Table 5.20 Total existing load, TMDL and allocations for 11-digit HUC 030 (daily).

14-Digit HUC	Sub-Watershed	Sub-Watershed Extent (Upper RM-Lower RM)	Parameter	Existing Loads				% Reduction	TMDL	Allocations			
				PS	NPS	Upstream	Total			WLA	LA	Upstream	MOS
030-020	Tusc R below Chippewa Creek to above Fox Run	103.2-97.5	FC	**LDC**									
030-050	Fox Run	Entirety	TP[2]	2.32	41.17	-	43.49	84.9	6.57	2.48	3.76	-	0.33
030-060	Tusc R below Fox Run to above Sippo Ck-mainstem	97.5-90.83	FC	**LDC**									
030-070	Mudbrook Creek	Entirety	FC[1]	1.26	0.13	-	1.39	98.5	0.02	0.0001	0.02	-	-
030-080	Newman Creek above Orrville Ditch (RM 9.76)	Head-9.76	FC[1]	1.27	5.75	-	7.02	99.6	0.03	0.001	0.03	-	-
			TP[2]	7.96	39.23	-	47.19	88.3	5.85	3.46	2.10	-	0.29
030-090	Orrville Ditch	Entirety	FC[1]	0.52	5.80	-	6.32	99.6	0.03	0.00	0.03	-	-
			TP[2]	0.94	43.19	-	44.14	46.0	23.86	0.0	22.66	-	1.19
030-100	Lower Newman Creek (dwst of Orrville D)	9.76-mouth	FC[1]	1.49	0.44	0.06	1.98	95.7	0.08	0.000007	0.03	0.06	-
030-110	West Sippo Creek	Entirety	FC[1]	2.61	0.14	-	2.74	99.1	0.03	0.00004	0.03	-	-
			TP[2]	6.15	24.60	-	30.75	82.6	5.35	0.26	4.83	-	0.27
030-120	Sippo Creek	Entirety	FC[1]	2.84	0.06	-	2.90	97.9	0.06	0.001	0.06	-	-

[1] cfu * 10^{13} * day^{-1}
[2] lbs * day^{-1}

Table 5.21 Existing nonpoint source loads for 11-digit HUC 030.

14-Digit HUC	Sub-Watershed	Sub-Watershed Extent (Upper RM-Lower RM)	Parameter	Existing Non-Point Source Loads						
				Cropland	Pasture	Forest	Ground Water	Cattle in stream	Urban	Total
030-050	Fox Run	Entirety	TP[2]	9931.2	3982.9	227.5	818.1	-	66.1	15025.8
030-070	Mudbrook Creek	Entirety	FC[1]	1.47	16.86	0.007	-	-	0.003	18.34
030-080	Newman Creek above Orrville Ditch (RM 9.76)	Head-9.76	FC[1]	21.17	59.01	0.009	-	713.35	0.01	793.55
			TP[2]	4730.9	8426.1	209.9	742.3	-	210.3	14319.5
030-090	Orrville Ditch	Entirety	FC[1]	18.27	55.83	0.009	-	726.22	0.0007	800.3
			TP[2]	4349.9	10442.2	196.0	756.6	-	21.4	15766.1
030-100	Newman Creek below Orrville Ditch to Tuscarawas	9.76-mouth	FC[1]	13.11	46.99	0.02	-	-	0.006	60.13
030-110	West Sippo Creek	Entirety	FC[1]	2.81	15.99	0.007	-	-	0.007	18.82
			TP[2]	3700.9	4330.8	191.4	646.8	-	108.7	8978.6
030-120	Sippo Creek	Entirety	FC[1]	0.63	7.49	0.01	-	-	0.004	8.14

[1] cfu * 10^{13} * season^{-1} [2] lbs * year^{-1}

Table 5.22 Nonpoint source load allocations for 11-digit HUC 030.

14-Digit HUC	Sub-Watershed	Sub-Watershed Extent (Upper RM-Lower RM)	Parameters		Individual Non-Point Sources						
					Cropland	Pasture	Forest	Ground water	Cattle in stream	Urban	Total
030-050	Fox Run	Entirety	TP[2]	Allocation	769.2	308.4	227.5	63.3	-	5.1	1373.6
				% Reduction	92.3	92.3	0.0	92.3	-	92.3	-
030-070	Mudbrook Creek	Entirety	FC[1]	Allocation	0.23	2.62	0.007	-	-	0.0005	2.86
				% Reduction	84.4	84.4	0.0	-	-	84.4	-
030-080	Newman Creek above Orrville Ditch (RM 9.76)	Head-9.76	FC[1]	Allocation	0.96	2.68	0.009	-	0.00	0.0005	3.65
				% Reduction	95.5	95.5	0.0	-	100	95.5	-
			TP[2]	Allocation	187.2	333.1	209.9	29.3	-	8.4	767.8
				% Reduction	96.0	96.0	0.0	96.0	-	96.0	-
030-090	Orrville Ditch	Entirety	FC[1]	Allocation	0.87	2.67	0.009	-	0.00	0.00003	3.56
				% Reduction	95.2	95.2	0.0	-	100	95.2	-
			TP[2]	Allocation	2256.2	5416.1	196.0	392.4	-	11.0	8271.7
				% Reduction	48.1	48.1	0.0	48.1	-	48.1	-
030-100	Lower Newman Creek (dwst of Orrville D)	9.76-mouth	FC[1]	Allocation	0.90	3.22	0.02	-	-	0.0004	4.14
				% Reduction	93.2	93.2	0.0	-	-	93.2	-
030-110	West Sippo Creek	Entirety	FC[1]	Allocation	0.53	3.02	0.007	-	-	0.001	3.56
				% Reduction	81.1	81.1	0.0	-	-	81.1	-
			TP[2]	Allocation	662.0	774.7	191.4	115.7	-	19.4	1763.1
				% Reduction	82.1	82.1	0.0	82.1	-	82.1	-
030-120	Sippo Creek	Entirety	FC[1]	Allocation	0.63	7.49	0.01	-	-	0.004	8.14
				% Reduction	0.0	0.0	0.0	-	-	0.0	-

[1] cfu * 10^{13} * $season^{-1}$ for cfu * 10^{13} * day^{-1} divide each value by 138
[2] lbs * $year^{-1}$ for lbs * day^{-1} divide each value by 365

Table 5.23 Point source existing and allocated loads for 11-digit HUC 030.

14-Digit HUC	Sub-Watershed	Sub-Watershed Extent	Parameter		NPDES Discharger	MS4	HSTS
030-050	Fox Run	Entirety	TP[2]	Existing	114.0	0	732.4
				% reduction	none	-	100
				Allocation	904.8	0	0
030-070	Mudbrook Creek	Entirety	FC[1]	Existing	0.02	0.02	173.82
				% reduction	0	84.4	100
				Allocation	0.02	0.003	0
030-080	Newman Creek above Orrville Ditch (RM 9.76)	Head-9.76	FC[1]	Existing	0.22	0	174.52
				% reduction	0	-	100
				Allocation	0.22	0	0
			TP[2]	Existing	2070.1	0	835.8
				% reduction	39.1	-	100
				Allocation	1261.0	0	0
030-090	Orrville Ditch	Entirety	FC[1]	Existing	0	0	71.94
				% reduction	-	-	100
				Allocation	0	0	0
			TP[2]	Existing	0	0	344.6
				% reduction	-	-	100
				Allocation	0	0	0
030-100	Lower Newman Creek (dwst of Orrville D)	9.76-mouth	FC[1]	Existing	0.001	0.001	206.26
				% reduction	0	93.2	100
				Allocation	0.001	0.0001	0
030-110	West Sippo Creek	Entirety	FC[1]	Existing	0	0.03	359.49
				% reduction	-	81.1	100
				Allocation	0	0.006	0
			TP[2]	Existing	0	522.5	1721.8
				% reduction	-	82.1	100
				Allocation	0	93.5	0
030-120	Sippo Creek	Entirety	FC[1]	Existing	0	0.16	391.56
				% reduction	-	0	100
				Allocation	0	0.16	0

[1] cfu * 10^{13} * season^{-1} for cfu * 10^{13} * day^{-1} divide each value by 138
[2] lbs * year^{-1} for lbs * day^{-1} divide each value by 365

Table 5.24 Existing and allocated loads for point source dischargers (not including MS4s and HSTSs) for HUC 030.

14-Digit HUC	Sub-Watershed	Sub-Watershed Extent	Facility	Parameter	Existing load	% Reduction	Allocated load
030-010	Tusc R, below Wolf Ck to above Chippewa Ck	RM 110.7 to RM 103.2	3PD00004 Barberton WWTP	TP[2]	98505	80%	19701
030-050	Fox Run	Entirety	3PR00280 CLAY'S PARK RESORTS FOX RUN	TP[2]	18.9	none	639.7
			3PR00288 OHIO FAMILY FOUNDATION INC.		67.7	none	182.8
			3PV00099 TOP-O-HILL MHP		27.4	none	82.2
030-070	Mudbrook Creek	Entirety	3PV00097 FORTY CORNERS MOBILE VLG	FC[1]	0.02	0	0.02
030-080	Newman Creek above Orrville Ditch (RM 9.76)	Head-9.76	3PB00013 DALTON WWTP	FC[1]	0.19	0	0.19
			3PV00017 LINCOLN TERRACE ESTATES MHP		0.02	0	0.02
			3PB00013 DALTON WWTP	TP[2]	1895.3	51.8	913.8
			3PV00017 LINCOLN TERRACE ESTATES MHP		174.9	none	347.3
030-100	Lower Newman Creek (dwst of Orrville D)	9.76-mouth	3PR00180 NORTH LAWRENCE VOLUNTEER FIRE DEPT	FC[1]	0.001	0	0.001

[1] cfu * 10^{13} * season^{-1} for cfu * 10^{13} * day^{-1} divide each value by 138
[2] lbs * year^{-1} for lbs * day^{-1} divide each value by 365

Table 5.25 Facilities with required total P reductions in 11-digit HUC 030.

14-Digit HUC	Sub-Watershed	Sub-Watershed Extent	Facility	Outfall #	Average total P effluent concentration (mg/l)		Average effluent flow (MGD)	
					Existing	Required	Existing	Design
030-010	Tusc R, below Wolf Ck to above Chippewa Ck	RM 110.7 to RM 103.2	3PD00004 Barberton WWTP	001	5.39	1.0	5.5	6.0
030-080	Newman Ck upst Orrville D.	Head-9.76	3PB00013 DALTON WWTP	001	3.0[+]	1.0	0.207	0.3

[†] This concentration of total P (3.0 mg/l) is assumed for effluent from public waste facilities with no representative data

Table 5.26 MS4 entities for 11-digit HUC 030.

14-Digit HUC	Sub-Watershed	Sub-Watershed Extent (Upper RM-Lower RM)	MS4 entities	Exempt MS4 entities (wavier granted)
030-070	Mudbrook Creek	Entirety	Jackson Township (Stark County), Lawrence Township (Stark County)	-
030-100	Lower Newman Creek (dwst of Orrville D)	9.76-mouth	City of Massillon, Lawrence Township (Stark County), Tuscarawas Township (Stark County), Perry Township (Stark County)	-
030-110	West Sippo Creek	Entirety	Tuscarawas Township (Stark County), City of Massillon	-
030-120	Sippo Creek	Entirety	City of Massillon, Perry Township (Stark County), Jackson Township (Stark County)	Village of Hills and Dale

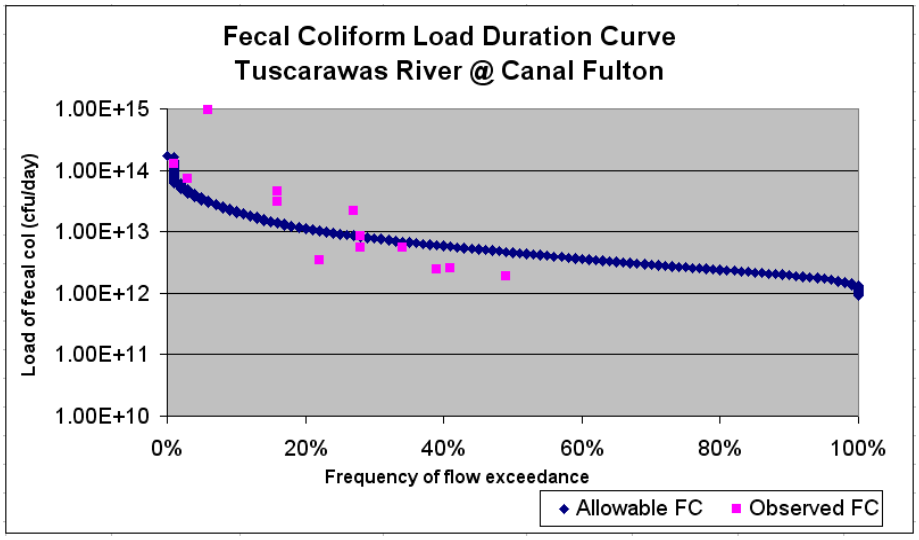


Figure 5.10 Load duration curve for the Tuscarawas River at river mile 100.3.

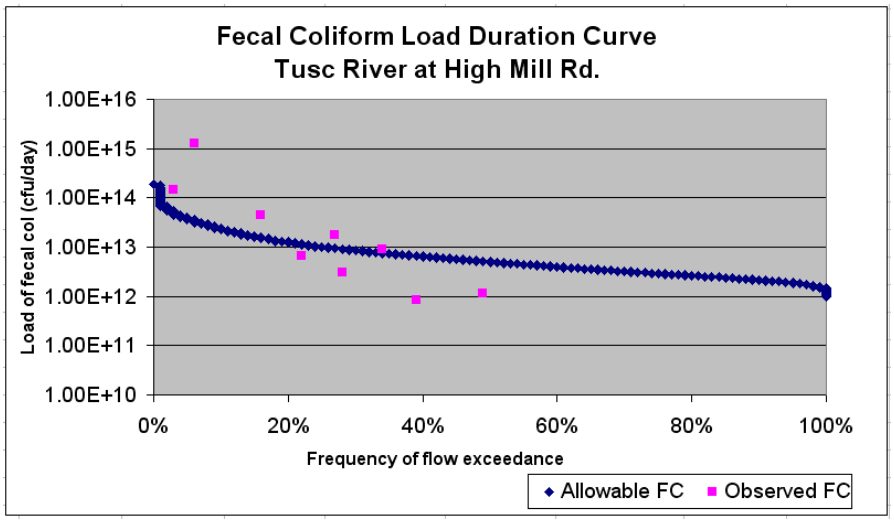


Figure 5.11 Load duration curve for the Tuscarawas River at river mile 94.87.

5.3.2 Habitat and Sediment

030-030

The upper Nimisila Creek sub-watershed has causes of impairments including siltation, habitat and flow alteration and organic enrichment. The one stream site in this sub-watershed met the sediment and habitat TMDL targets. There is only a slight deviation for one of the three measures included in the substrate metric of the sediment TMDL. Similar to Hubbard Creek in the 14-digit HUC 020-020, the habitat TMDL method using the QHEI does not indicate that areas with lake flow alterations fail to meet the habitat targets. The biology at this stream sampling site indicates the site only marginally misses the use attainment criteria for full attainment.

030-050
Fox Run sediment and habitat measurements fail to meet TMDL expectations throughout the subwatershed. Excessive siltation and channelization (although the channel is recovering) are cited as causes of impairment to the more downstream site (river mile 2.7). The upstream sampling site, river mile 4.9, has recently been channelized creating very poor habitat conditions which make this segment largely uninhabitable by aquatic life. Excessive fine stream sediment deposits, poor instream habitat cover and poor stream morphology lacking sinuosity are all noted as impairments of this site. The total QHEI score is only 18, the lowest of all the QHEIs calculated for this TMDL assessment unit.

030-080
One stream assessment site on upper Newman Creek has very little habitat cover, is dominated by fine sediments and is highly embedded. The sediment TMDL meets expectations with only the riparian metric not meeting its target. Despite the high degree of embeddedness, the large proportion of cobbles in the bed material was sufficient to raise the substrate score above the target value. The habitat measurements fails with two out of the three points needed to satisfy the TMDL. The only high influence attribute of modified conditions is sparse instream cover.

030-090
One site on Orrville Ditch and one site on an unnamed tributary to Orrville Ditch at river mile 0.52 are assessed in this 14-digit HUC. Orrville Ditch is designated as a MWH aquatic life use stream, and fails to meet the sediment and habitat targets by a large margin. Since these TMDLs are developed for WWH designated streams this TMDL is not fully appropriate. However the degree to which this site fails these TMDLs indicates the level of impact channel modifications have brought about. The unnamed tributary to Orrville Ditch drains the area containing the two CAFO operations discussed above in Section 5.3.1. The sediment and habitat TMDLs both meet expectations for WWH at this sampling site indicating these are not the main causes of impairment to this tributary. Organic enrichment is also a cause of impairment for this subwatershed, and reductions of nutrients and silage drainage from the Stoll Farms, Inc. should improve water quality and biology in Orrville Ditch's unnamed tributary as well as Orrville Ditch.

030-110
Three sampling sites on West Sippo Creek exist. The most upstream and downstream sites both meet the sediment and habitat TMDLs. The site in the middle, at river mile 2.6, fails to meet the sediment TMDL with a deviation of 27% and the habitat TMDL target is missed with a score of 2 points out of the 3 that are needed. These results indicate that the subwatershed impairment is primarily from its organic enrichment source which is dealt with above in Section 5.3.1.

030-120
Sippo Creek drains an area with a large population, and many historical channel alterations. Both the sediment and habitat miss TMDL expectations by a large degree. A muck substrate which creates complete embeddedness causes the substrate metric of the Sippo Creek sampling to be zero. Additionally the channelized nature of the stream is another reason for it scoring zero out of the three needed points for the habitat TMDL.

The unnamed tributary to Sippo Creek at river mile 4.54 contains the drainage from Lake Cable. This stream meanders in an altered channel through low density residential areas until it converges with Sippo Creek. While this stream is designated MWH it fails to meet the sediment and habitat TMDLs by a large margin. The low lying areas in this tributary's watershed were

likely heavily influenced by wetlands. This fact should be considered when examining QHEI results.

Table 5.27 Sediment and habitat TMDLs for 11-digit HUC 030.

TMDL Targets For WWH		Sediment TMDL						Habitat TMDL						
		Allocations			TMDL			Allocations			Subscore			TMDL
		≥ 13	≥ 14	≥ 5	32			≥ 60 = *1 pt*	< 2 = *1 pt*	< 5 = *1 pt*				*3 pts*
Existing Scores Stream/River (Use) ***Impaired indicates use is not met***	**River Mile**	**QHEI Categories**			**Total Sediment Score**	**% Deviation from target**	**Main impaired category if any**	**QHEI Score**	**# of High Influence Attributes**	**Total # of Modified Attributes**	**QHEI**	**High influence**	**# Modified Attributes**	**Total Habitat Score**
		Substrate	**Channel**	**Riparian**										
Nimisila Creek to Nimisila Reservoir (05040001-030-030)														
Nimisila Creek	7	11.5	16	10	37.5	**Meets**	Substrate	77.5	0	3	1	1	1	**3**
Fox Run (05040001-030-050														
Fox Run	4.9	1	4	2	7	78.13	Substrate	18	4	10	0	0	0	0
	2.7	13.5	12.5	4.5	30.5	4.69	Channel	59.5	1	6	0	1	0	1
Newman Creek above Orrville Ditch (05040001-030-080)														
Newman Creek	11.9	17	15	2	34	**Meets**	Riparian	66.5	1	5	1	1	0	2
Orrville Ditch (05040001-030-090)														
Orrville Ditch	2.3	1	4	2	7	78.13	Substrate	20	4	9	0	0	0	0
Trib to Orville Ditch (RM 0.52)	1.2	17.5	15.5	3.5	36.5	**Meets**	Riparian	68.5	0	3	1	1	1	**3**
West Sippo Creek (05040001-030-110)														
West Sippo Creek (WWH)	3.8	16	15	4	35	**Meets**	Riparian	71.5	0	3	1	1	1	**3**
	2.6	6	14.5	3	23.5	26.56	Substrate	61.5	1	6	1	1	0	2
	1.1	17.5	16.5	5	39	**Meets**	**None**	73	0	1	1	1	1	**3**
Sippo Creek (05040001-030 120)														
Sippo Creek	4.6	0	10	4.5	14.5	54.7	Substrate	35.5	3	9	0	0	0	0
Trib to Sippo Creek (RM 4.54)	2.8	1	6	4.5	11.5	64.06	Substrate	27.5	4	10	0	0	0	0

5.3.3 Organic Enrichment/Dissolved Oxygen

030-010

This 14-digit HUC receives a large nutrient load from the Barberton WWTP. The effluent concentration of total phosphorus (based on the discharger's self monitoring data from 2002-2005) ranges from 1.2 to 11.8 mg/l, with an average of 5.4 mg/l. On average, the Barberton WWTP releases 122 kg/day of total phosphorus to the stream. Figure 5.12 shows a load duration curve for total P, developed from water quality and streamflow data collected by Ohio EPA in the Tuscarawas River at RM 104.3, about 4.8 miles downstream from the Barberton WWTP. The red line indicates the target load of phosphorus, which is being exceeded under most flow regimes, except the extremely high flows. The blue data points indicate total phosphorus loads measured in the stream. Notice that most load data points do not increase with streamflow, other than under extremely high flows (those exceeded from 0 to 14% of the time). This confirms that the Barberton WWTP (a fairly constant load) is the main phosphorus contributor, rather than nonpoint sources associated with runoff events.

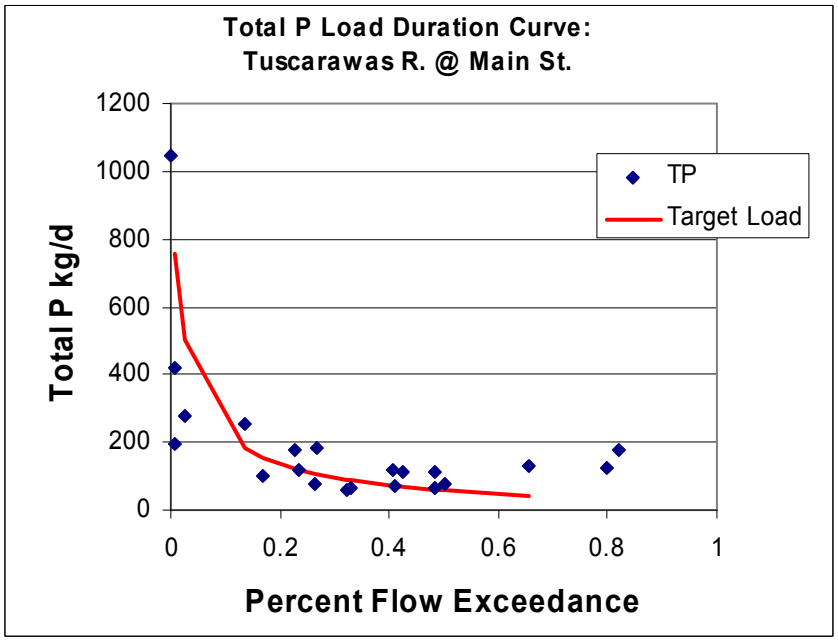


Figure 5.12 Total P load duration curve for the Tuscarawas River at Main St., Clinton (RM 104.3).

Figure 5.13 shows the dramatic increase in the Tuscarawas River total P concentration in the vicinity of the Barberton WWTP outfall, well above the target instream concentrations of 0.28 mg/l (MWH target) and 0.17 mg/l (WWH target). The plots are based on data collected by Ohio EPA between 2003 and 2005.

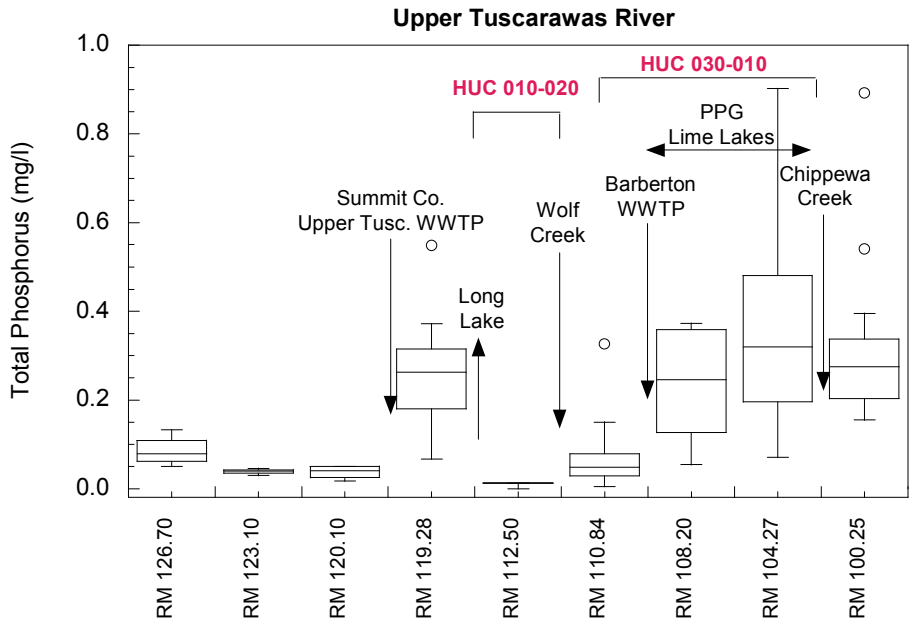


Figure 5.13 Range of Total P measured from Ohio EPA water quality surveys (2003-2005) in the Upper Tuscarawas River.

The other large contributor of total P in the reach (assumed to be mostly in dissolved form) seems to be groundwater inflow near the PPG lime lakes, based on mass balance analysis of the streamflows, water quality, and effluent data collected during the 13-15 September 2005 Ohio EPA survey. The PPG lime lakes contain waste from soda ash production, which consist of fine-grained lime spoil that is alkaline, lacks nutrients, and is unable to support vegetation. Reclamation efforts included mixing the waste with sewage sludge, regrading, and planting of mixed herbaceous and woody vegetation (Foos, et al., 2000).

Additional field data collection is recommended to confirm the source of the unaccounted flow and nutrients downstream of the Barberton WWTP.

The calibrated QUAL2K model for the upper Tuscarawas River is used to simulate water quality under summer $7Q_{10}$ design conditions. Input data for the QUAL2K D.O. model is shown in Appendix E. Figure 5.14 shows some scenarios simulated under summer low flow conditions. The three scenarios shown are:

- existing conditions (total P concentration of 5.4 mg/l at 5.5 MGD)
- recommended total P concentration of 1 mg/l at design flow (6 MGD)
- effluent total P concentration of 1.0 mg/l at design flow, in addition to 80% reduction in suspected groundwater /lime lakes phosphorus contribution.

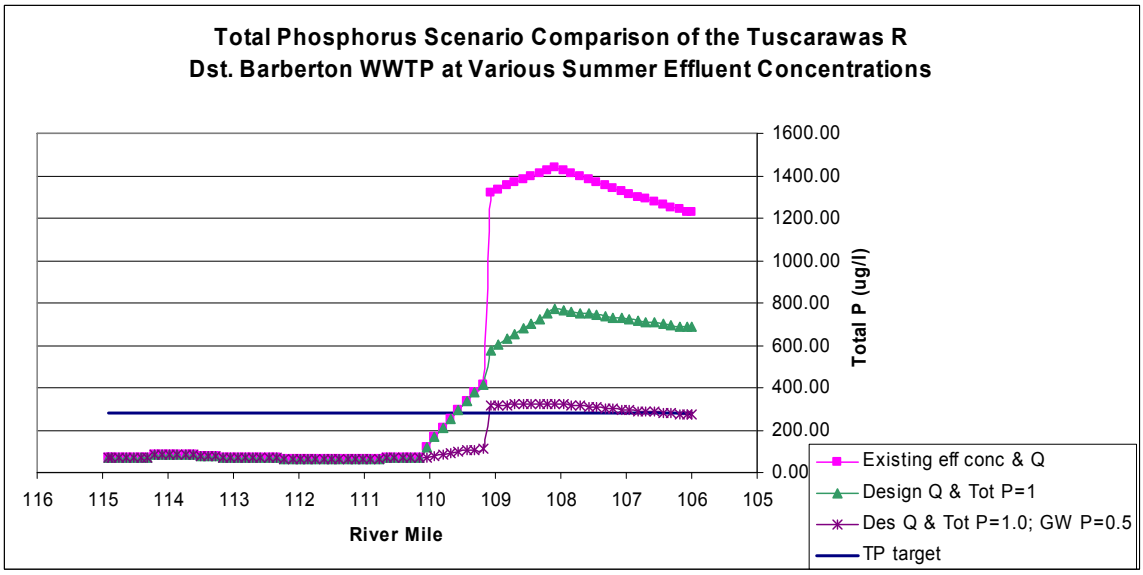


Figure 5.14 Possible scenarios for total P reduction in Tuscarawas River near Barberton, from QUAL2K model summer simulations.

The simulations indicate that even with an effluent total P of 1 mg/l, the instream concentration of total P downstream of the Barberton WWTP will not meet the total P target of 0.28 mg/l unless the phosphorus contribution from unknown sources (possibly from groundwater/PPG lime lakes) drops from an estimated 2.2 mg/l to less than 0.5 mg/l.

The effluent concentration shown in Table 5.24 represents an 80% reduction in total P load for the Barberton WWTP.

Section 5.12

Mitigation Documentation

Section 5.12.2

Off-Site Permitee-Responsible Mitigation Project Documentation

October 10, 2012

Metro Parks, Serving Summit County seeks to purchase a 127 acre property in Summit and Wayne Counties, OH; USGS Doylestown quadrangle map, 40081h6. This property contains, outside of a 100' buffer from adjacent, active railroad bed, 96.5 acres of Category 3 wetland.

A wetland delineation was recently performed on all accessible areas of the site to all appropriate protocols, including methodology from the 1987 *Corps of Engineers Wetlands Delineation Manual* and guidance from the 2009 *Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region*. Supporting maps, data forms, and photographs have also been provided. The site also supports two short streams; a perennial stream on the eastern border and an intermittent stream on the northern border.

Appendix A: Maps
Appendix B: ORAM, HHEI, and Wetland Determination Sample Point Data Forms
Appendix C: Representative Photographs

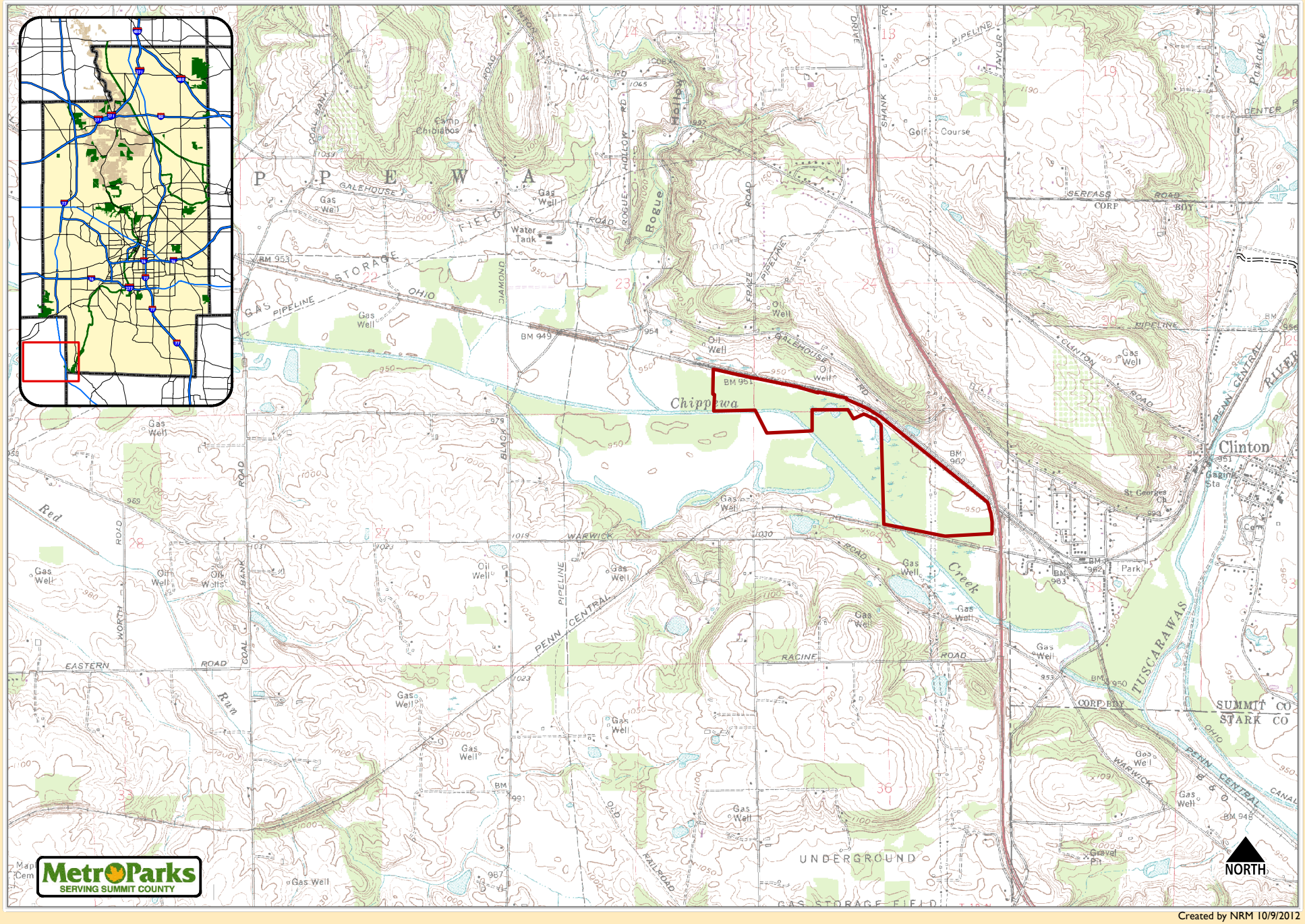
Appendix A:

Maps

Figure 1

Chippewa Creek Lowlands

Site Location within Doylestown USGS Quadrangle Map



Created by NRM 10/9/2012

0 900 1,800 3,600 5,400 7,200 Feet

Figure 2

Chippewa Creek Lowlands

County Aerial Photo (2006)

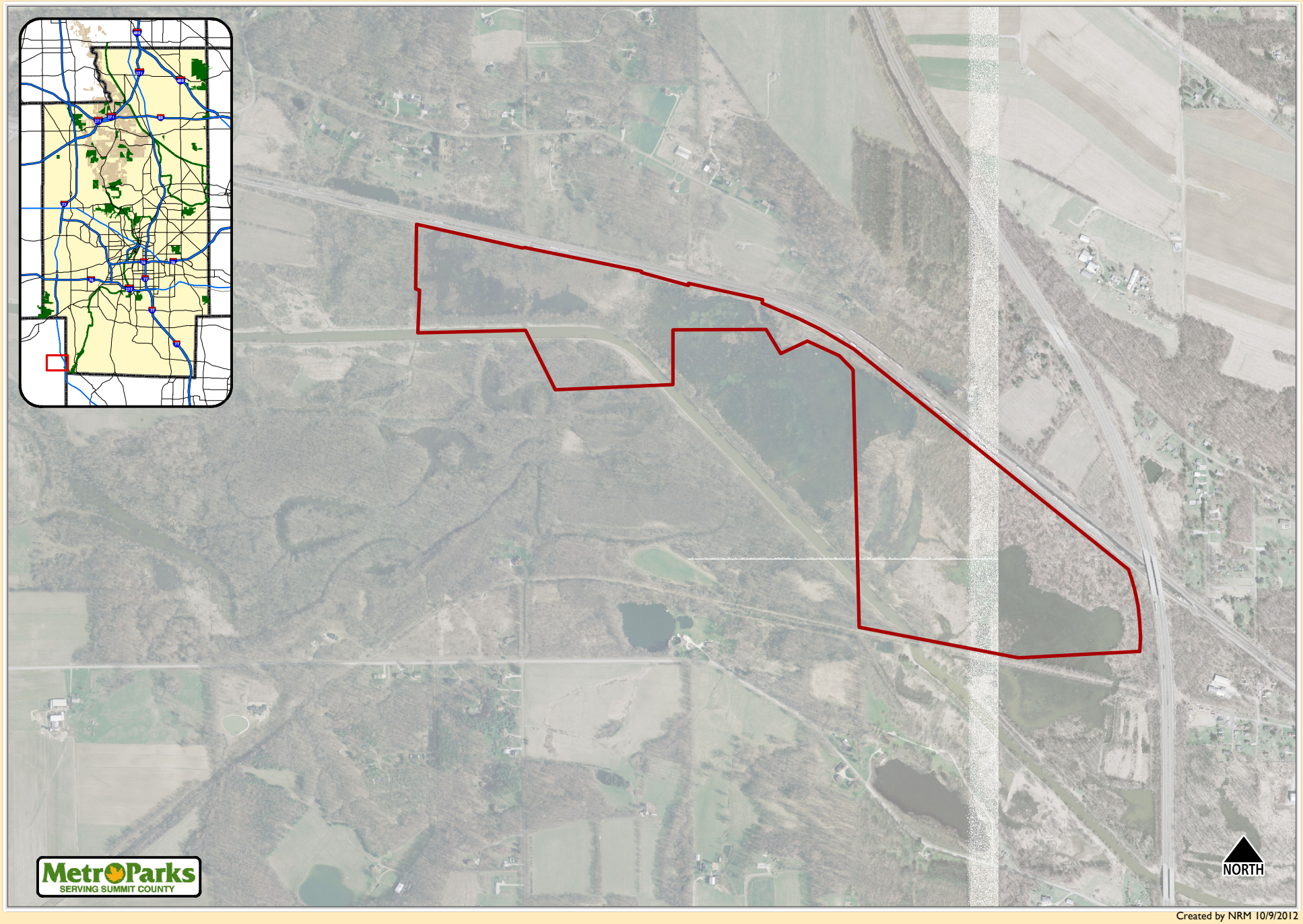
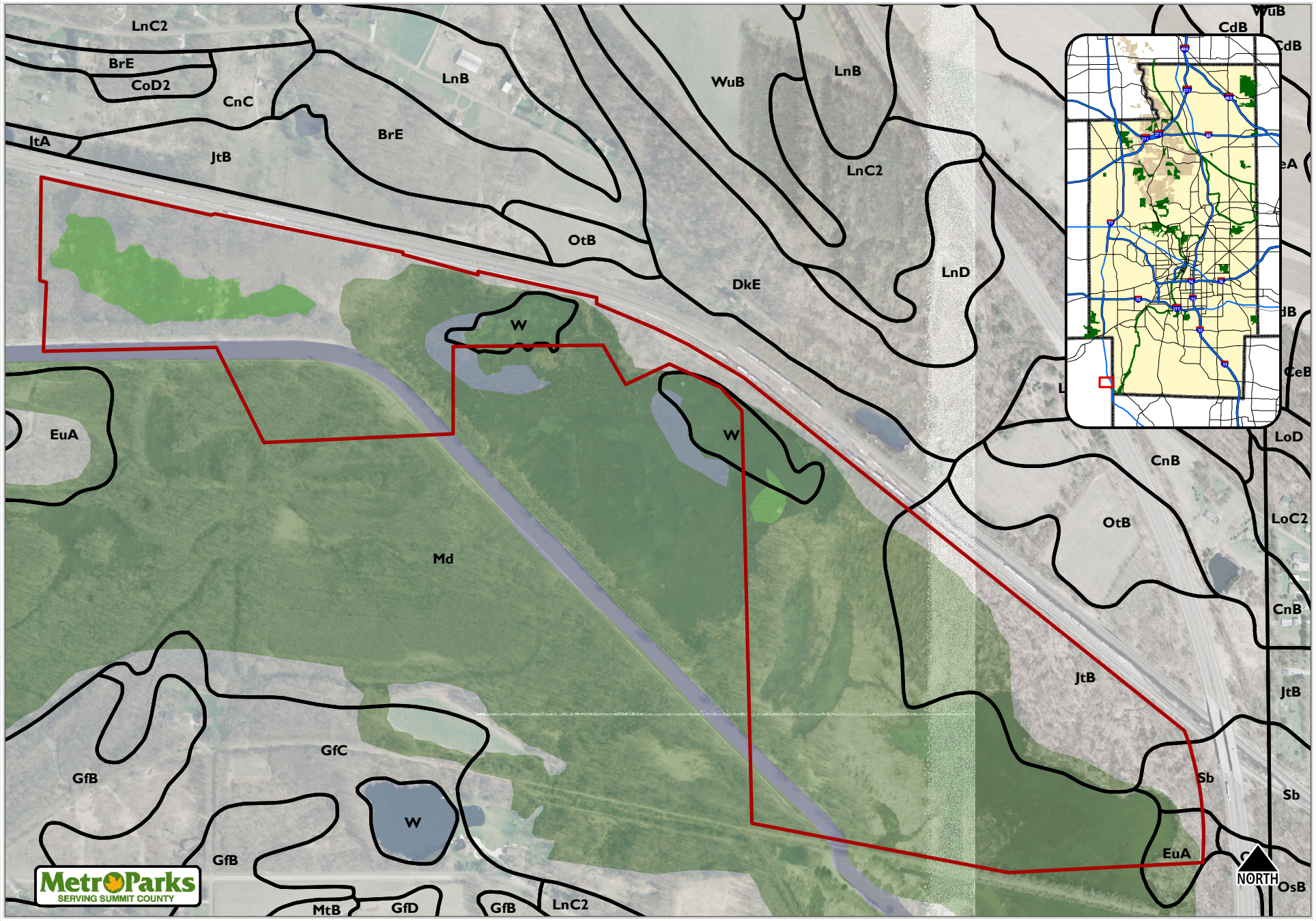


Figure 3

Chippewa Creek Lowlands

County Soil Survey (1990) & National Wetlands Inventory (2009)



Created by NRM 10/9/2012

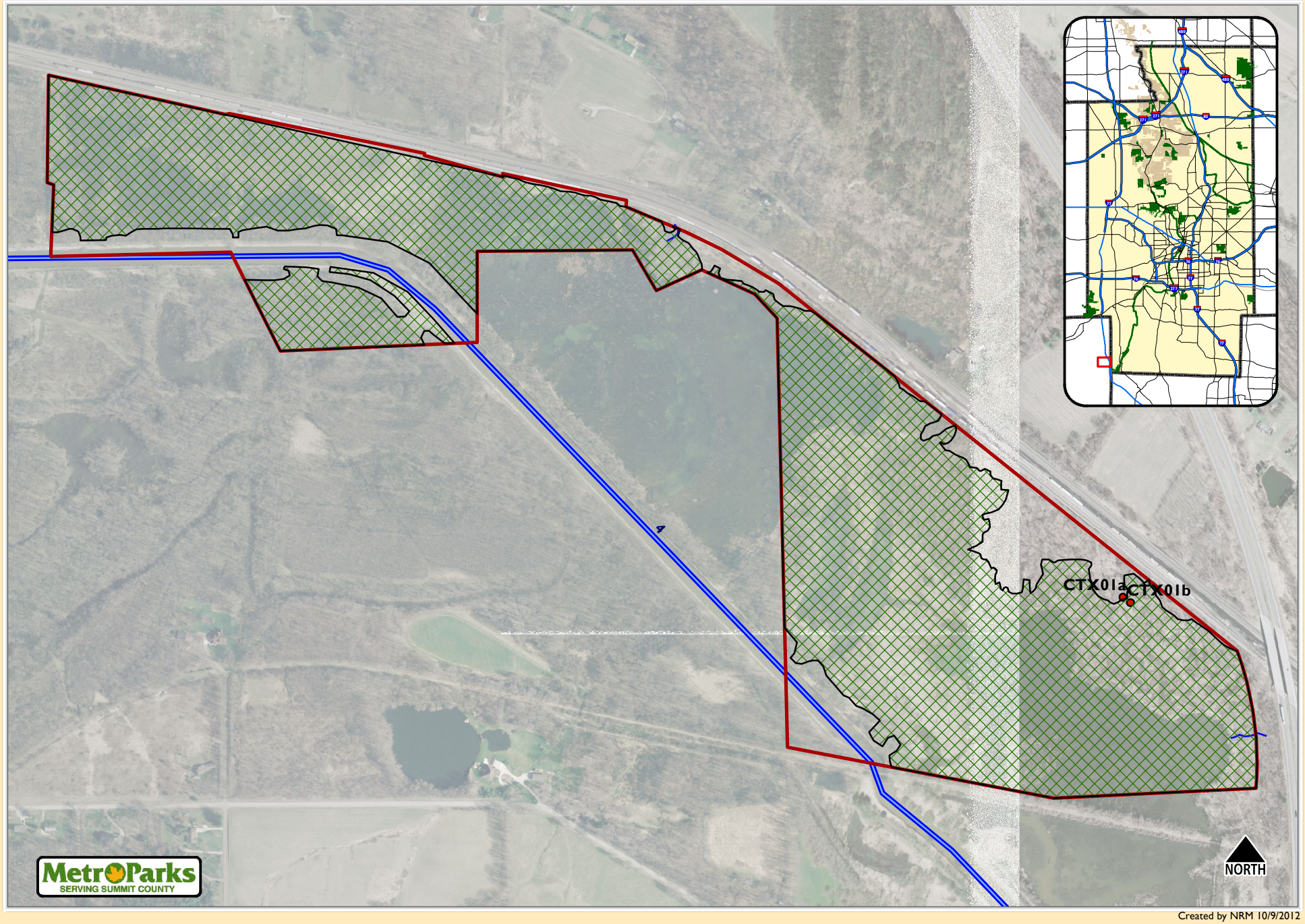
Feet

0 220 440 880 1,320 1,760

Figure 4

Chippewa Creek Lowlands

Wetland Delineation

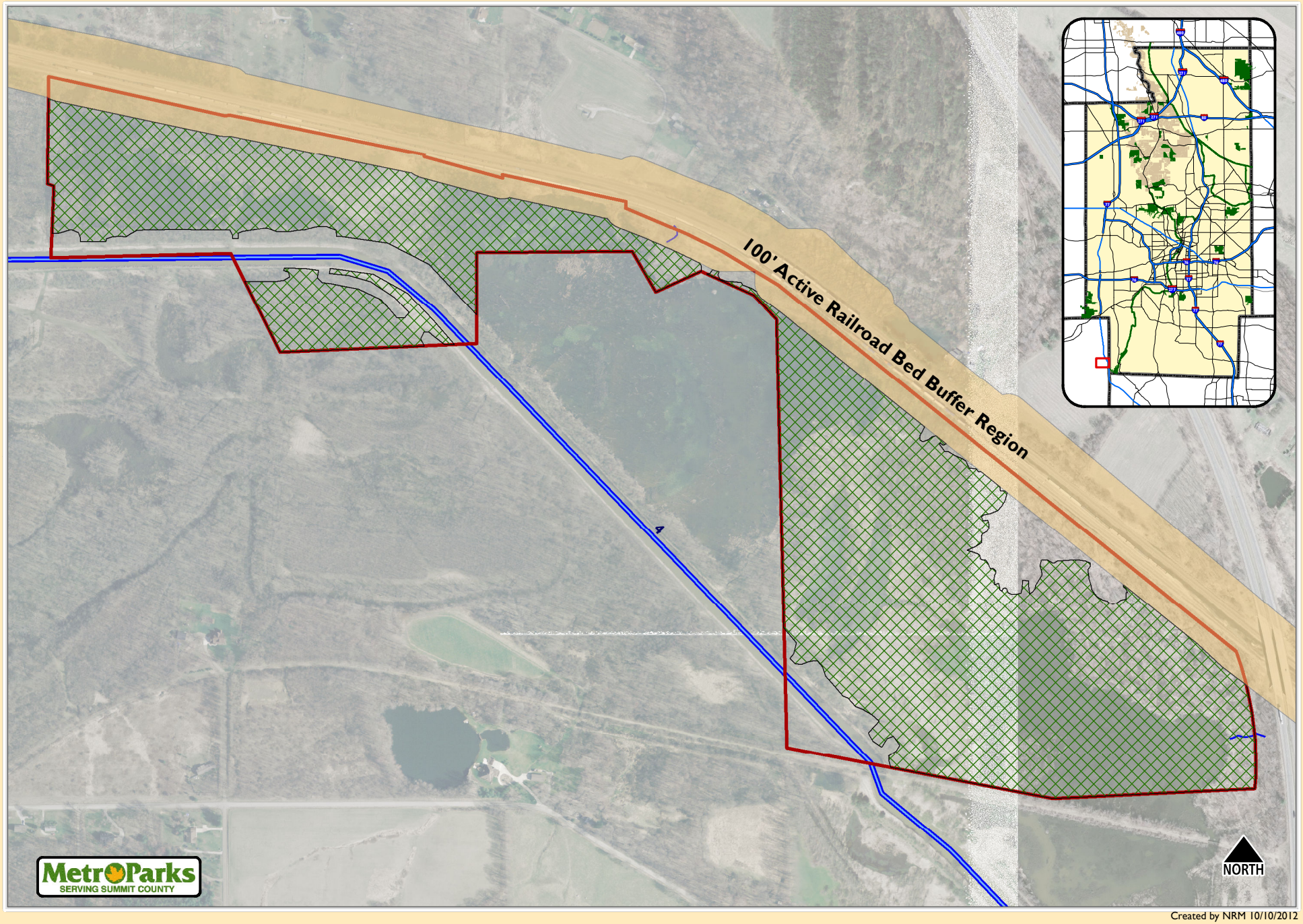


Created by NRM 10/9/2012

Figure 5

Chippewa Creek Lowlands

Wetland Delineation with 100' Active Railroad Buffer



Text

Appendix B:

Data Forms

ORAM, HHEI, and Wetland Determination Sample Points

ORAM v. 5.0 Field Form Quantitative Rating

Site: Chippewa Creek Lowlands	Rater(s): J. Wilfle K	Date: 9.15.11

Metric 1. Wetland Area (size).

6 (max 6 pts.) | 6 (subtotal)

Select one size class and assign score.

- [X] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

7 (max 14 pts.) | 13 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [X] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [X] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [X] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

27 (max 30 pts.) | 40 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [X] Other groundwater (3)
- [X] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [X] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [X] 100 year floodplain (1)
- [X] Between stream/lake and other human use (1)
- [X] Part of wetland/upland (e.g. forest), complex (1)
- [X] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- [X] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [ ] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [X] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [X] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [X] ditch
- [X] tile
- [ ] dike
- [ ] weir
- [X] stormwater input
- [ ] point source (nonstormwater)
- [X] filling/grading
- [X] road bed/RR track
- [ ] dredging
- [ ] other_____

Metric 4. Habitat Alteration and Development.

15 (max 20 pts.) | 55 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [X] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [X] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [X] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [X] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [X] dredging
- [ ] farming
- [X] nutrient enrichment

55 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Site: Chippewa Creek Lowlands	Rater(s): J. Whittle	Date: 9.15.11

55
subtotal this page

10 | 65 | **Metric 5. Special Wetlands.**

max 10 pts. | subtotal

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [X] Known occurrence state/federal threatened or endangered species (10) Sandhill Crane - Grus canadensis
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

20 | 85 | **Metric 6. Plant communities, interspersion, microtopography.**

max 20 pts. | subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [2] Aquatic bed
- [2] Emergent
- [2] Shrub
- [3] Forest
- [ ] Mudflats
- [1] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [X] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [X] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [2] Vegetated hummucks/tussucks
- [2] Coarse woody debris >15cm (6in)
- [3] Standing dead >25cm (10in) dbh
- [3] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

85 **GRAND TOTAL(max 100 pts)**

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: http://www.epa.state.oh.us/dsw/401/401.html

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 46

SITE NAME/LOCATION Clinton Towpath CSX - Stream 1

SITE NUMBER _____ RIVER BASIN _____ DRAINAGE AREA (mi²) < 0.1

LENGTH OF STREAM REACH (ft) 100 LAT. 40.924800 LONG. -81.649248 RIVER CODE _____ RIVER MILE _____

DATE 9/13/11 SCORER J.White COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]		☒	SILT [3 pt]	45
☐	BOULDER (>256 mm) [16 pts]		☐	LEAF PACK/WOODY DEBRIS [3 pts]	
☐	BEDROCK [16 pt]		☐	FINE DETRITUS [3 pts]	
☐	COBBLE (65-256 mm) [12 pts]	5	☐	CLAY or HARDPAN [0 pt]	
☒	GRAVEL (2-64 mm) [9 pts]	30	☐	MUCK [0 pts]	
☐	SAND (<2 mm) [6 pts]	20	☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0 **(A)** 12

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

TOTAL NUMBER OF SUBSTRATE TYPES: **(B)** 4

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☒	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** ~18

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☒	≤ 1.0 m (≤ 3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.0

HHEI Metric Points

Substrate Max = 40 16

A + B

Pool Depth Max = 30 25

Bankfull Width Max=30 5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R		FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☒	☒	Wide >10m	☒	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☒	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

Ohio EPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 38

SITE NAME/LOCATION Clinton Towpath - CSX - Stream 2

SITE NUMBER _____ RIVER BASIN _____ DRAINAGE AREA (mi²) < 0.1

LENGTH OF STREAM REACH (ft) 250 LAT. 40.927016 LONG. -81.651158 RIVER CODE _____ RIVER MILE _____

DATE 9/13/11 SCORER J. Whittle COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐☐	BLDR SLABS [16 pts]		☐☒	SILT [3 pt]	40
☐☐	BOULDER (>256 mm) [16 pts]		☐☐	LEAF PACK/WOODY DEBRIS [3 pts]	5
☐☐	BEDROCK [16 pt]		☐☐	FINE DETRITUS [3 pts]	
☐☐	COBBLE (65-256 mm) [12 pts]		☐☐	CLAY or HARDPAN [0 pt]	
☐☐	GRAVEL (2-64 mm) [9 pts]	5	☒☐	MUCK [0 pts]	40
☐☐	SAND (<2 mm) [6 pts]	10	☐☐	ARTIFICIAL [3 pts]	

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock 0

(A) 3

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:

(B) 5

TOTAL NUMBER OF SUBSTRATE TYPES:

HHEI Metric Points

Substrate Max = 40

8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☒	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH (centimeters):** 6

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

☐	> 4.0 meters (> 13') [30 pts]	☒	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (≤ 3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS _____ **AVERAGE BANKFULL WIDTH (meters)** 1.2

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☒	☒	Wide >10m	☐	☒	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☒	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☒	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☒	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☒ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Clippaua Creek Confluence City/County: Wayne Sampling Date: 10.4.2012

Applicant/Owner: Metro Parks, Serving Summit County State: OH Sampling Point: CTX01a

Investigator(s): J. Whittle Section, Township, Range: Doylestown

Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): —

Slope (%): _____ Lat: 40.926648 Long: -81.661358 Datum: NAD 83

Soil Map Unit Name: JtB NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____	
Water Table Present?	Yes _____	No _____	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____	**Wetland Hydrology Present?** Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: 5m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	40	Y	FAC
2. Quercus pal	30	Y	FACW
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 5m)			
1. Rubus allegheniensis	40	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	_____	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Vaccinium pallidum	10	Y	UPL
2. Fagus grandifolia	10	Y	FACU
3. Tussilago farfara	10	Y	FACU
4. Parthenocissus quinquefolia	10	Y	FACU
5. Solidago rugosa	10	Y	FAC
6. Solidago canadensis	10	Y	FACU
7.			
8.			
9.			
10.			
11.			
12.			
	_____	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	50	x 3 =	150
FACU species	80	x 4 =	320
UPL species	10	x 5 =	50
Column Totals:	170	(A)	_____ (B)

Prevalence Index = B/A = 3.41

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/4	100						
3-5	10YR 5/4	100						
5-12	10YR 6/3	90	10YR 5/8	10	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Quite a bit of old Till from RR Incursion. Gravel, coal, sand, organic Till.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chippewa Creek lowlands City/County: Wayne Sampling Date: 10, 4, 2012

Applicant/Owner: Metro Parks, Serving Summit County State: OH Sampling Point: CWX016

Investigator(s): J. Writtle Section, Township, Range: Doylestown

Landform (hillslope, terrace, etc.): gentle slope Local relief (concave, convex, none): _____

Slope (%): _____ Lat: 40.926581 Long: -81.651221 Datum: NAD 83

Soil Map Unit Name: JtB NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes X No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- X Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 3 4

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: 5m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	20	Y	FACW
2. Ulmus americana	30	Y	FACW
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 5m)			
1. Ulmus americana	20	Y	FACW
2. Cornus amomum	10	N	FACW
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. Polygonum sagittatum	30	Y	OBL
2. Polygonum cf. scandens	20	Y	OBL
3. Phalaris arundinacea	30	Y	OBL
4. Juncus effusus	10	N	OBL
5. Leersia virginica	10	N	FACW
6. Typha latifolia	10	N	OBL
7. Onoclea sensibilis	10	N	OBL
8. Symplyotrichum puniceum	5	N	OBL
9.			
10.			
11.			
12.			
	125 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	G1 3/N	100						
4-16	2.5Y 6/1	80	10YR 6/8	10	C	M		
			G1 4/N	10	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- X Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Appendix C:

Representative Photographs

Chippewa Creek

Sample Point CTX01a (Non-wetland)

Category 3 Wetland

Sample Point CTX01b (Wetland)

Category 3 Wetland