *et al.* 2004) also is presented in Table 5 to provide information regarding the rarity of the species and the habitats that these species most commonly inhabit.

In general, the bird community found using the forest along the Sheboygan River is comprised of common species distributed throughout Wisconsin. While most of the observed species are regular summer and winter residents, several species such as the great blue heron (*Ardea herodias*), ovenbird (*Seiurus aurocapillus*), American redstart (*Setophaga ruticilla*) and black-and-white warbler (*Mniotilta varia*) migrate when winter conditions are unfavorable. With the exception of the solitary sandpiper (*Tringa solitaria*), which breeds in the Canadian provinces and Alaska (Sibley 2000), the observed species breed throughout the state.

The bird community is also characterized by species that can be found in a variety of habitats including riparian habitat as found along the Sheboygan River. The habitat types most often associated with the observed species, as described in the *Checklist of Wisconsin Birds*, are upland or wet areas dominated by shrubs (Code G on Table 5) (WDNR *et al.* 2004), and urban habitat (Code J on Table 5), which is described as including residential backyards, parks, industrial areas and clustered rural development areas. The composition of avifauna reflects these findings given the local disturbances in the watershed from industrial buildings, golf courses, residential areas and maintained lawns associated with Sheboygan Falls and the Village of Kohler. The contiguous mature riparian corridor along the river provides cover and foraging resources for both locally breeding canopy-dwelling and ground-feeding species and non-resident migratory species. The limited extent of mudflats at Area 6 provides some foraging habitat for individuals of migrating shorebirds (Appendix B, Photo 17). However, the small size (2000 ft^2) makes it unlikely that a high number of shorebirds could use this area.

No rare, threatened or endangered bird species were observed during the survey. The lack of preferred habitat likely precludes the presence of piping plover, which is known to occur along the shores of Lake Michigan and possibly in inland shores[1]. Although the red-shouldered hawk was not observed, appropriate habitat (WDNR *et al.* 2004) is present on the site.

WHAP Wildlife Habitat Appraisal Procedure

The results of the WHAP assessment are provided in Table 6. The results provide a qualitative evaluation of wildlife habitat and a relative measure of habitat quality between the six areas that were assessed. The results of the analyses indicate that the habitat quality scores for FPR-3, FLP-4 and FPL-8 were 44.5, 41 and 43, respectively and compared to the maximum obtainable score of 100, these areas are of moderate quality with respect to wildlife habitat (Table 6). High levels of anthropogenic disturbance (i.e., the establishment of managed areas) such as the pastures and mowed areas significantly reduced plant species diversity, plant cover, vertical stratification, structural complexity and habitat availability for wildlife. Given that wildlife habitat quality is assumed to be closely related to vegetation diversity, plant composition, physiognomy and forest structure, changes in these characteristics would have a direct impact on the quality of wildlife habitat. Alternatively, moderately high wildlife quality scores were documented in areas FPR-5 and FPR-6 (each with 73) followed by FPR-7, which had a

[1] Although it is unlikely that piping plover use the shoreline in the study area, additional consultation with WDNR should be considered to confirm the exact location of the historical sighting (1937).

habitat quality score of 66. Although natural disturbance (i.e., flooding) plays a major role in these habitats, human intervention appeared to be minimal and is reflected in the habitat quality scores.

CONCLUSIONS

The following conclusions can be drawn from the results of the critical habitat survey.

The forked aster is a rhizomatous plant that has been found growing on moist rocky ledges, stream floodplains, open oak woodlands, wooded ravines, railroad rights-of-way and woodland edges (WDNR 2004). In Wisconsin, they are most commonly associated with wooded river and stream floodplain terraces. Preferred environmental conditions include alkaline soils, high light levels and moderate moisture. This species is slow growing and is therefore most likely to be found in areas possessing moderate levels of disturbance. It flowers from August to October. The WDNR (2004) indicates that this species has become out competed for space, light and resources by non-native shrubs such as buckthorn and Tartarian honeysuckle. The critical habitat survey found limited potential habitat for this species in the floodplain forests under study. The time of the investigation coincided with the flowering period of this species, but forked asters were not observed.

The red-shouldered hawk, while not observed in the study area, is known to be found locally and may use the habitat associated with the Sheboygan River. Some similarities exist between preferred habitat and habitats at the study site. This species prefers unfragmented riparian hardwood forests and wooded swamps, and nests in mature deciduous trees 10-200 feet off the ground. Red-shouldered hawks prey on small mammals, reptiles, amphibians, birds and occasionally invertebrates. This hawk can tolerate some human disturbance if the tall trees in their territories are maintained (Ehrlich *et al.* 1988). Red-shouldered hawks are considered to be uncommon migrants and summer residents, and uncommon to rare winter residents in the south and central parts of the state, respectively (www.dnr.state.wi.us/org/land/er/factsheets/birds/rshhwk.htm). Based on the habitat requirements of this species, the site may provide foraging habitat for local individuals. However, it is unlikely that the study site is capable of supporting nesting pairs, given the lack of a large (300-500+ acres) undisturbed tracts of mature forested habitat, which is the preferred habitat of breeding pairs (McKay *et al.* 2001).

The lack of preferred habitat likely precludes the presence of the piping plover, which is known to occur along the shores of Lake Michigan and possibly along inland shores. This species is typically associated with sparsely vegetated sandy beaches (www.dnr.state.wi.us/org/land/er/factsheets/birds/plover.htm). Although two small mudflats were present in FPR-6, their small size likely precludes their use by piping plover. None of the other areas surveyed provide suitable habitat for use by this species. The rareness of this species is well established in the State. Piping plover have not bred in Wisconsin since the mid-1980s and the number of breeding pairs at that time was limited to a few pairs. Moreover, none were identified in Sheboygan County. More recently, an occasional individual may show up on Wisconsin's Rare Bird Alert (e.g., Manitowoc County; September 6, 2004). Given the rareness of this species in Wisconsin, the age of the historical sighting in the study area (1937) and the lack of suitable habitat, it can be confidently concluded that it is very unlikely that piping plover occur in the study area.

The results of the floral and faunal surveys indicate that no threatened and endangered plant or bird species or forest communities identified by the WDNR were identified in the six study areas at the time

of the survey. The floodplain areas provide limited habitat that could support the forked aster, piping plover or red-shouldered hawk, and are typical of similar habitats that occur in the region. Given these findings it is concluded that critical habitat as defined in the ESA is not present for the forked aster, piping plover or red-shouldered hawk in the study areas examined.

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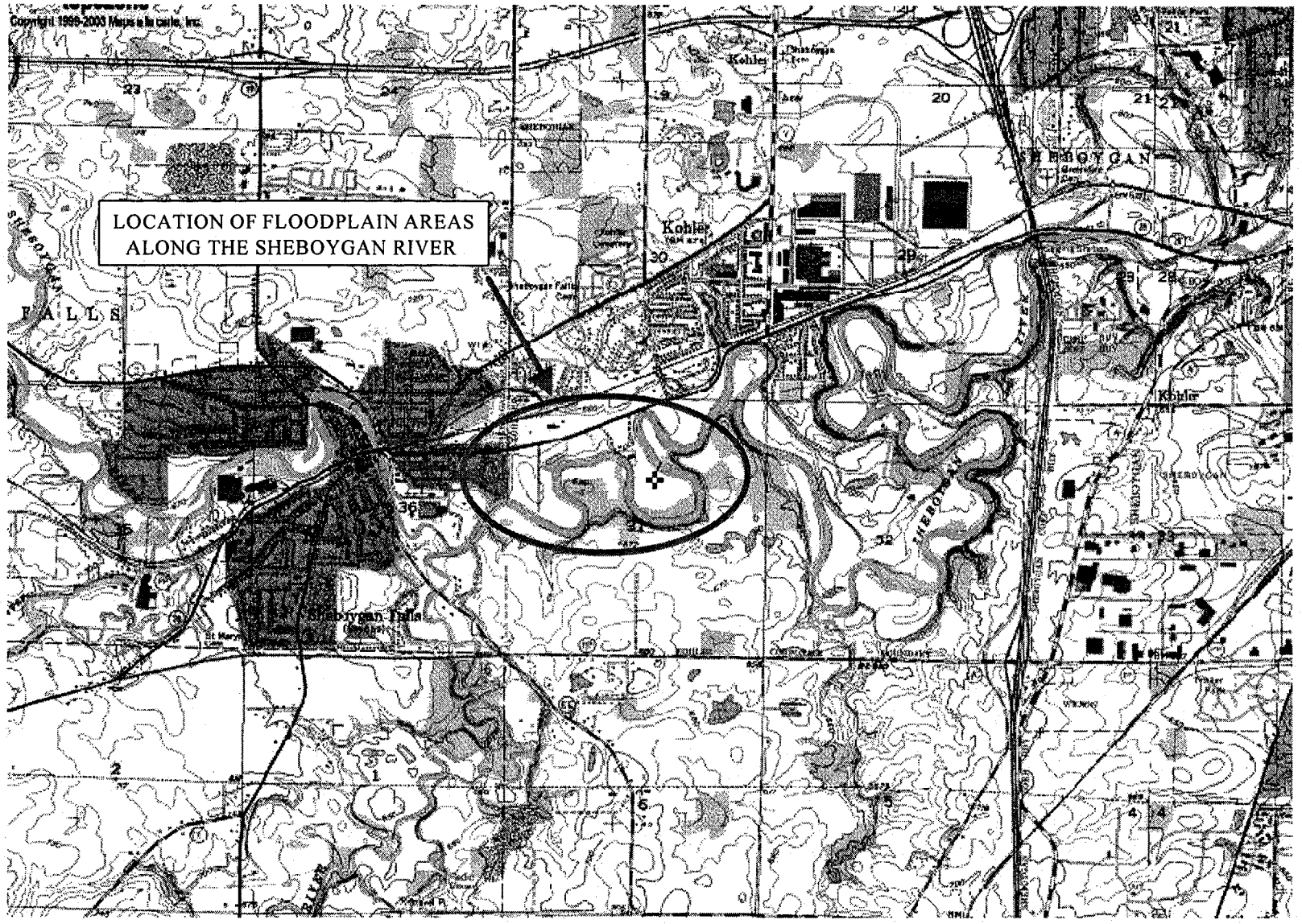

SCALE: 1 INCH = 3168 FEET

0' 2112' 4224'

Job: 41683412.0601	REGIONAL LOCATION MAP
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Checked by:	SHEBOYGAN COUNTY, WISCONSIN
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FIGURE 1

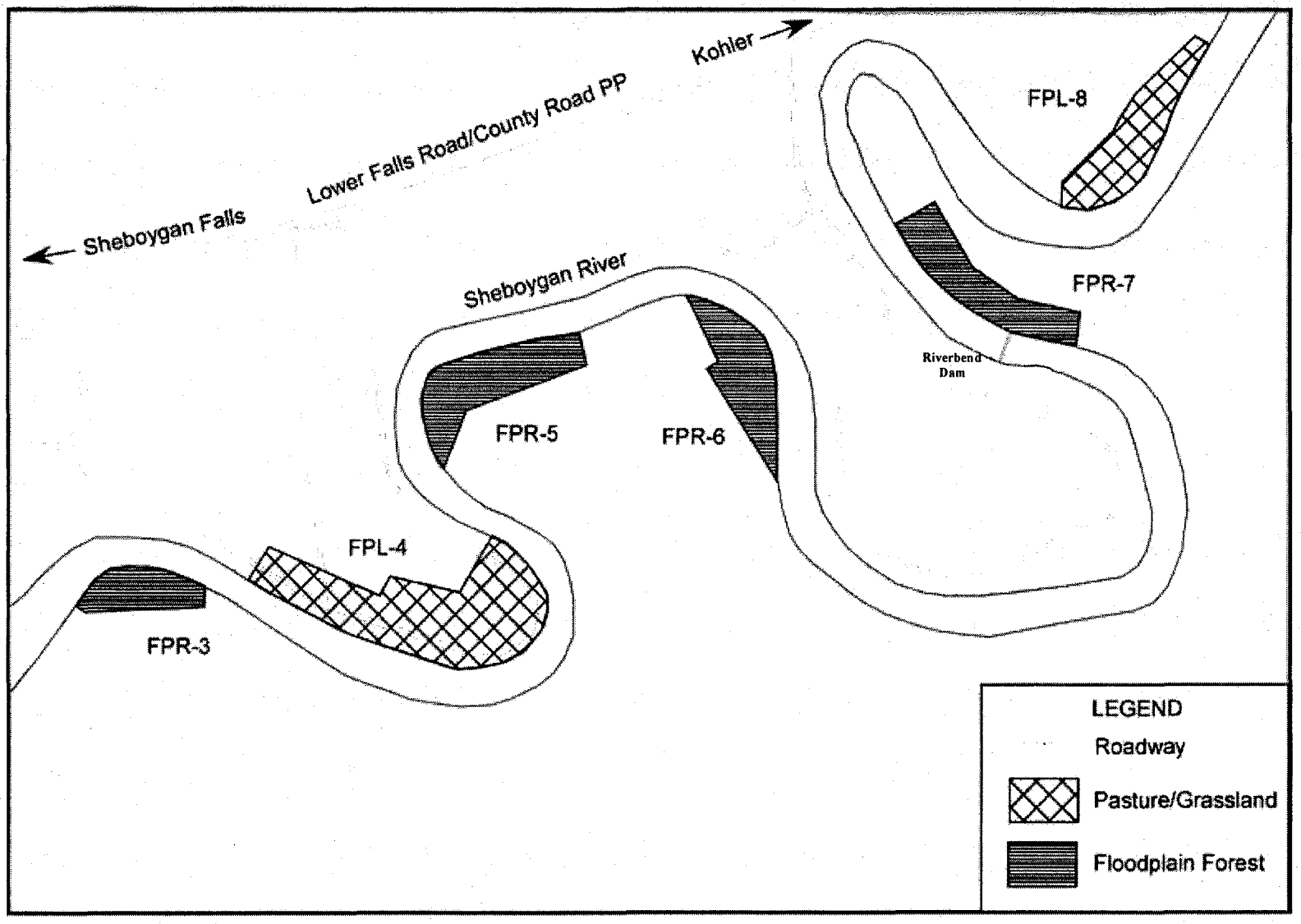

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Table 1
Habitat Summary of Floodplain Areas
Sheboygan River Floodplains
Kohler, Wisconsin

Floodplain Area	Size (acres)	Riparian Forest	Floodplain Forest	Pasture	Meadow	Grass
FPR-3	1.97	✓			✓	
FPL-4	8.52	✓		✓	✓	
FPR-5	3.98	✓	✓		✓	
FPR-6	3.85	✓	✓			
FPR-7	3.62	✓	✓			
FPL-8	3.83	✓			✓	✓

Table 2
Listed Species Documented Within or Near the Study Site
Sheboygan River Floodplains
Kohler, Wisconsin

Scientific Name	Common Name	Status	Preferred Habitat	Potential Habitat Present
Plants				
Ranunculus cymbalaria	seaside crowfoot	Threatened	Sandy or muddy shores or marshes, ditches and harbors along Lake Michigan, often in brackish or alkaline places	No
Reptiles				
Regina septemvittata	queen snake	Endangered	Clear spring-fed streams with moderate to fast currents and rocky bottoms	No
Invertebrates				
Crangonyx gracilis	side swimmer	Special Concern	Aquatic	Not Assessed
Lioporeus triangularis	predaceous diving beetle	Special Concern	Aquatic	Not Assessed
Birds				
Buteo lineatus	red-shouldered hawk	Threatened	Unfragmented, mature floodplain forests along major rivers	Possible
Charadrius melodus	piping plover	Endangered	Shores of Lake Michigan	Possible

Data from Appendix A

Table 3
Listed Species Known from Within 2 Miles of the Study Site
Sheboygan River Floodplains
Kohler, Wisconsin

Scientific Name	Common Name	Status	Preferred Habitat	Potential Habitat Present
Plants				
Aster furcatus	forked aster	Threatened	Floodplains and woodlands	Possible
Astragalus neglectus	Cooper's milkwetch	Endangered	Gravel thickets, roadsides, river banks, lakeshores, especially on limestone, and in disturbed forests and fields	No
Cakile edentula	American sea rocket	Special Concern	Sand dunes along the Great Lakes	No
Scutellaria parvula var. parvula	small skullcap	Special Concern	Sandy soils, dry prairies and limestone cliffs	No
Onosmodium molle	marbleseed	Special Concern	Dry calcareous hillsides and old pastures	No
Orobranche uniflora	one-flowered broomrape	Endangered	Dry prairies, lake dune and sand prairies	No
Forest Communities				
-------	Northern Mesic Forest	Community	-------	No

Data from Appendix A

Table 4
Floral Inventory of Floodplain Areas
Sheboygan River Floodplain
Kohler, Wisconsin

Scientific Name	Common Name	Floodplain Area					
		FPR-3	FPL-4	FPR-5	FPR-6	FPR-7	FPL-8
Trees							
Acer negundo	box maple	✓	✓		✓		✓
Acer nigrum	black maple				✓		
Acer rubrum	red maple			✓			✓
Ailanthus altissima	tree-of-heaven						✓
Betula papyrifera	paper birch			✓	✓		
Carya cordiformis	bitternut hickory	✓	✓		✓	✓	✓
Fagus grandifolia	beech			✓	✓		
Fraxinus pennsylvanica	green ash	✓	✓		✓	✓	✓
Juniperus virginiana	eastern red cedar	✓					
Pinus strobus	white pine			✓		✓	
Populus balsamifera	balsam poplar				✓		
Populus grandidentata	big-tooth poplar						✓
Populus tremuloides	trembling aspen	✓					
Quercus macrocarpa	bur oak	✓	✓	✓	✓	✓	✓
Quercus bicolor	swamp white oak	✓					
Salix nigra	black willow	✓	✓	✓	✓	✓	✓
Tilia americana	basswood		✓				✓
Thuja plicata	cedar						✓
Ulmus americana	American elm			✓			
Shrubs							
Crataegus crus-gilli	cockspur hawthorn	✓	✓	✓	✓	✓	✓
Eleagnus angustifolia	Russian olive	✓	✓				
Lonicera tartarica	Tartarian honeysuckle	✓	✓	✓		✓	✓
Rhamnus catharica	buckthorn	✓	✓		✓	✓	✓
Viburnum lentago	sweet viburnum	✓	✓				
Zanthoxylum americanum	northern prickly ash	✓	✓		✓		
Herbs							
Achillea millefolium	yarrow	✓	✓		✓		✓
Asclepias syriaca	common milkweed	✓	✓				
Aster laevis	smooth aster				✓		✓
Bromus sp.	brome grass	✓					
Carex sp.	sedge	✓	✓	✓	✓	✓	✓
Campanula rotundifolia	bluebell		✓				
Circium arvense	Canada thistle		✓				
Circium vulgare	bull thistle		✓		✓		✓
Convulvulus sepium	hedge bindweed				✓		
Daucus carota	Queen Anne's lace	✓			✓		✓
Echinocystis lobata	wild cucumber		✓				

Scientific Name	Common Name	Floodplain Area					
		FPR-3	FPL-4	FPR-5	FPR-6	FPR-7	FPL-8
Equisetum pratense	meadow horsetail				✓		
Elymus virginicus	wild rye grass						✓
Erigeron annuus	daisy fleabane	✓	✓	✓	✓		
Eupatorium rugosum	white snakeroot		✓				
Galium aparine	cleavers	✓				✓	
Geum canadense	white avens				✓		
Glechoma hederacea	Gill over the ground				✓	✓	
Hesperis matronalis	dames' rocket	✓	✓	✓	✓	✓	✓
Impatiens capensis	jewelweed				✓		
Laportea canadensis	wood nettle				✓		
Leonurus cardiaca	motherwort		✓				
Lespedezia virginica	slender bush clover				✓		
Linnaria vulgaris	butter and eggs		✓				
Lysimachia nummularia	moneywort				✓	✓	
Mentha arvense	wild mint						✓
Monarda fistulosa	wild bergamot	✓	✓	✓	✓		
Oenothera biennis	evening primrose				✓		
Oxalis europaea	yellow woodsorrel		✓		✓		
Parthenocissus quiquefolia	Virginia creeper		✓				
Petasites palmatus	sweet coltsfoot						✓
Phalaris arundinacea	reed canary grass	✓	✓	✓	✓	✓	✓
Plantago lanceolata	English plantain	✓					
Plantago major	common plantain		✓				
Prunella vulgaris	heal all				✓		
Polygonum aviculare	common knotgrass		✓				
Rudbeckia laciniata	tall coneflower		✓	✓	✓		
Saponaria officinalis	bouncing bet		✓				
Setaria glauca	yellow foxtail		✓				
Smilacina stellata	false solomon's seal	✓		✓	✓	✓	✓
Solidago canadensis	Canada goldenrod	✓	✓	✓	✓	✓	✓
Solidago flexicaulis	zigzag goldenrod					✓	
Symphoriocarpus albus	common snowberry	✓					
Taraxacum officinale	dandelion		✓				
Trifolium repens	white clover		✓				
Urtica dioica	stinging nettle		✓		✓		✓
Verbascum thapsus	common mullein	✓			✓		
Vines							
Hummulus lupulus	common hop						✓
Vitis riparia	riverbank grape	✓	✓	✓	✓	✓	✓

Table 5
Bird Species List
Sheboygan River Floodplains
Kohler, Wisconsin

Common Name	Scientific Name	Seasonal Distribution[1,2]	Breeding Status[1]	Habitat Type[1,3]	Floodplain Area					
					3	4	5	6	7	8
American crow	*Corvus brachyrhynchos*	Regular summer and winter resident	Breeds throughout state	EFGHIJ	✓	✓	✓			
American goldfinch	*Carduelis tristis*	Regular summer and winter resident	Breeds throughout state	EFGJ		✓	✓	✓		✓
American redstart	*Setophaga ruticilla*	Regular summer resident	Breeds throughout state	ABGHI						✓
American robin	*Turdus migratorius*	Regular summer and winter resident	Breeds throughout state	EFGHJ	✓		✓	✓		✓
belted kingfisher	*Ceryle alcyon*	Regular summer and winter resident	Breeds throughout state	BCD		✓		✓		
black-and-white warbler	*Mniotilta varia*	Regular summer resident	Breeds throughout state	GHI		✓				
black-capped chickadee	*Poecile atricapilla*	Regular summer and winter resident	Breeds throughout state	GHIJ	✓	✓	✓	✓		✓
blue jay	*Cyanocitta cristata*	Regular summer and winter resident	Breeds throughout state	GHIJ		✓	✓	✓		✓
common grackle	*Quiscalus quiscula*	Regular summer and winter resident	Breeds throughout state	CFGJ		✓				
great blue heron	*Ardea herodias*	Regular summer resident, possible/rare winter resident	Breeds throughout state	ABCD		✓				

Common Name	Scientific Name	Seasonal Distribution[1,2]	Breeding Status[1]	Habitat Type[1,3]	Floodplain Area					
					3	4	5	6	7	8
hairy woodpecker	*Picoides villosus*	Regular summer and winter resident	Breeds throughout state	GHIJ				✓	✓	
mourning dove	*Zenaida macroura*	Regular summer and winter resident	Breeds throughout state	EFGJ				✓		
northern cardinal	*Cardinalis cardinalis*	Regular summer and winter resident	Breeds throughout state	GHJ		✓				
nuthatch sp.	*Sitta* sp.	--	--	--		✓		✓		
ovenbird	*Seirus aurocapillus*	Regular summer resident	Breeds throughout state	DGHI				✓		
red-breasted nuthatch	*Sitta canadensis*	Regular summer and winter resident	Breeds throughout state	IJ			✓			
solitary sandpiper	*Trigna solitaria*	Regular summer migrant	Non-breeder	ABD				✓		
tufted titmouse	*Baeolophys bicolor*	Regular summer and winter resident	Breeds throughout state	IJ	✓	✓				
warbler sp.	Warbler sp.	--	--	--			✓			
wild turkey	*Meleagris gallopavo*	Regular summer and winter resident	Breeds throughout state	EFGH			✓	✓		

[1]Source: Adapted from the Checklist of Wisconsin Birds (WDNR et al., 2004).
[2]Regular indicates yearly occurrence.
[3]The habitat types indicate the typical habitat the species is most likely to be found in the following habitats: A-Great Lakes shores; B-Inland shores; C-Marshes and/or wet meadows; D-Swamps and bogs; E-Grasslands; F-Croplands; G-Brushy areas; H-Deciduous woods; I-Coniferous woods; J-Urban areas.
-- Lack of information precludes identification at the species level.

Table 6
WHAP Habitat Quality Scores
Sheboygan River Floodplains
Kohler, Wisconsin

Floodplain Area	Habitat Quality Score*
3	44.5
4	41
5	73
6	73
7	66
8	43

*out of a possible score of 100

Appendix A

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Scott Hassett, Secretary

101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921
Telephone 608-266-2621
FAX 608-267-3579
TTY 608-267-6897

July 14, 2004

Ms. Katie Eberhart
URS Corporation
335 Commerce Drive, Suite 300
Fort Washington, PA 19034

SUBJECT: Endangered Resources Review (ERIR Log # 04 - 112)
Proposed habitat evaluation - Sheboygan River

Dear Ms. Eberhart,

The Bureau of Endangered Resources has reviewed the project area described in your letter of July 6th for the proposed habitat evaluation along the Sheboygan River in Sheboygan County.

Our Natural Heritage Inventory (NHI) data files contain the following information for the project site located in T15N R22E, Section 36 and T15N R23E, Sections 30 and 31, Sheboygan County. In addition to the proposed project site, endangered resource information is provided for an area within two miles of the project's location (and within five miles for aquatic species). This information is provided so impacts to nearby endangered resources can be assessed and to assist in determining which rare species may occur in the project's impact area. If the described habitat types exist in the project's impact area, then species that occur nearby may be present at the proposed location.

Our data files contain historical records (generally, records that are 25 years old or older) of rare species known to occur within the vicinity of the evaluation site. Unfortunately, the Bureau does not have more current survey information documenting the continued existence of these species in the area. The older records are included as an indication of species that may still occur in the area or for restoration purposes if appropriate habitat exists.

Endangered resources documented within or near the evaluation site in T15N R22E Section 36 and T15N R23E Sections 30 and 31 include:

Scientific name	Common name	Status	Observation Date
Ranunculus cymbalaria	Seaside Crowfoot	Threatened	1909
Regina septemvittata	Queen snake	Endangered	1967
Lioporeus triangularis	A Predaceous Diving Beetle	Special Concern	1996
Crangonyx gracilis	A Side-swimmer	Special Concern	1996
Charadrius melodus	Piping Plover	Endangered	1937
Burteo lineatus	Red-shouldered hawk	Threatened	1972

In addition to the species listed above, there are a number of rare terrestrial species known from the area. If there is worked planned or equipment brought in, please contact the Bureau to discuss what measures could be used to avoid impacts to these species.

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Scientific name	Common name	Status	Observation Date
Aster furcatus	Forked Aster	Threatened	1997, 1998
Cakile edentula	American Sea-rocket	Special Concern	1967
Scutellaria parvula var. parvula	Small Skullcap	Endangered	1904
Orobanche uniflora	One-flowered Broomrape	Special Concern	1934
Astragalus neglectus	Cooper's Milkvetch	Endangered	1904
Onosmodium molle	Marbleseed	Special Concern	1919
	Northern Mesic Forest	Community	1976

Special Concern (Watch) species are species about which some problem of abundance or distribution is suspected but not yet proved. The main purpose of this category is to focus attention on certain species before they become endangered or threatened.

Comprehensive endangered resource surveys have not been completed for the project area. As a result, our data files may be incomplete. The lack of additional known occurrences does not preclude the possibility that other endangered resources may be present.

We understand that this information will be used for a habitat evaluation that is scheduled for July 19, 2004. Also find enclosed the field report forms that may be used for plant, animal, and community reporting. Given that there is no work planned at this time, I do not anticipate any impacts to rare species or natural communities.

The specific location of endangered resources is sensitive information that has been provided to you for the analysis and review of this project. Exact locations should not be released or reproduced in any publicly disseminated documents.

This letter is for informational purposes and only addresses endangered resource issues. This letter does not constitute Department of Natural Resources authorization of the proposed project and does not exempt the project from securing necessary permits and approvals from the Department.

Please see the enclosure for additional habitat descriptions. You may contact me at (608) 264-6057 if you have any questions about this information.

Sincerely,

Candice Sovinski, ER/4
Bureau of Endangered Resources

CC: Maureen Millmann – SER/ Milwaukee

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Green Bay ES Field Office
2661 Scott Tower Drive
New Franken, Wisconsin 54229-9565
Telephone 920/866-1717
FAX 920/866-1710

October 15, 2004

Ms. Katie Eberhart
URS Corporation
335 Commerce Drive, Suite 300
Fort Washington, Pennsylvania 19034

re: Remedial investigation
Sheboygan River
Sheboygan Falls
Sheboygan County, Wisconsin

Dear Ms. Eberhart:

The U.S. Fish and Wildlife Service (Service) has received your letter requesting information for a habitat evaluation pertaining to the subject remedial investigation. In response, we are providing information related to federally-listed threatened and endangered species, those proposed for listing, or designated critical habitat.

Federally-Listed Threatened and Endangered Species and Critical Habitat

A review of information in our files indicates that the following federally-listed threatened or endangered species or critical habitats occur in Sheboygan County:

Classification	Common Name	Scientific Name	Habitat
threatened	Pitcher's thistle	Cirsium pitcheri	stabilized dunes and blowout areas

Currently, there are no known federally-listed threatened or endangered species or critical habitat present in the areas you identified on the map you provided. However, there may be state-listed species and/or sensitive natural areas in or near the project area. Over time, habitats at or near the project site may be utilized by listed or proposed species not present at this time. Further, fish, wildlife or plant species occurring within the project area may become federally-listed as threatened or endangered or proposed for listing; it is also possible that critical habitat could be proposed or designated for a species. Therefore, if there is a time lag between project plan completion and execution, it is important to reassess the impact of the project on federally-listed or proposed species or designated critical habitat prior to completion of the final project design

and start of construction. In such instances, this office should be contacted for updated species and critical habitat information. Our species/critical habitat list is updated every 6 months.

As this project involves a Federal action and/or activity, the lead Federal agency, the U.S. Environmental Protection Agency, or its designated agent, is responsible for contacting the Service regarding that agency's determination as to whether the selected remediation alternative may affect federally-listed threatened or endangered species or adversely modify designated critical habitat. Section 7 of the Endangered Species Act of 1973, as amended (ESA), directs Federal agencies to consult with the Service on such matters. The Service would respond as to whether we concur with the determination of the Federal agency or its designated agent. If the proposed project may adversely affect federally-listed threatened or endangered species or adversely modify designated critical habitat, the Federal action agency should initiate formal consultation with the Service in accordance with section 7 of the ESA. Information on the section 7 consultation process can be obtained by contacting the staff person identified at the end of this letter.

We appreciate the opportunity to respond. Questions pertaining to these comments can be directed to Ms. Leakhena Au at 920-866-1734.

Sincerely,

Janet M. Smith
Field Supervisor

cc: FWS, Fort Snelling, MN Attn: Dave De Vault

Appendix B

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
1	08/30/04

Direction Photo Taken:

West

Description:

Floodplain area showing meadow habitat in area FPR-3.

Photo No.	Date:
2	08/30/04

Direction Photo Taken:

West

Description:

Riparian forest in area FPR-3.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
3	08/30/04

Direction Photo Taken:

West

Description:

Black willow (*Salix nigra*) growing at the top of bank in area FPL-4.

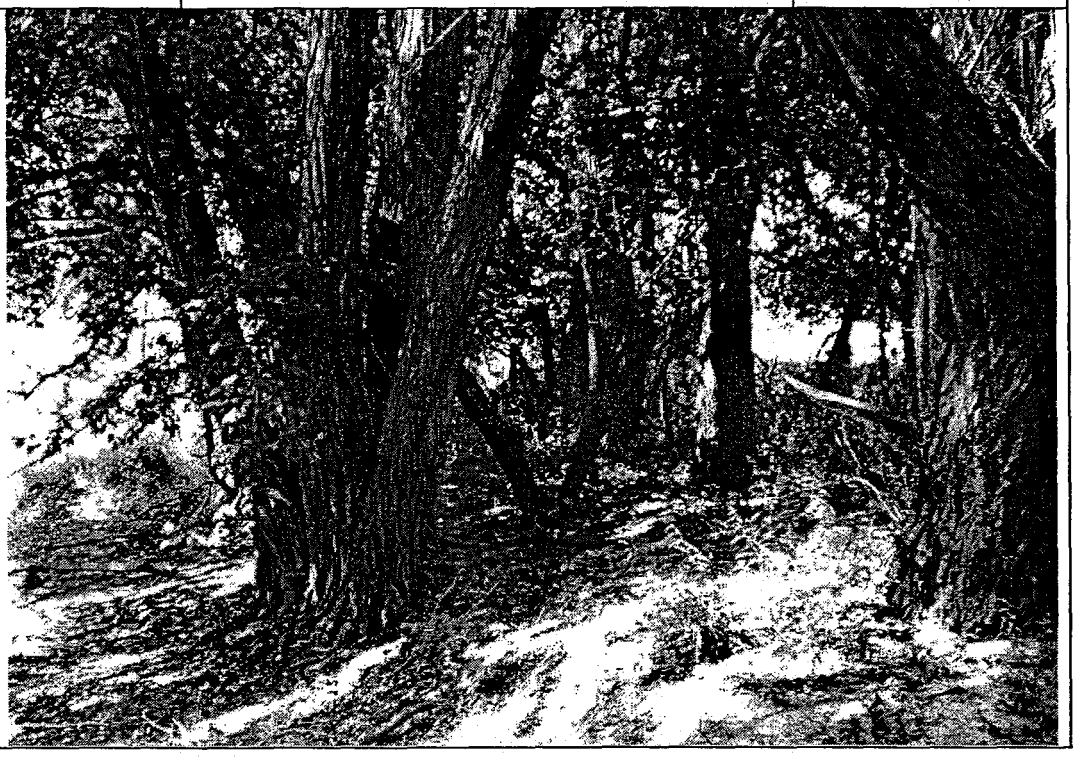


Photo No.	Date:
4	08/30/04

Direction Photo Taken:

North

Description:

Horse pasture in Area FPL-4.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
5	09/01/04

Direction Photo Taken:

East

Description:

Floodplain forest showing scrub-shrub habitat in Area FPR-5.

Photo No.	Date:
6	09/01/04

Direction Photo Taken:

East

Description:

Riparian forest in area FPR-5 showing trees and the invasive reed canary grass (*Phalaris arundinacea*).

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

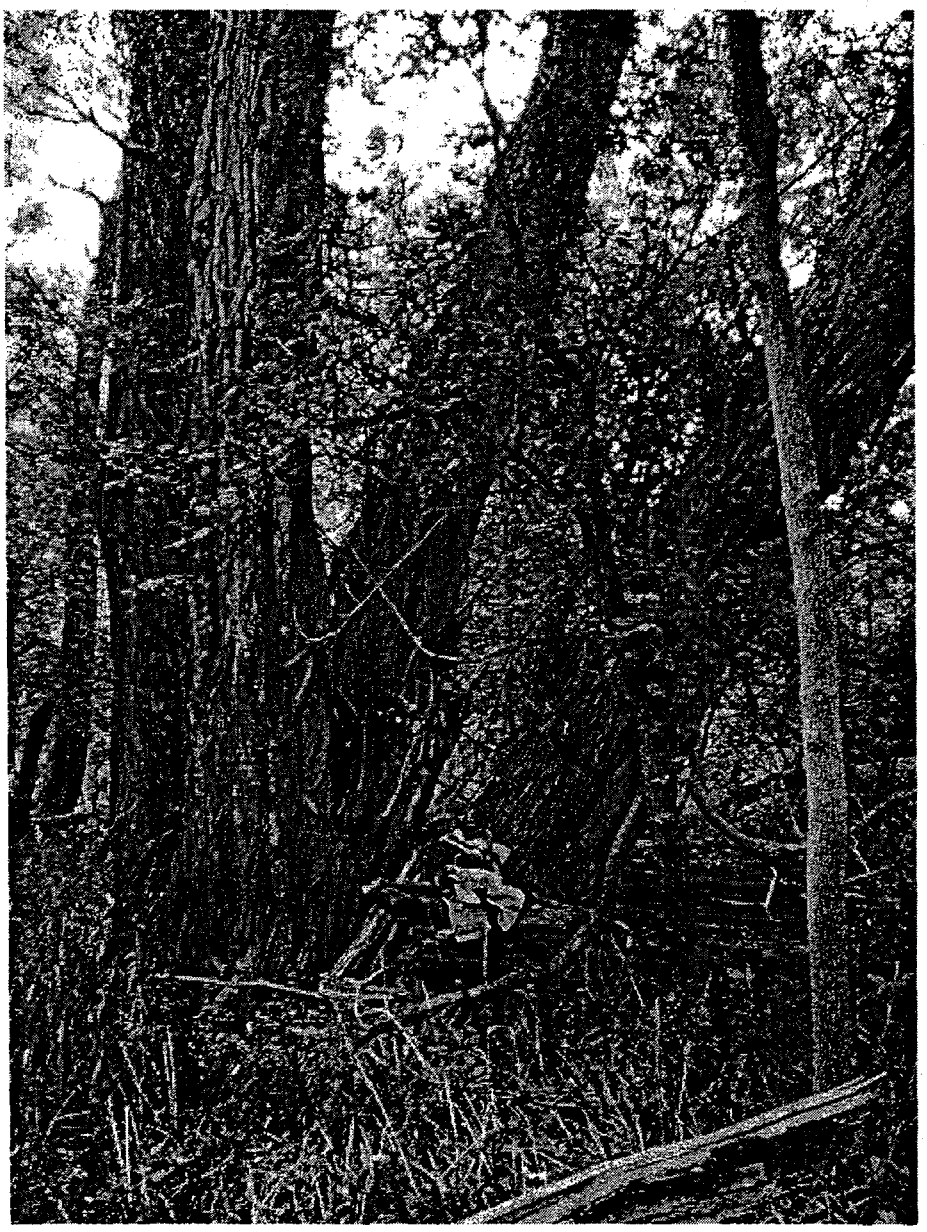
Photo No.	Date:
7	09/01/04

Direction Photo Taken:

East

Description:

An example of black willow trees growing on the banks of the Sheboygan River. Tree is located in FPR-6. Note coat for scale.



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PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
8	09/01/04

Direction Photo Taken:

Southeast

Description:

Floodplain forest in FPR-6.

Photo No.	Date:
9	09/01/04

Direction Photo Taken:

South

Description:

Floodplain forest in FPR-7.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
10	09/01/04

Direction Photo Taken:

West

Description:

Riparian forest in FPR-7.

Photo No.	Date:
11	09/02/04

Direction Photo Taken:

West

Description:

Floodplain forest in FPL-8.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
12	09/02/04

Direction Photo Taken:

Northeast

Description:

Area FPL-8 showing maintained grassy area and riparian forest in the background.

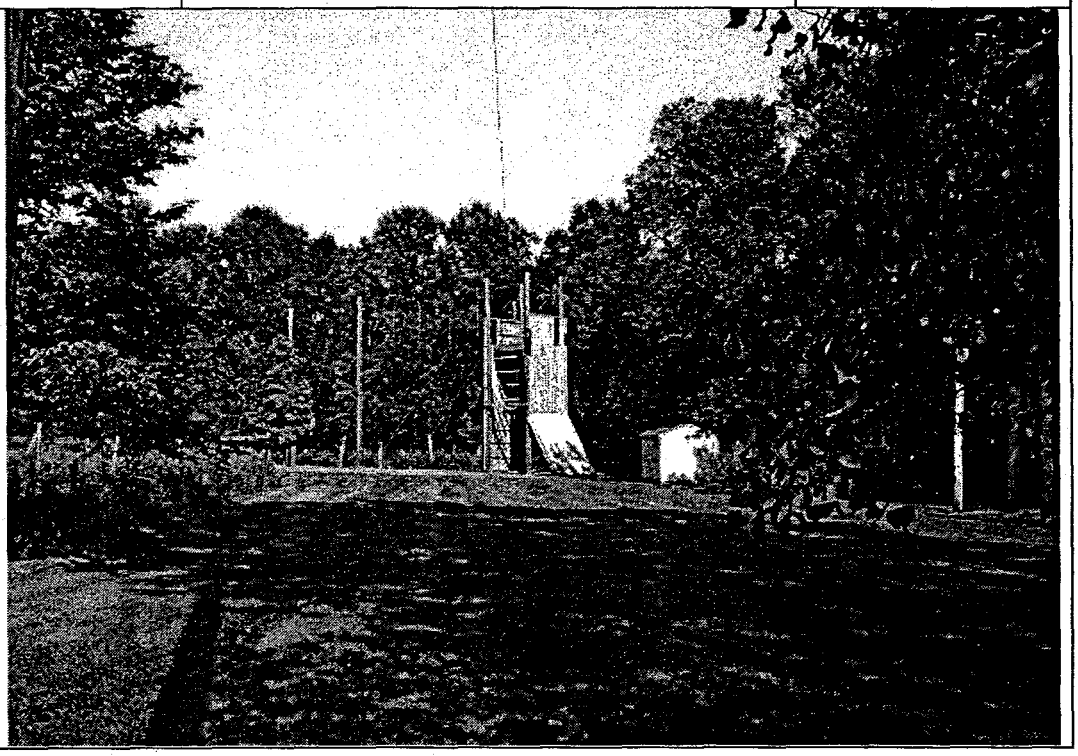


Photo No.	Date:
13	09/2/04

Direction Photo Taken:

Northeast

Description:

Dense cover of dame's rocket (*Hesperis matronalis*) in Area FPL-8.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
14	08/30/04

Direction Photo Taken:

South

Description:

Vegetative debris lodged on the branches of a tree adjacent to the Sheboygan River. The debris provides a measure of flood elevation.

Photo No.	Date:
15	08/30/04

Direction Photo Taken:

North

Description:

Dead branches and twigs piled on forest floor due to flooding.

URS

PHOTOGRAPHIC LOG

Client Name:	Site Location:	Project No.
PRS	Sheboygan River, Kohler, Wisconsin	41683412.0601

Photo No.	Date:
16	08/30/04

Direction Photo Taken:

Northwest

Description:

"Laid down" herbaceous groundcover due to flooding.

Photo No.	Date:
17	09/02/04

Direction Photo Taken:

East

Description:

Mudflat on the Sheboygan River located adjacent to FPR-6 showing spotted sandpipers (*Actitis macularia*) feeding.

CHICAGO & NORTHWEST RR

LOWER FALLS ROAD

DRIVE

FLOODPLAIN 8

FLOODPLAIN 7

FLOODPLAIN 6

FLOODPLAIN 5

FLOODPLAIN 4

FLOODPLAIN 3

11-194 ppm

SHEBOYGAN RIVER

N

SCALE 1" = 300'

0 300 600 FT

REVISION	DESCRIPTION	DRAWN BY	CHECKED BY	DATE
0	UR FLOODPLAIN INVESTIGATION	PRK	DPD	3/29/05

FLOODPLAIN INVESTIGATION

ENGINEER SEAL

Pollution Risk Services
100 E-Business Way, Suite 210
Cincinnati, Ohio 45241
Phone: 513-489-2793
Fax: 513-489-2794

PREPARED FOR:

SHEBOYGAN RIVER AND HARBOR SUPERFUND SITE

SHEYBOYGAN FALLS, WISCONSIN

UPPER RIVER FLOODPLAINS SAMPLE LOCATIONS

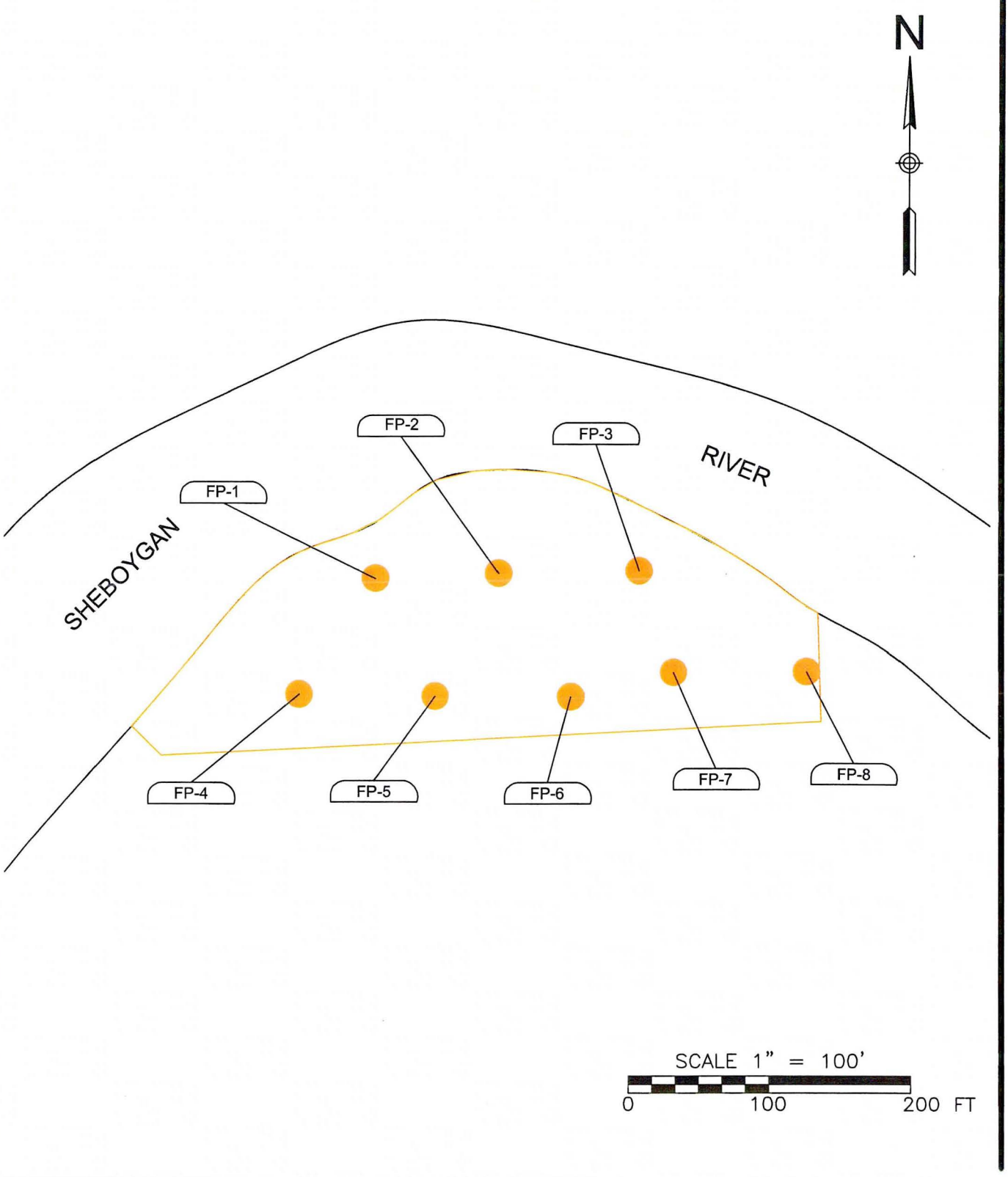
SCALE:	1" = 300'
REVISION:	0
PROJECT NUMBER:	02-010
SHEET NO:	3.0

units?

Table 3.1
Floodplain 3 PCB Concentration Sample Results
Sheboygan River and Harbor Superfund Site ~ Phase II

	SAMPLE LOCATION								
	DEPTH BELOW GROUND SURFACE	FP1	FP2	FP3	FP4	FP5	FP6	FP7	FP8	MEAN CONCENTRATION
Surface	0.0-0.5	14.00	17.00	56.00	0.56	0.07	0.12	2.90	0.45	27.52
	0.5-1.5	194.00	8.30	9.30						
Frost Line	1.5-2.5	11.00								24.18
	2.5-3.5	0.60								
	3.5-4.5									
	4.5-5.5									

NOTES:
1. PCB Concentrations are measured in units of mg/Kg
2. Non-detect results are shown in italics and represent 1/2 the detection limit.

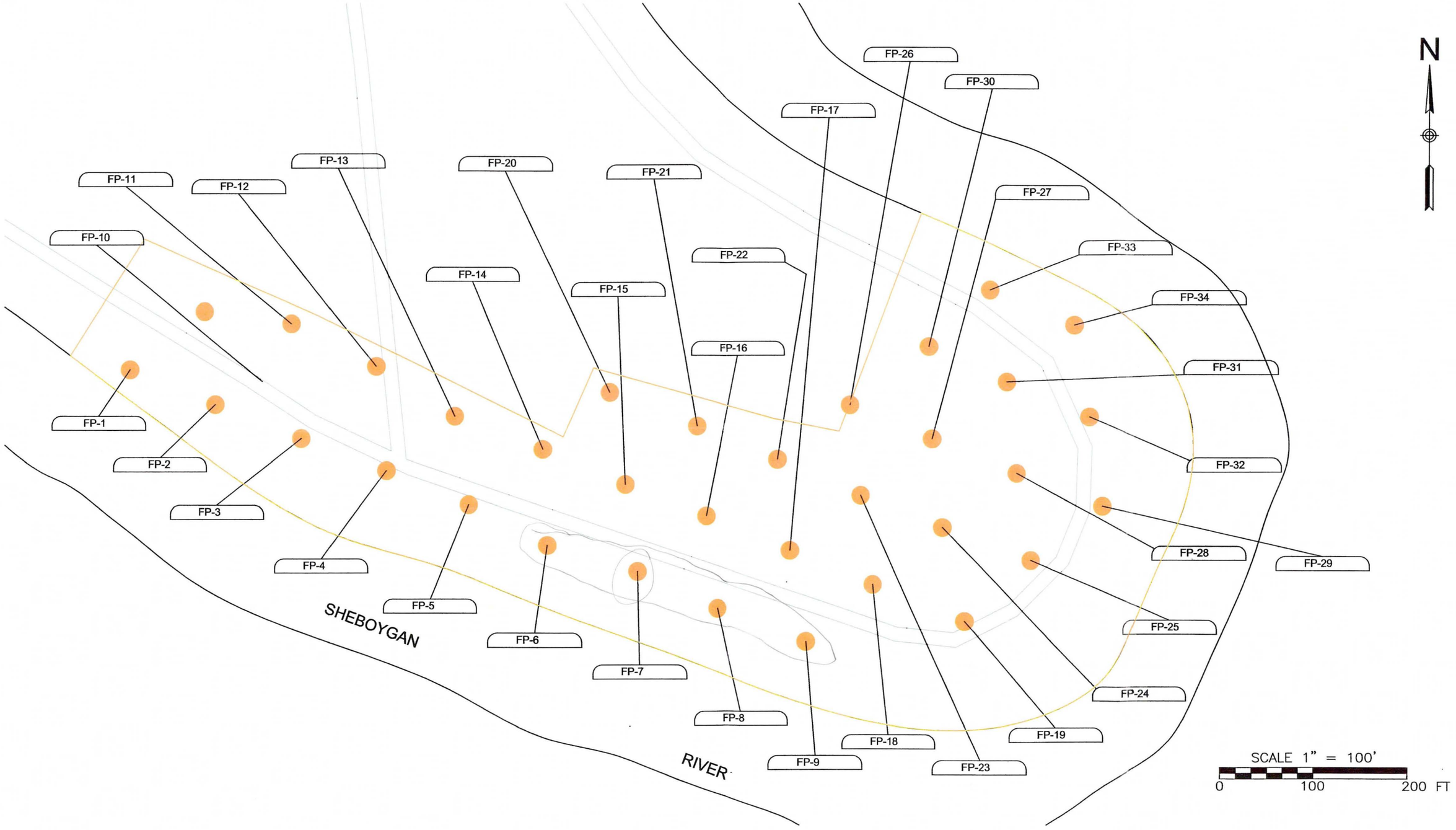


FLOODPLAIN INVESTIGATION	CONFIDENTIAL - ALL RIGHTS RESERVED - PROPERTY OF PRS Pollution Risk Services 100 E-Business Way, Suite 210 Cincinnati, Ohio 45241 Phone: 513-489-2793 Fax: 513-489-2794	PREPARED FOR: SHEBOYGAN RIVER AND HARBOR SUPERFUND SITE SHEYBOYGAN FALLS, WISCONSIN	FLOODPLAIN 3 SAMPLE LOCATIONS	SCALE: 1" = 100' REVISION: PROJECT NUMBER: 02-010 SHEET NO: 3.1

Table 3.2
Floodplain 4 PCB Concentration Sample Results
Sheboygan River and Harbor Superfund Site ~ Phase II

	SAMPLE LOCATIONS																																	
	DEPTH BELOW GROUND SURFACE	FP1	FP2	FP3	FP4	FP5	FP6	FP7	FP8	FP9	FP10	FP11	FP12	FP13	FP14	FP15	FP16	FP17	FP18	FP19	FP20	FP21	FP22	FP23	FP24	FP25	FP26	FP27	FP28	FP29	FP30	FP31	FP32	FP33	FP34	MEAN CONC.
Surface	0.0-0.5	0.42	0.25	3.50	5.70	3.90	16.00	37.00	23.00	9.50	0.40	0.05	3.00	0.43	3.50	2.00	10.70	2.20	2.50	18.00	1.20	0.79	0.83	0.73	2.10	5.50	0.54	1.10	1.30	7.00	1.30	1.10	4.10	2.30	4.50	**6.01**
	0.5-1.5						11.00	42.00	1.40								1.90			1.60																
Frost Line	1.5-2.5						0.92	2.00	0.25								0.20			0.20																**4.89**
	2.5-3.5						0.26	0.76	0.16								0.13			0.31																
	3.5-4.5						0.02	1.20	0.04								0.16			0.17																
	4.5-5.5							1.00									0.09																			

NOTES: 1. PCB Concentrations are measured in units of mg/Kg
2. Non-detect results are shown in italics and represent 1/2 the detection limit.



REVISION	DESCRIPTION	DRAWN BY	CHECKED BY	DATE
0	UR SEDIMENT DEPOSIT INVESTIGATION	PRK	DPD	3/29/05

FLOODPLAIN INVESTIGATION

ENGINEER SEAL

Pollution Risk Services
100 E-Business Way Suite 210
Cincinnati, Ohio 45241
Phone: 513-489-2793
Fax: 513-489-2794

PREPARED FOR:

SHEBOYGAN RIVER AND HARBOR SUPERFUND SITE

SHEYBOYGAN FALLS, WISCONSIN

FLOODPLAIN 4
SAMPLE LOCATIONS

SCALE:	1" = 100'
REVISION:	0
PROJECT NUMBER:	02-010
SHEET NO:	3.2

Table 3.3
Floodplain 5 PCB Concentration Sample Results
Sheboygan River and Harbor Superfund Site ~ Phase II

	SAMPLE LOCATION																
	DEPTH BELOW GROUND SURFACE	FP1	FP2	FP3	FP4	FP5	FP6	FP7	FP8	FP9	FP10	FP11	FP12	FP13	FP14	FP15	FP16	MEAN CONCENTRATION
Surface	0.0-0.5	0.07	0.16	0.19	0.06	0.06	0.02	*0.01*	0.04	3.20	0.38	1.70	28.00	32.00	16.00	2.70	0.20	
	0.5-1.5												3.80	1.69	3.00			**4.91**
	1.5-2.5												1.60	0.23	2.00			
Frost Line	2.5-3.5												0.72	0.12	0.47			**3.94**
	3.5-4.5												0.69					
	4.5-5.5																	

NOTES: 1. PCB Concentrations are measured in units of mg/Kg
2. Non-detect results are shown in italics and represent 1/2 the detection limit.

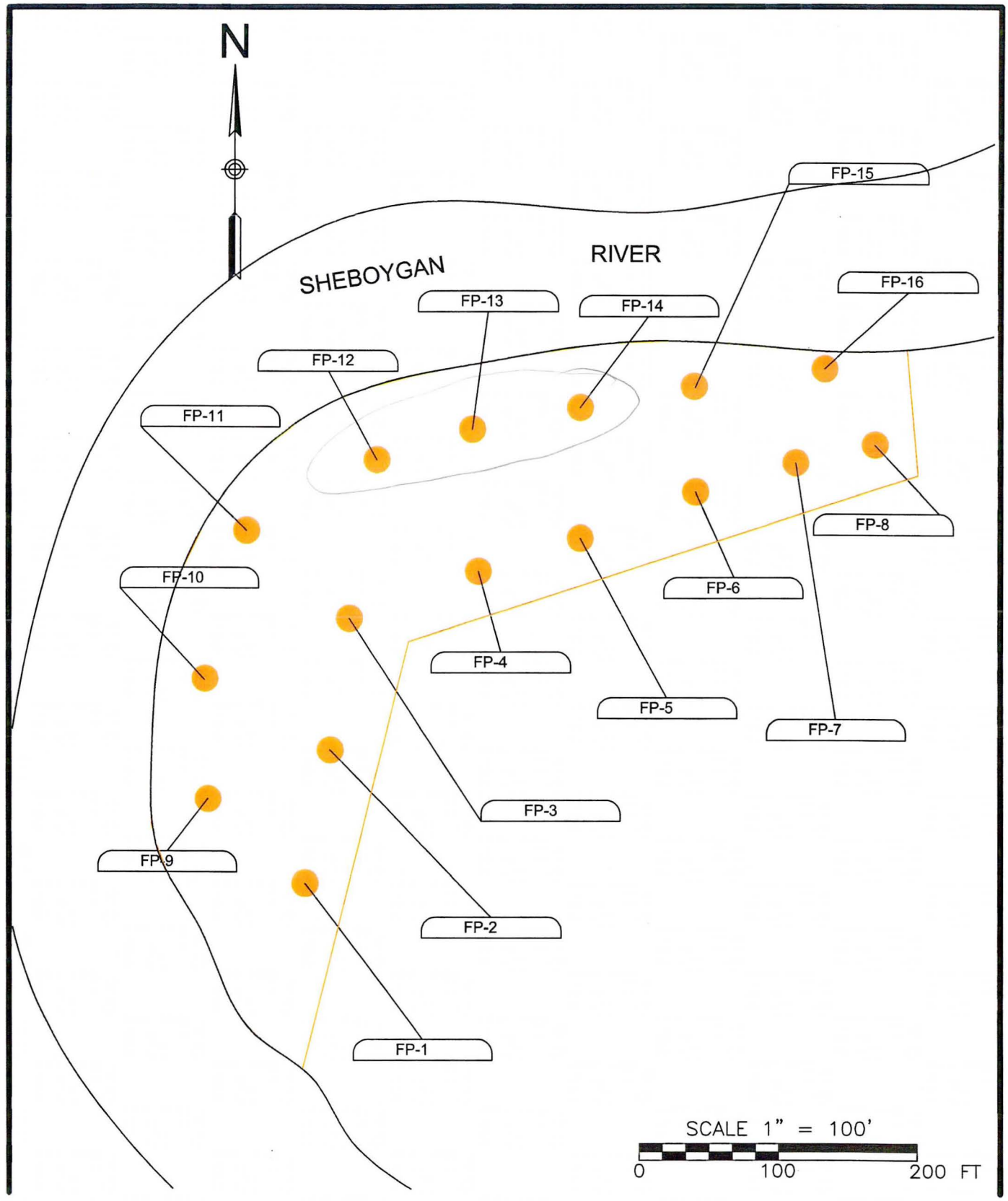


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Table 3.4
Floodplain 6 PCB Concentration Sample Results
Sheboygan River and Harbor Superfund Site ~ Phase II

	SAMPLE LOCATION																		
	DEPTH BELOW GROUND SURFACE	FP1	FP2	FP3	FP4	FP5	FP6	FP7	FP8	FP9	FP10	FP11	FP12	FP13	FP14	FP15	FP16	FP17	FP18	MEAN CONCENTRATION
Surface	0.0-0.5	0.82	0.26	25.00	23.00	20.00	12.00	1.80	2.60	26.00	22.00	35.00	20.00	46.00	10.00	0.94	5.00	0.87	0.17	15.69
	0.5-1.5			5.40	2.60	1.60				87.00	5.60	1.90	1.10	41.00	86.00	0.27	2.30	0.15	0.03	
	1.5-2.5			2.00						10.00	0.83	0.42	0.16	4.10	9.90	0.02		0.05		11.21
Frost Line	2.5-3.5									5.40		0.23	0.13	3.80	3.30	0.03		*0.01*		
	3.5-4.5													0.97	2.20					
	4.5-5.5													1.20						

NOTES:
1. PCB Concentrations are measured in units of mg/Kg
2. Non-detect results are shown in italics and represent 1/2 the detection limit.

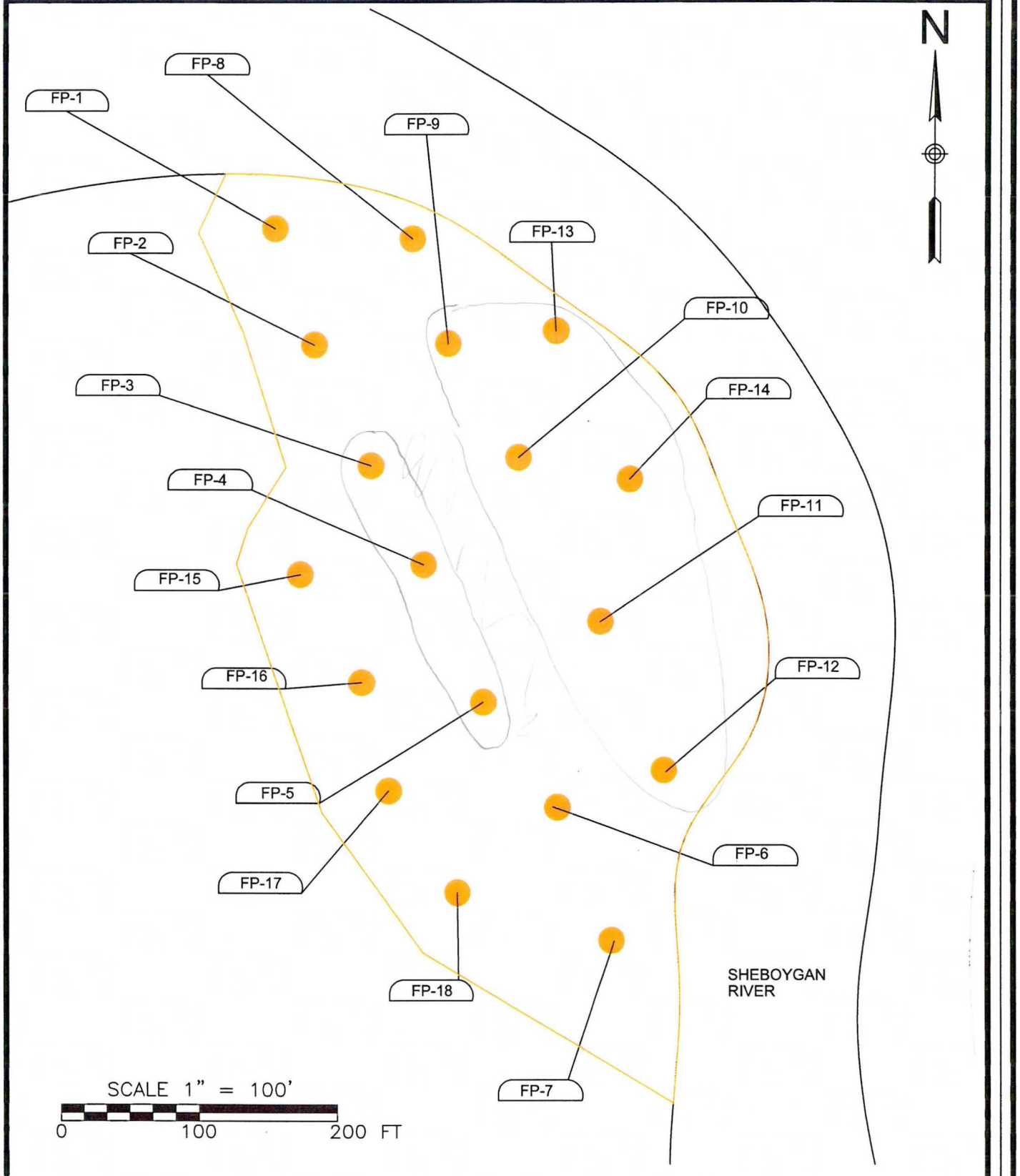

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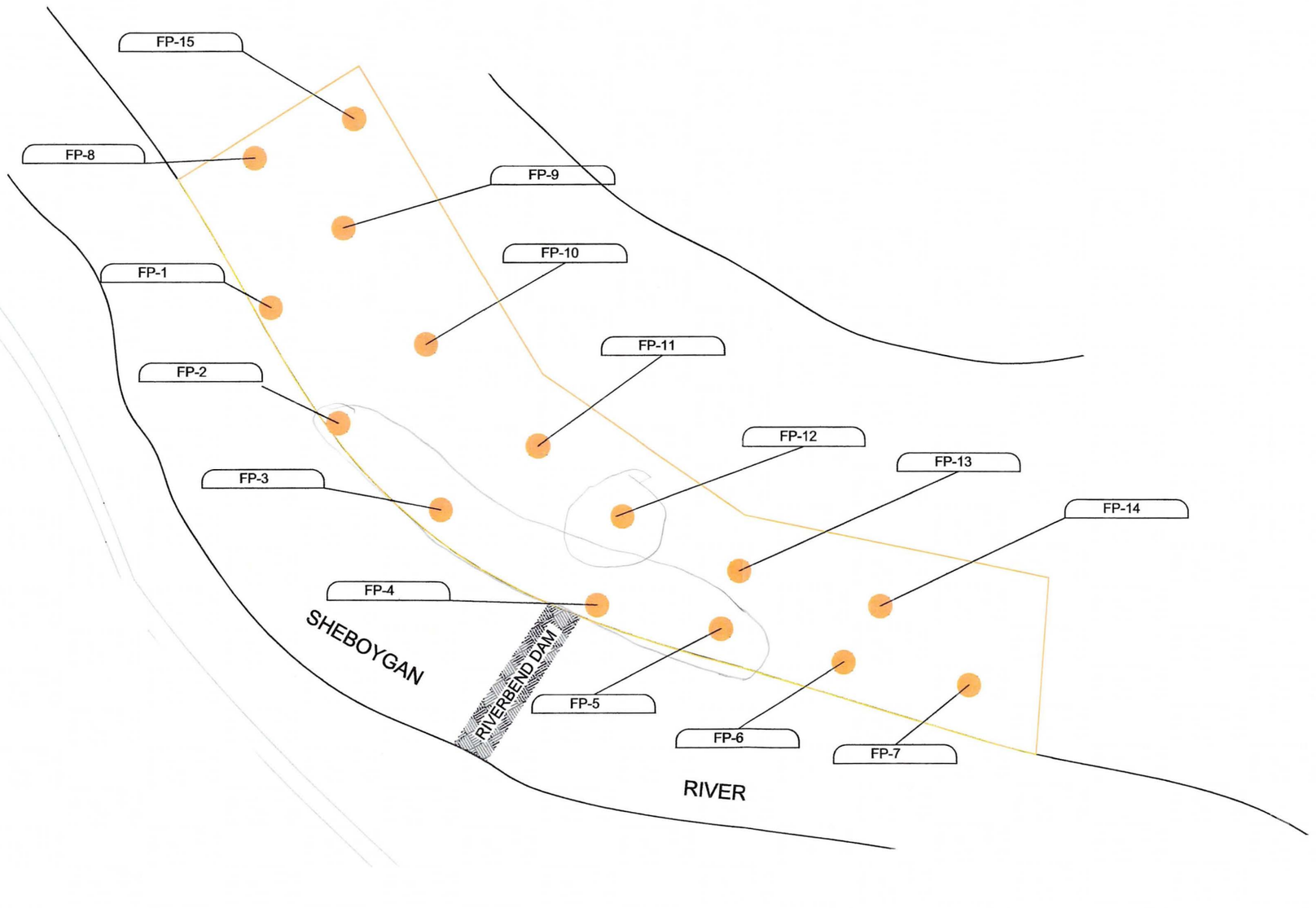
Table 3.5
Floodplain 7 PCB Concentration Sample Results
Sheboygan River and Harbor Superfund Site ~ Phase II

	SAMPLE LOCATION															
	DEPTH BELOW GROUND SURFACE	FP1	FP2	FP3	FP4	FP5	FP6	FP7	FP8	FP9	FP10	FP11	FP12	FP13	FP14	FP15	MEAN CONCENTRATION
Surface	0.0-0.5	2.60	8.00	16.50	17.90	9.00	2.90	1.49	0.57	0.12	0.05	0.18	11.00	1.40	0.14	0.08	4.95
	0.5-1.5			13.00	3.40								0.82				
Frost Line	1.5-2.5			0.68	0.29								0.19				3.79
	2.5-3.5			0.25	0.24								0.08				
	3.5-4.5			*0.19*													
	4.5-5.5																

NOTES:
1. PCB Concentrations are measured in units of mg/Kg
2. Non-detect results are shown in italics and represent 1/2 the detection limit.



REVISION	DESCRIPTION	DRAWN BY	CHECKED BY	DATE
0	UR SEDIMENT DEPOSIT INVESTIGATION	PRK	DPD	3/29/05

FLOODPLAIN INVESTIGATION

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PREPARED FOR:

SHEBOYGAN RIVER AND HARBOR SUPERFUND SITE

SHEYBOYGAN FALLS, WISCONSIN

FLOODPLAIN 7
SAMPLE LOCATIONS

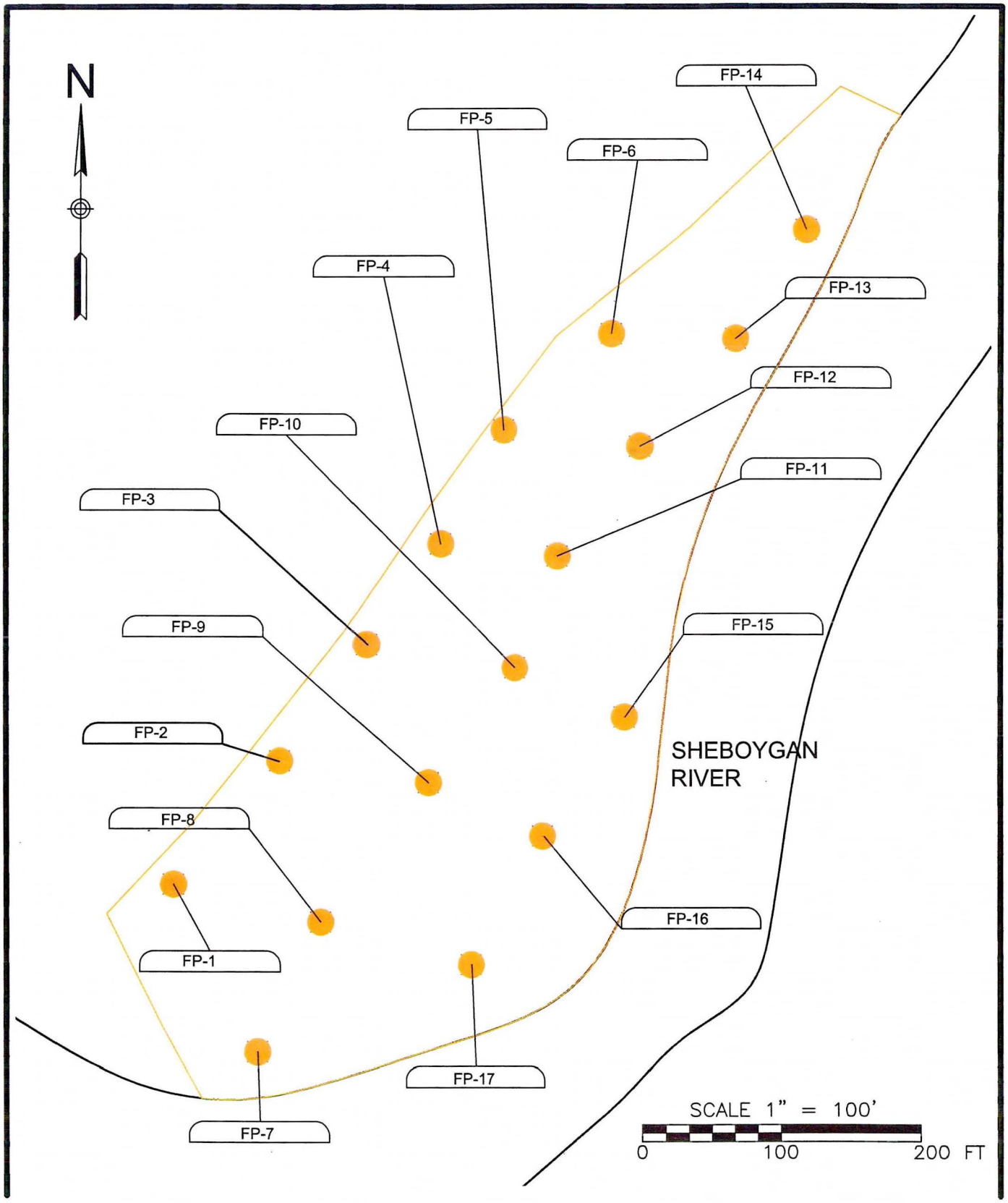
SCALE:	1" = 100'
REVISION:	0
PROJECT NUMBER:	02-010
SHEET NO:	3.5

Table 3.6
Floodplain 8 PCB Concentration Sample Results
Sheboygan River and Harbor Superfund Site ~ Phase II

	SAMPLE LOCATION																	
	DEPTH BELOW GROUND SURFACE	FP1	FP2	FP3	FP4	FP5	FP6	FP7	FP8	FP9	FP10	FP11	FP12	FP13	FP14	FP15	FP16	FP17	MEAN CONCENTRATION
Surface	0.0-0.5	0.15	NA	0.12	0.21	0.19	0.19	0.02	0.22	0.13	0.97	0.52	*0.05*	*0.01*	*0.01*	4.90	1.60	0.56	**0.62**
	0.5-1.5									0.67									
Frost Line	1.5-2.5									0.07									**0.56**
	2.5-3.5									0.01									
	3.5-4.5									*0.01*									
	4.5-5.5																		

NOTES: 1. PCB Concentrations are measured in units of mg/Kg

2. Non-detect results are shown in italics and represent 1/2 the detection limit.



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