Appendix D

Ecological Restoration Monitoring

This page intentionally left blank

Contents

Abbreviations ..... D-iv
Measurement Abbreviations ..... D-iv
D.1.0 Ecological Restoration Monitoring D-1
D.2.0 Prairie Functional Monitoring D-1
D.3.0 Wetland Mitigation Monitoring D-2
D.3.1 Amphibian Surveys D-2
D.3.2 Hydrological Monitoring D-3
D.4.0 Implementation Monitoring D-3
D.4.1 Paddys Run Tributary D-4
D.4.2 Triangle Area D-5
D.4.3 Former Silos Area D-5
D.5.0 Species Inventory Activities D-6
D.6.0 Activities in 2014 ..... D-6
D.7.0 References D-6

Tables

Table D-1. Prairie Functional Monitoring Vegetation Summary D-8
Table D-2. Prairie Functional Monitoring Comparison D-9
Table D-3. A82PR1 Vegetation Monitoring Data Summary D-10
Table D-4. BAPBA2 Vegetation Monitoring Data Summary D-11
Table D-5. BAPPR1 Vegetation Monitoring Data Summary D-12
Table D-6. ERPPR1 Vegetation Monitoring Data Summary D-13
Table D-7. FPAA3A Vegetation Monitoring Data Summary D-15
Table D-8. FPAA3B Vegetation Monitoring Data Summary D-16
Table D-9. FPAA4A Vegetation Monitoring Data Summary D-17
Table D-10. FPAA4B Vegetation Monitoring Data Summary D-18
Table D-11. FPAA6A Vegetation Monitoring Data Summary D-19
Table D-12. FPAA6B Vegetation Monitoring Data Summary D-20
Table D-13. FPAMDC Vegetation Monitoring Data Summary D-21
Table D-14. FSAPR1 Vegetation Monitoring Data Summary D-22
Table D-15. FVCPR1 Vegetation Monitoring Data Summary D-24
Table D-16. FWPPR1 Vegetation Monitoring Data Summary D-25
Table D-17. NDAA14 Vegetation Monitoring Data Summary D-26
Table D-18. NDAA6E Vegetation Monitoring Data Summary D-27
Table D-19. NDAARA Vegetation Monitoring Data Summary D-28
Table D-20. NDABAW Vegetation Monitoring Data Summary D-29
Table D-21. NDACWT Wetland Vegetation Monitoring Data Summary D-30
Table D-22. NDAEPL Vegetation Monitoring Data Summary D-31
Table D-23. NDAFPP Vegetation Monitoring Data Summary D-32
Table D-24. NDARP Vegetation Monitoring Data Summary D-33
Table D-25. NDASP7 Vegetation Monitoring Data Summary D-34
Table D-26. NPPBR1 Vegetation Monitoring Data Summary D-35
Table D-27. PREPR1 Vegetation Monitoring Data Summary D-36
Table D-28. PRWPR1 Vegetation Monitoring Data Summary D-38

Table D-29. PRWPR2 Vegetation Monitoring Data Summary D-39
Table D-30. PRWPR3 Vegetation Monitoring Data Summary D-40
Table D-31. WM1PR1 Vegetation Monitoring Data Summary D-41
Table D-32. Amphibian Monitoring Summary D-42
Table D-33. Amphibian Index of Biotic Integrity D-43
Table D-34. Implementation Monitoring Herbaceous Cover Data Summary D-44
Table D-35. Implementation Monitoring Herbaceous Cover Data Summary Paddys Run Tributary Project—Mesic Prairie D-45
Table D-36. Implementation Monitoring Herbaceous Cover Data Summary Paddys Run Tributary Project—Wetland D-46
Table D-37. Implementation Monitoring Herbaceous Cover Data Summary Triangle—Mesic Prairie D-47
Table D-38. Implementation Monitoring Herbaceous Cover Data Summary Triangle—Wet Mesic Prairie D-48
Table D-39. Implementation Monitoring Woody Vegetation Survival D-49
Table D-40. Coverboard Monitoring Summary D-50

Figures

Figure D-1. Ecological Monitoring Areas D-51
Figure D-2A. Ecological Monitoring Survey Areas—Northwest Site Quadrant D-52
Figure D–2B. Ecological Monitoring Survey Areas—Northeast Site Quadrant D-53
Figure D–2C. Ecological Monitoring Survey Areas—Southwest Site Quadrant D-54
Figure D–2D. Ecological Monitoring Survey Areas—Southeast Site Quadrant D-55
Figure D-3A. Wetland Area BAPW2 Hydrograph D-57
Figure D–3B. Wetland Area BAPW3 Hydrograph D-58
Figure D–3C. Wetland Area BAPW4 Hydrograph D-59
Figure D–3D. Wetland Area BAPW7 Hydrograph D-60
Figure D–3E. Wetland Area BAPW9 Hydrograph D-61
Figure D–3F. Wetland Area FPAW2 Hydrograph D-62
Figure D–3G. Wetland Area FPAW4 Hydrograph D-63
Figure D–3H. Wetland Area FPAW5 Hydrograph D-64
Figure D–3I. Wetland Area FPAW7 Hydrograph D-65
Figure D–3J. Wetland Area FPAW9 Hydrograph D-66
Figure D–3K. Wetland Area PREW6 Hydrograph D-67
Figure D–3L. Wetland Area NPPW4 Hydrograph D-68
Figure D–3M. Wetland Area NPPW5 Hydrograph D-69
Figure D–3N. Wetland Area WM1W1 Hydrograph D-70
Figure D–3O. Wetland Area WM1W2 Hydrograph D-71
Figure D–3P. Wetland Area WM1W3 Hydrograph D-72
Figure D–3Q. Wetland Area WM1W4 Hydrograph D-73
Figure D–3R. Wetland Area WM1W5 Hydrograph D-74
Figure D–3S. Wetland Area WM1W6 Hydrograph D-75
Figure D–3T. Wetland Area WM1W7 Hydrograph D-76
Figure D–3U. Wetland Area WM2W1 Hydrograph D-77
Figure D–3V. Wetland Area WM2W2 Hydrograph D-78
Figure D–3W. Wetland Area WM2W3 Hydrograph D-79
Figure D–3X. Wetland Area PRTW1 Hydrograph D-80

Figure D–3Y. Wetland Area PRTW2 Hydrograph..... D-81
Figure D–3Z. Wetland Area PRTW3 Hydrograph..... D-82

Abbreviations

AIBI	Amphibian Index of Biotic Integrity
BAP	Borrow Area Project
CC	Coefficient of Conservatism
DOE	U.S. Department of Energy
FPA	Former Production Area
FQAI	Floristic Quality Assessment Index
NPP	Northern Pine Plantation
Ohio EPA	Ohio Environmental Protection Agency
PRE	Paddys Run East
WM1	Wetland Mitigation Phase I
WM2	Wetland Mitigation Phase II

Measurement Abbreviations

m^2	square meters

D.1.0 Ecological Restoration Monitoring

Ecological restoration monitoring at the Fernald Preserve in 2013 involved functional monitoring, implementation monitoring, wetland mitigation monitoring, and species inventory. Prairie communities were evaluated as part of functional monitoring. Implementation monitoring included characterization of the Paddys Run Tributary and Triangle Area restoration projects as well as woody vegetation survival in the Former Silos Area. Species inventory activities also occurred, including continued wetland amphibian surveys and evaluation of reptile and small mammal coverboards. The location of 2013 ecological monitoring activities is shown on Figure D-1.

Ecological restoration monitoring is required as a result of the natural resource damage settlement between U. S. Department of Energy (DOE), Ohio Environmental Protection Agency (Ohio EPA) and U.S. Department of Interior. The Fernald Preserve Natural Resource Restoration Plan (State of Ohio 2008) specifies ecological restoration monitoring requirements. The *Wetland Mitigation Monitoring Report* (DOE 2012a) included provisions to continue evaluation of wetland communities through the functional monitoring program. In addition to continuation of vegetation and amphibian surveys, water elevations continue to be monitored within mitigation wetlands.

D.2.0 Prairie Functional Monitoring

Pursuant to the Fernald Preserve Natural Resource Restoration Plan (State of Ohio 2008), functional phase monitoring in 2013 focused on restored prairie communities. Fifteen random 1 square meter (m^2) quadrats were surveyed across each of 29 prairie monitoring areas during the growing season (June through September). Quadrat locations within each monitoring area are identified on Figures D-2A through D-2D. Surveys were divided into three rounds of five samples to ensure coverage throughout the growing season. Species richness data were collected and were used to calculate the percent native species, average coefficient of conservatism (CC) and Floristic Quality Assessment Index (FQAI) for each restoration area. The Ohio Floristic Quality Assessment Index Database (Andreas 2004) is used to determine nativity status and CC values. Cover class estimates were also obtained to evaluate the extent of vegetation establishment across restored areas. The parameters used for evaluation of functional monitoring results have been established for some time. Processes for calculating FQAI and cover are described in the *Ecological Monitoring Methods Plan and Procedures* (DOE 2013).

A summary of prairie functional monitoring findings is provided in Tables D-1 and D-2. Area-specific data summaries are provided in Tables D-3 through D-31. As with other functional monitoring efforts, the prairie data sets are compared to both the baseline and reference sites. The baseline and reference site information was originally reported in the *2002 Consolidated Monitoring Report for Restored Areas at the Fernald Closure Project* (DOE 2003). This information is now available as an appendix to the *Ecological Monitoring Methods Plan and Procedures* (DOE 2013).

Results indicate much improvement over baseline conditions, with all but one of the restoration areas surveyed exceeding baseline in percent native species (BAPPR1). All areas exceeded average CC and FQAI when compared to grazed pasture baseline conditions (Table D-1). Native

species composition in BAPPR1 has decreased from 65 percent in 2010 (DOE 2011).Table D-5 shows that while a number of seeded grasses and forbs are present in BAPPR1, a variety of non-native species are established, including invasive Canada thistle (*Cirsium arvense*) and woody invasives bush honeysuckle (*Lonicera maackii*) and callery pear (*Pyrus sp.*). BAPPR1 is the prairie that is encircled by the Lodge Pond Trail (Figure D-2D).

A comparison to the previous prairie functional monitoring datasets also shows continued progress. Table D-2 provides the data summary for the three areas surveyed in 2004: the Phase I Wetland Mitigation project; Area 8, Phase II Revegetation project; and the Ecological Restoration Park prairie. Results from 2010 for these areas are also provided. Percent native species and average CC have mostly improved from 2010, with upland areas in the Phase I Wetland Mitigation (WM1PR1) being the exception. Percent native species, average CC and FQAI all scored lower than previous years. Data presented in Table D-31 reveal that upland portions of the project area are impacted by several invasive herbaceous and woody species. Canada goldenrod (*Solidago canadensis*), which is a native species but has a low CC of 1, is also prevalent across the prairie area.

Maintenance activities for prairie areas are specified in the *Restored Area Maintenance Plan* (DOE 2012b). Activities include prescribed burn, mowing, and spot herbicide application. A prescribed burn was conducted in BAPPR1 in spring 2010. Also, spot herbicide application is conducted one or two times every year in both BAPPR1 and WM1PR1. The 2010 prescribed burn in BAPPR1 was difficult to maintain in the southern portion of the area, due to the density of cool-season fescue and other grasses. While sitewide results indicate that the current management approach is effective in maintaining prairie communities, the 2013 results in BAPPR1 and WM1PR1 suggest that management activities should increase in these areas. Areas of heavy cool season or noxious weeds may require active reseeding following chemical or physical removal.

D.3.0 Wetland Mitigation Monitoring

Pursuant to the *Wetland Mitigation Monitoring Report* (DOE 2012a) limited wetland monitoring continued in 2013. Activities included amphibian surveys to calculate Amphibian Index of Biotic Integrity (AIBI) and hydrologic monitoring using shallow wells (piezometers).

D.3.1 Amphibian Surveys

Amphibian monitoring was conducted in spring 2013 for selected basins within the mitigation wetlands. Table D-32 lists the amphibian species observed and Table D-33 compares AIBI scores for each basin since 2011. These tables indicate that mitigated wetlands are sustaining or improving in overall quality and function. 2013 findings have been similar to those recorded in previous years with ambystomatid salamanders observed in wetlands that are located adjacent to established forest communities (NPP, WM1, and WM2 wetlands). The presence of ambystomatid salamanders is a key indicator of mitigation wetland success (Micacchion 2011).

While no ambystomatid salamanders have been observed in the Former Production Area (FPA) wetlands, these basins continue to show improved AIBI scores. This appears to be due to high cricket frog (*Acris crepitans*) frequencies and low abundance of tolerant species [i.e., bullfrog

(*Lithobates catesbeianus*)]. Ohio EPA assigned a CC of 7 for cricket frogs, based on their recent decline through much of the state (Micacchion 2011). These frogs seem to prefer the relatively new basins that are located across the FPA and are often observed in great numbers.

The Paddys Run Tributary basin was added to the amphibian monitoring program in 2013. Results are encouraging, with an ambystomatid salamander larva observed 1 year following construction.

D.3.2 Hydrological Monitoring

Hydrological monitoring consists of daily water level readings from shallow wells (i.e., piezometers) that were installed in late 2009. The location of piezometers within site wetlands is shown on Figures D2-A through D-2D. Hydrographs for each basin are provided in Figures D-3A through D-3Z. Notes are provided on the hydrograph charts indicating when the piezometer was dry, or when data was not collected due to transducer failure. The 2013 results were similar to those of past years, with saturated conditions observed through the winter and spring, followed by drier conditions in the summer and fall. These findings are also similar to those at other emergent wetlands in Ohio. The influence of surface water is evident, as spikes in water elevations are observed in most basins (Mack 2004) following precipitation events in summer months.

Three new piezometers were installed in the vicinity of the Paddys Run Tributary restoration project that was constructed in 2012. Initial results indicate that saturated conditions were present from 21 percent to 40 percent of the year, which is less than the 53 percent performance standard established in the *Fernald Preserve Wetland Mitigation Monitoring Plan* (DOE 2009). This is probably due the fact that the wetlands were only 1 year old. Field observations showed that water levels were maintained in the main vernal pool basin for the whole year. Additional monitoring is needed to determine whether the issue is related to hydrology or placement.

D.4.0 Implementation Monitoring

Implementation monitoring in 2013 included three areas: herbaceous survey and woody vegetation survival for the Paddys Run Tributary, herbaceous survey of the Triangle Area, and woody vegetation survival for the Former Silos Area restoration. Implementation project areas are shown on Figure D-1, with specific quadrat locations identified in Figures D-2A through D-2D. Herbaceous summary data is provided in Table D-34. Area-specific species lists are included as Tables D-35 through D-38. A summary of woody vegetation survival is provided in Table D-39. Each of these projects is discussed below.

Pursuant to the Natural Resource Restoration Plan, seeded areas are evaluated for two criteria: percentage of native species and total cover. Implementation monitoring goals include at least 50 percent native vegetation establishment and 90 percent total cover by the end of the first growing season following seeding. Seeded areas are evaluated via random sampling. All seeded areas are evaluated within each restoration project. Depending on the size of the restoration project, seeded areas may be grouped into habitat-specific subareas. For each distinct area, five 1 m^2 quadrats are randomly distributed and surveyed. Field personnel estimate the total cover and list all species present within each quadrat. Total cover is estimated by assigning cover class

categories for each quadrat. A cover class of 1 indicates that only one or two individual plants are present. A cover class of 10 represents 95 percent to 99 percent vegetative cover. The data collected are used to determine total cover, percent native species composition, and relative frequency of native species, pursuant to the *Ecological Monitoring Methods Plan and Procedures* (DOE 2013).

For woody vegetation, all planted sapling trees and container-grown shrubs are evaluated for survival at the end of the first growing season following installation. This involved an assignment of one of four categories: alive, resprouting, vital, and dead or unaccounted. Trees and shrubs are considered "alive" when their main stem and/or greater than 50 percent of the lateral stems are viable. "Resprouting" trees and shrubs have a dead main stem, with one or more new shoots growing from the stem or the root mass. Plants are categorized as "vital" when less than 50 percent of its lateral branches are alive. "Dead" trees have no signs of life at all. "Trees that are "unaccounted" are considered dead. Only "alive" trees are counted as surviving. The woody vegetation goal is 80 percent survival following the first growing season.

D.4.1 Paddys Run Tributary

The goal of the Paddys Run Tributary Project is to create vernal pool breeding habitat for ambystomatid salamanders within a contiguous forest community. The project involved grading to create a vernal pool and installation of woody and herbaceous vegetation along Paddys Run Road. Over 1,100 balled and burlapped and container-grown trees and shrubs were planted within a 4-acre area. An additional 3 acres were planted with bare root seedlings. Deer fence was installed around the 4-acre planting area and all disturbed areas were seeded with either wetland or mesic prairie grass and forb mixes.

Establishment of herbaceous vegetation for the Paddys Run Tributary was generally acceptable (Table D-34). Both wetland and mesic prairie seeding sub-areas had greater than 50 percent native species composition and compare well to the 2012 results. For total cover, all but one of the quadrats scored a cover class of 10 (95 percent to 99 percent cover). A cover class of 8 (50 percent to 75 percent cover) in one of the mesic prairie quadrats resulted in 88 percent total cover, which is just below the 90 percent cover goal. Field observations confirm that herbaceous vegetation is well established within both mesic prairie and wetland project areas.

The woody-vegetation survival rates for the Paddys Run Tributary is presented in Table D-39. In general, the large container and balled-and-burlapped trees performed well, along with wetland shrubs. Overall, woody vegetation did not meet the 80 percent survival goal in 2012. The 2013 results show that the surviving woody vegetation is mostly stable. Overall survival totals dropped slightly, from 58 percent to 53 percent. As with 2012, most of the large trees and plants located near wetland areas survived much better than smaller vegetation that was installed in the former mesic prairie area. This may be due to lingering stress from the 2012 drought or simply that many plants could not be found in the tall mesic prairie grass that dominate the upland portions of the project area. As with 2012, hundreds of plants were unaccounted for. These are conservatively counted as "dead" when calculating survival. If all unaccounted for plants were counted as "alive," then overall survival would be approximately 95 percent. Counting unaccounted plants as dead is the most likely reason that some species of plants show higher percent survival in 2013 versus 2012, as more live plants were found. This could also be due to vigorous resprout of shrubs or a revised "vitality" classification for some plants.

D.4.2 Triangle Area

The goal of the Triangle Area project was to expand prairie establishment at the Fernald Preserve. The Triangle Area, which measures 7 acres, is similar in setting and community to adjacent on-property grasslands that were successfully converted to mesic tall grass prairie. The seeding approach was consistent with other grassland establishment efforts at the Fernald Preserve. Existing cool season grasses were eradicated with two applications of glyphosate herbicide: one in the fall of 2011 and a second about 2 weeks prior to seeding in May 2012. Seeds were installed with a tractor-pulled seed drill. Originally, the entire seeding area was planned as a mesic prairie. Following a spring 2012 field walk down, the Natural Resource Trustees determined that a portion of the Triangle Area should be seeded with a wetland seed mix. Therefore, two monitoring sub-areas were evaluated (i.e., mesic prairie and wet mesic prairie).

Both native species (i.e., 50 percent) and total cover (i.e., 90 percent) goals for the Triangle Area were met (Table D-34). Results from the Triangle Area are consistent with other prairie establishment efforts on Fernald Preserve property where topsoil is still intact. Native species include a combination of seeded grasses and forbs, along with volunteer species that are common in disturbed communities (Tables D-37 and D-38).

D.4.3 Former Silos Area

Ecological restoration activities in 2013 included completion of planting within the Former Silos Area. Similar to the Paddys Run Tributary and Triangle Area, this project was funded by the Fernald Natural Resource Trustees. It involved construction of a meandering wetland swale between two existing ponds, and installation of trees, shrubs and herbaceous plants. Grading and most planting activities took place in 2012. Fieldwork in spring 2013 involved installation of wetland shrubs and herbaceous plants.

80 trees and shrubs were planted in the Former Silos Area. Woody vegetation survival was calculated in late summer 2013. Table D-39 shows 76 percent overall survival within the area. Silky dogwood (*Cornus amomum*) is the only species that appears to be heavily impacted. Field observations revealed that this species has suffered severe deer browsing. The Former Silos Area does not have deer exclosure fencing installed like the Paddys Run Tributary project. As a result, wetland shrubs are susceptible to impacts from deer. Silky dogwood survival in the Paddys Run Tributary was 89 percent, which suggests a positive effect of deer exclosure fencing.

Because of its small footprint, an evaluation of herbaceous cover across the Former Silos Area was included as part of the prairie functional monitoring program (FSAPR1, Figure D-1). Table D-14 provides the vegetation data summary for FSAPR1. The area had acceptable native species composition (50 percent) and total cover (94 percent).

D.5.0 Species Inventory Activities

An effort was initiated in 2008 to inventory a variety of plant and animal species at the Fernald Preserve. This work assists with adaptive management of ecologically restored areas, adds to the local database of biological information, and provides opportunities for educational outreach.

Coverboard monitoring continued in 2013. From 2009 to 2011, single sheets of corrugated aluminum that absorb heat and provide shelter to a variety of species were placed around selected wetlands. The intent was to attract both small mammals and reptiles; however, the discovery of ambystomatid salamanders in 2012 suggested the need for a new approach to the study. To better mimic the natural cover preferred by salamanders, 14 square inches of white oak coverboards were placed alongside the metal boards around the perimeter of two wetlands that had the greatest frequency of salamander observations (Figure D-2A and D-2B). Research indicates that wood coverboards are successful in attracting salamanders (Grant 1992). These wood coverboard areas were monitored during the fall of 2012 through 2013. Table D-40 provides a summary of amphibian, reptile, and small mammals observed in 2013. A total of five species of salamanders, four ambystomatid and one plethodon, were observed under both the metal and wood coverboards.

Metal coverboards not intended for salamander monitoring exhibited the same reoccurring small mammal and reptile species over 2 years of observations. In an effort to expand on the species inventory, these coverboards were transferred from original locations to areas in the northwest and southwest portions of the site. The boards were left unmonitored for a year to allow vegetation beneath the boards to recede and allow wildlife to adapt to their presence. From late fall to early winter of 2013 all the areas with individual metal coverboards were included in the observations. Table D-40 lists the species recorded in these areas. No new reptile or mammal species were observed in 2013.

D.6.0 Activities in 2014

Monitoring activities in 2014 will focus on amphibian and wetland hydrology in site mitigation wetlands, forest functional monitoring, woody vegetation survival in the Former Silos Area, and further investigation of coverboards for expanded amphibian monitoring. Project-specific species inventory activities will also continue.

D.7.0 References

Andreas, B.K., J. Mack, and J. McCormac, 2004. *Floristic Quality Assessment Index (FQAI) for Vascular Plants and Mosses for the State of Ohio*, Ohio Environmental Protection Agency, Division of Surface Water, Wetland Ecology Group, Columbus, Ohio.

DOE (U.S. Department of Energy), 2003. *2002 Consolidated Monitoring Report for Restored Areas at the Fernald Closure Project*, 20900-RP-0017, Draft, Revision B, Fluor Fernald, Fernald Area Office, Cincinnati, Ohio.

DOE (U. S Department of Energy), 2009. *Fernald Preserve Wetland Mitigation Monitoring Plan*, LMS/FER/S05034, Final, Fernald Area Office, Cincinnati, Ohio.

DOE (U. S. Department of Energy), 2011. *2010 Site Environmental Report*, LMS/FER/S07409, Final, Fernald Area Office, Cincinnati, May.

DOE (U. S Department of Energy), 2012a. *Wetland Mitigation Monitoring Report*, LMS/FER/S08266, Final, Fernald Area Office, Cincinnati, Ohio, May.

DOE (U. S Department of Energy), 2012b. *Restored Area Maintenance Plan*, LMS/FER/S05080, Final, Fernald Area Office, Cincinnati, Ohio.

DOE (U.S. Department of Energy), 2013. *Ecological Monitoring Methods Plan and Procedures*, LMS/FER/S06195, Fernald Area Office, Cincinnati, Ohio.

Grant, B.W., A.D. Tucker, J.E. Lovich, A.M. Mills, P.M. Dixon, and J.W. Gibbons, 1992. "The use of coverboards in estimating patterns of reptile and amphibian biodiversity," pp. 379–403 in *Wildlife 2001: Populations*, D. L. McCullough and R.H. Barrett (eds.), Elsevier Applied Science, London.

Mack, J.J., M.S. Fennessey, M. Micacchion, and D. Porej, 2004. *Standardized Monitoring Protocols, Data Analysis and Reporting Requirements for Mitigation Wetlands in Ohio,* Version 1.0, Ohio EPA Technical Report (WET/2004-6), Ohio Environmental Protection Agency, Wetlands Ecology Group, Division of Surface Water, Columbus, Ohio.

Micacchion, M., 2011. Field Manual for the Amphibian Index of Biotic Integrity (AmphIBI) for Wetlands, Ohio EPA Technical Report WET/2011-1. Ohio Environmental Protection Agency, Wetlands Ecology Group, Division of Surface Water, Columbus, Ohio.

State of Ohio, 2008. *Consent Decree Resolving Ohio's Natural Resource Damage Claim against DOE*, State of Ohio v. United States Department of Energy, et al, Civil Action No. C-1-86-0217, Judge Spiegel.

Table D-1. Prairie Functional Monitoring Vegetation Summary

Restoration Area	Monitoring Sub-Area	Total Species	Native Species	Native Species (Percent)	Relative Frequency of Native Species (Percent)	Average CC[a]	FQAI[b]	Average Cover[c] (Percent)
Area 8, Phase II Revegetation	A82PR1	34	22	65%	51%	1.83	10.66	97%
Borrow Area	BAPBA2	33	17	52%	52%	1.34	7.73	87%
	BAPPR1	26	10	38%	54%	1.21	6.16	97%
Ecological Restoration Park	ERPPR1	49	33	67%	63%	1.47	10.26	97%
Former Production Area	FPAA3A	33	19	58%	77%	2.28	13.07	95%
	FPAA3B	23	16	70%	90%	1.50	7.19	97%
	FPAA4A	35	22	63%	74%	2.21	13.09	85%
	FPAA4B	39	22	56%	71%	2.08	13.00	94%
	FPAA6A	32	20	63%	81%	2.41	13.62	92%
	FPAA6B	41	25	61%	80%	1.89	12.09	95%
	FPAMDC	42	26	62%	69%	1.53	9.88	93%
Former Silos Area	FSAPR1	58	29	50%	43%	1.20	9.14	94%
Visitors Center Landscape Area	FVCPR1	46	28	61%	67%	2.45	16.60	88%
Former Waste Pits Area	FWPPR1	44	23	52%	57%	1.56	10.35	95%
Non-Design Areas	NDAA14	40	17	43%	48%	1.33	8.43	95%
	NDAA6E	46	28	61%	57%	1.52	10.33	88%
	NDAARA	43	22	51%	52%	1.59	10.42	87%
	NDABAW	40	26	65%	61%	2.56	16.18	96%
	NDACWT	38	17	45%	39%	1.35	8.34	95%
	NDAEPL	33	17	52%	57%	1.77	10.15	95%
	NDAFPP	38	22	58%	58%	1.71	10.52	97%
	NDARP	40	21	53%	56%	1.26	7.95	93%
	NDASP7	42	22	52%	44%	2.10	13.63	92%
	NPPBR1	31	21	68%	69%	1.89	10.52	97%
Paddys Run East	PREPR1	53	36	68%	69%	2.00	14.56	97%
Paddys Run West	PRWPR1	36	24	67%	67%	1.68	10.06	96%
	PRWPR2	49	27	55%	47%	1.35	9.44	97%
	PRWPR3	49	33	67%	78%	2.24	15.67	97%
Wetland Mitigation Phase I	WM1PR1	35	16	46%	52%	1.06	6.27	97%
Grazed Pasture Baseline Condition		38	15	39%	23%	0.42	2.60	NA
Upland Prairie Reference Site		88	81	92%	92%	3.26	30.59	NA

[a]CC = coefficient of conservatism

[b]FQAI = Floristic Quality Assessment Index

[c]NA = not applicable

Table D-2. Prairie Functional Monitoring Comparison

Year	Total Species	Native Species	Native Species (Percent)	Relative Frequency of Native Species (Percent)	Average CC[a]	FQAI[b]
Phase I Wetland Mitigation (WM1PR1)						
2004	64	31	48%	41%	1.33	10.63
2010	25	14	56%	46%	1.80	9.00
2013	35	16	46%	52%	1.06	6.27
Area 8 Phase II Revegetation (A82PR1)						
2004	53	28	53%	48%	1.40	10.16
2010	22	12	55%	42%	1.68	7.89
2013	34	22	65%	51%	1.83	10.66
Ecological Restoration Park (ERPPR1)						
2004	66	40	61%	70%	1.65	13.42
2010	39	25	64%	66%	1.46	9.13
2013	49	33	67%	63%	1.47	10.26
Grazed Pasture Baseline Condition						
2002	38	15	39%	23%	0.42	2.60
Upland Prairie Reference Site						
2002	88	81	92%	92%	3.26	30.59

[a]CC = coefficent of conservatism

[b]FQAI = Floristic Quality Assessment Index

Table D-3. A82PR1 Vegetation Monitoring Data Summary

Total Species.:	34	**Average CC[a]:**	1.83
Native Secies.:	22	**Total Cover:**	97%
Non-Native Species.:	12	**FQAI[b]:**	10.66
Percent Native:	65%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acer negundo	BOX ELDER	tree	3	0.07	1%
Achillea millefolium	YARROW	forb	1	0.13	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.40	7%
Aster pilosus	AWL ASTER	forb	1	0.07	1%
Boehmeria cylindrica	FALSE NETTLE	forb	4	0.07	1%
Cardamine sp.	NDA[c]	cress	NDA[c]	0.07	1%
Carex sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Elymus sp.	NDA[c]	grass	NDA[c]	0.07	1%
Equisetum hyemale	SCOURING-RUSH	grass	2	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.20	3%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.13	2%
Rubus allegheniensis	COMMON BLACKBERRY	shrub	1	0.13	2%
Silphium perfoliatum	CUP PLANT	fob	6	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.53	9%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.27	5%
Toxicodendron radicans	POISON-IVY	vine	1	0.07	1%
Ulmus americana	AMERICAN ELM	tree	2	0.13	2%
Vernonia gigantea	TALL IRONWEED	forb	2	0.13	2%
Vitis riparia	RIVERBANK GRAPE	vine	3	0.07	1%
Vitis vulpina	FROST GRAPE	vine	3	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.87	15%
Allium vineale	**FIELD GARLIC**	forb	0	0.13	2%
Carduus nutans	**NODDING THISTLE**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Festuca sp.	**NDA[c]**	grass	0	0.87	15%
Glechoma hederacea	**GROUND IVY**	forb	0	0.13	2%
Ipomoea coccinea	**RED MORNING-GLORY**	forb	0	0.07	1%
Prunella vulgaris	**SELF HEAL**	forb	0	0.13	2%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.20	3%
Sorghum halepense	**JOHNSON GRASS**	grass	0	0.13	2%
Regreen	**REGREEN**	grass	NDA[c]	0.07	1%
Unknown	**UNKNOWN**	grass	NA[d]	0.07	1%
			Native Species:	2.93	51%
			Non-Native Species:	2.80	49%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-4. BAPBA2 Vegetation Monitoring Data Summary

Total Species:	33	**Average CC[a]:**	1.34
Native Species.:	17	**Total Cover:**	87%
Non-Native Species.:	16	**FQAI[b]:**	7.73
Percent Native:	52%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.13	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.13	2%
Aster pilosus	AWL ASTER	forb	1	0.73	12%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.13	2%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.33	5%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.13	2%
Juncus sp.	NDA[c]	forb	NDA[c]	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.13	2%
Panicum capillare	WITCH GRASS	grass	1	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.33	5%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.27	4%
Salix nigra	BLACK WILLOW	tree	2	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.27	4%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.07	1%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	0.20	3%
Agrostis gigantea	**REDTOP**	grass	0	0.40	7%
Barbarea vulgaris	**YELLOW ROCKET**	forb	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.13	2%
Cichorium intybus	**CHICORY**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.20	3%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.27	4%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.27	4%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.13	2%
Rumex crispus	**CURLY DOCK**	forb	0	0.07	1%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.27	4%
Trifolium repens	**WHITE CLOVER**	forb	0	0.40	7%
Regreen	**REGREEN**	grass	NDA[c]	0.33	5%
Unknown	**UNKNOWN**	grass	NA[d]	0.13	2%
			Native Species:	3.20	52%
			Non-Native Species:	2.93	48%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-5. BAPPR1 Vegetation Monitoring Data Summary

Total Species:	26	**Average CC[a]:**	1.21
Native Species:	10	**Total Cover:**	97%
Non-Native Species:	16	**FQAI[b]:**	6.16
Percent Native:	38%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Andropogon gerardii	BIG BLUESTEM	grass	5	0.60	14%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.40	10%
Aster pilosus	AWL ASTER	forb	1	0.20	5%
Erechtites hieracifolia	PILEWORT	forb	2	0.13	3%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.07	2%
Panicum virgatum	SWITCH GRASS	grass	4	0.13	3%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.07	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.33	8%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.20	5%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.13	3%
Agrostis gigantea	**REDTOP**	grass	0	0.20	5%
Allium vineale	**FIELD GARLIC**	forb	0	0.13	3%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.20	5%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.07	2%
Dactylis glomerata	**ORCHARD GRASS**	grass	0	0.07	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	2%
Festuca sp.	**NDA[c]**	grass	0	0.13	3%
Lolium multiflorum	**ITALIAN RYEGRASS**	grass	0	0.20	5%
Lolium perenne	**PERENNIAL RYEGRASS**	grass	0	0.13	3%
Lolium sp.	**NDA[c]**	grass	NDA[c]	0.20	5%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.13	3%
Polygonum aviculare	**COMMON KNOTWEED**	forb	0	0.07	2%
Polygonum persicaria	**LADY'S THUMB**	forb	0	0.07	2%
Pyrus callieryana	**CALLIERY PEAR**	sm tree	0	0.07	2%
Setaria sp.	**NDA[c]**	grass	0	0.07	2%
Unknown	**UNKNOWN**	grass	NA[d]	0.13	3%
			Native Species:	2.27	54%
			Non-Native Species:	1.93	46%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-6. ERPPR1 Vegetation Monitoring Data Summary

Total Species:	49	**Average CC[a]:**	1.47
Native Species:	33	**Total Cover:**	97%
Non-Native Species:	16	**FQAI[b]:**	10.26
Percent Native:	67%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acer negundo	BOX ELDER	tree	3	0.07	1%
Achillea millefolium	YARROW	forb	1	0.07	1%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.20	3%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.20	3%
Campsis radicans	TRUMPET-CREEPER	vine	1	0.07	1%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.13	2%
Desmodium canescens	HOARY TICK-TREFOIL	forb	4	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.13	2%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.20	3%
Geum laciniatum	ROUGH AVENS	forb	2	0.07	1%
Geum sp.	NDA[c]	forb	NDA[c]	0.07	1%
Juniperus virginiana	EASTERN RED CEDAR	tree	3	0.07	1%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.13	2%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.40	5%
Pilea pumila	CLEARWEED	forb	2	0.07	1%
Rhus glabra	SMOOTH SUMAC	shrub	2	0.07	1%
Robinia pseudoacacia	BLACK LOCUST	tree	0	0.07	1%
Rubus allegheniensis	COMMON BLACKBERRY	shrub	1	0.07	1%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	0.07	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.67	9%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.13	2%
Toxicodendron radicans	POISON-IVY	vine	1	0.20	3%
Ulmus americana	AMERICAN ELM	tree	2	0.07	1%
Verbesina alternifolia	WINGSTEM	forb	5	0.40	5%
Vernonia gigantea	TALL IRONWEED	forb	2	0.40	5%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.07	1%
Vitis sp.	NDA[c]	vine	NDA[c]	0.20	3%
Vitis vulpina	FROST GRAPE	vine	3	0.13	2%

Table D-6 (continued). ERPPR1 Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Agrostis gigantea	**REDTOP**	grass	0	0.53	7%
Allium sp.	**NDA[c]**	forb	NDA[c]	0.13	2%
Allium vineale	**FIELD GARLIC**	forb	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.13	2%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.20	3%
Festuca sp.	**NDA[c]**	grass	0	0.53	7%
Glechoma hederacea	**GROUND IVY**	forb	0	0.33	4%
Ipomoea coccinea	**RED MORNING-GLORY**	forb	0	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.20	3%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.07	1%
Rosa multiflora	**MULTIFLORA ROSE**	shrub	0	0.13	2%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.13	2%
Urtica sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Duchesnia indica	**INDIAN-STRAWBERRY**	forb	NA[d]	0.07	1%
Unknown	**UNKNOWN**	grass	NA[d]	0.07	1%
			Native Species:	4.80	63%
			Non-Native Species:	2.80	37%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-7. FPAA3A Vegetation Monitoring Data Summary

Total Species:	33	**Average CC[a]:**	2.28
Native Species:	19	**Total Cover:**	95%
Non-Native Species:	22	**FQAI[b]:**	13.07
Percent Native:	58%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ammannia robusta	SESSILE TOOTH-CUP	forb	7	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.40	6%
Aster pilosus	AWL ASTER	forb	1	0.13	2%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.07	1%
Chamaecrista fasciculata	PARTRIDGE-PEA	forb	3	0.07	1%
Conyza canadensis	HORSEWEED	forb	0	0.20	3%
Erigeron annuus	DAISY FLEABANE	forb	0	0.20	3%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.13	2%
Eryngium yuccifolium	RATTLESNAKE-MASTER	forb	7	0.07	1%
Eupatorium altissimum	TALL BONESET	forb	0	0.13	2%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.60	9%
Panicum virgatum	SWITCH GRASS	grass	4	0.93	15%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.33	5%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.33	5%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.73	11%
Solidago rigida	STIFF GOLDENROD	forb	8	0.07	1%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.13	2%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.27	4%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.07	1%
Carduus nutans	**NODDING THISTLE**	forb	0	0.07	1%
Cichorium intybus	**CHICORY**	forb	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.33	5%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.07	1%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.13	2%
Setaria sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Sonchus arvensis	**FIELD SOW-THISTLE**	forb	0	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.27	4%
Unknown grass	**UNKNOWN**	grass	NA[d]	0.07	1%
Unknown	**UNKNOWN**	NA[d]	NA[d]	0.07	1%
			Native Species:	4.93	77%
			Non-Native Species:	1.47	23%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-8. FPAA3B Vegetation Monitoring Data Summary

Total Species:	23	**Average CC[a]:**	1.50
Native Species:	16	**Total Cover:**	97%
Non-Native Species:	7	**FQAI[b]:**	7.19
Percent Native:	70%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.13	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.67	11%
Aster pilosus	AWL ASTER	forb	1	0.20	3%
Conyza canadensis	HORSEWEED	forb	0	0.13	2%
Erigeron annuus	DAISY FLEABANE	forb	0	0.27	4%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.33	6%
Eupatorium altissimum	TALL BONESET	forb	0	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.20	3%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	0.13	2%
Lactuca sp.	NDA[c]	forb	NDA[c]	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.60	10%
Panicum virgatum	SWITCH GRASS	grass	4	0.87	14%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.40	7%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.27	4%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.80	13%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.27	4%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.20	3%
Cirsium vulgare	**BULL THISTLE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.07	1%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	forb	0	0.07	1%
Echinochloa sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Lactuca saligna	**WILLOW-LEAVED LETTUCE**	forb	0	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
			Native Species:	5.40	90%
			Non-Native Species:	0.60	10%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-9. FPAA4A Vegetation Monitoring Data Summary

Total Species:	35	**Mean CC[a]:**	2.21
Native Species:	22	**Total Cover:**	85%
Non-Native Species:	13	**FQAI[b]:**	13.09
Percent Native:	63%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.27	4%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.80	11%
Asclepias tuberosa	BUTTERFLY-WEED	forb	4	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.20	3%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.27	4%
Carex comosa	BEARDED SEDGE	sedge	2	0.07	1%
Echinacea purpurea	PURPLE CONEFLOWER	forb	6	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.27	4%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Eupatorium maculatum	SPOTTED JOE-PYE WEED	forb	6	0.13	2%
Geum laciniatum	ROUGH AVENS	forb	2	0.13	2%
Lycopus americanus	AMERICAN WATER-HOREHOUND	forb	3	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.40	6%
Panicum virgatum	SWITCH GRASS	grass	4	0.73	10%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.27	4%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.13	2%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	0.07	1%
Salix nigra	BLACK WILLOW	tree	2	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.80	11%
Solidago rigida	STIFF GOLDENROD	forb	8	0.33	5%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.13	2%
Carduus nutans	**NODDING THISTLE**	forb	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.07	1%
Cirsium vulgare	**BULL THISTLE**	forb	0	0.07	1%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.60	8%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.13	2%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.33	5%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.20	3%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.07	1%
Plantago major	**COMMON PLANTAIN**	forb	NA[d]	0.07	1%
Trifolium repens	**WHITE CLOVER**	forb	0	0.07	1%
Regreen	**NDA[c]**	grass	NDA[c]	0.07	1%
		Native Species:		5.40	74%
		Non-Native Species:		1.87	26%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-10. FPAA4B Vegetation Monitoring Data Summary

Total Species:	39	**Average CC[a]:**	2.08
Native Species:	22	**Total Cover:**	94%
Non-Native Species:	17	**FQAI[b]:**	13.00
Percent Native:	56%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.13	2%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.27	4%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.40	6%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.20	3%
Aster pilosus	AWL ASTER	forb	1	0.47	7%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.13	2%
Chamaecrista fasciculata	PARTRIDGE-PEA	forb	3	0.07	1%
Echinacea purpurea	PURPLE CONEFLOWER	forb	6	0.13	2%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.07	1%
Eryngium yuccifolium	RATTLESNAKE-MASTER	forb	7	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.47	7%
Panicum virgatum	SWITCH GRASS	grass	4	0.13	2%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.47	7%
Rhus glabra	SMOOTH SUMAC	shrub	2	0.07	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.33	5%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.93	14%
Solidago rigida	STIFF GOLDENROD	forb	8	0.13	2%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.07	1%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.07	1%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.13	2%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.07	1%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	forb	0	0.20	3%
Echinochloa sp.	**NDA[c]**	grass	NDA[c]	0.13	2%
Festuca elatior	**TALL FESCUE**	grass	0	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.13	2%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.13	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.40	6%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.07	1%
Polygonum persicaria	**LADY'S THUMB**	forb	0	0.13	2%
Verbascum blattaria	**MOTH MULLEIN**	forb	0	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
			Native Species:	4.80	71%
			Non-Native Species:	1.93	29%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-11. FPAA6A Vegetation Monitoring Data Summary

Total Species:	32	**Average CC[a]:**	2.41
Native Species:	20	**Total Cover:**	92%
Non-Native Species:	12	**FQAI[b]:**	13.62
Percent Native:	63%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.47	7%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.60	9%
Asclepias tuberosa	BUTTERFLY-WEED	forb	4	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.33	5%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.07	1%
Cercis canadensis	REDBUD	sm tree	3	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.13	2%
Erigeron annuus	DAISY FLEABANE	forb	0	0.67	10%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.20	3%
Eryngium yuccifolium	RATTLESNAKE-MASTER	forb	7	0.13	2%
Eupatorium altissimum	TALL BONESET	forb	0	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.07	1%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.60	9%
Panicum virgatum	SWITCH GRASS	grass	4	0.20	3%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.27	4%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.33	5%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.87	13%
Solidago rigida	STIFF GOLDENROD	forb	8	0.13	2%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.13	2%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.07	1%
Carduus nutans	**NODDING THISTLE**	forb	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.13	2%
Echinochloa sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Lepidium campestre	**FIELD PEPPER-GRASS**	forb	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.07	1%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.20	3%
Regreen	**REGREEN**	grass	NDA[c]	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.33	5%
Unknown grass	**UNKNOWN**	grass	NA[d]	0.07	1%
Unknown	**UNKNOWN**	NA[d]	NA[d]	0.07	1%
			Native Species:	5.47	81%
			Non Native Species:	1.27	19%

[a]CC= Coefficient of Conservatism

[b]FQAI= Floristic Quality Assessment Index

[c]NDA= No Determination

[d]NA=Not Applicable

Species in bold are non-native

Table D-12. FPAA6B Vegetation Monitoring Data Summary

Total Species:	41	**Average CC[a]:**	1.89
Native Species:	25	**Total Cover:**	95%
Non-Native Species:	16	**FQAI[b]:**	12.09
Percent Native:	61%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Andropogon gerardii	BIG BLUESTEM	grass	5	0.60	10%
Asclepias incarnata	SWAMP MILKWEED	forb	4	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.20	3%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	0.07	1%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.20	3%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.13	2%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.27	4%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.13	2%
Juncus anthelatus	BRANCHED RUSH	forb	4	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.07	1%
Juncus torreyi	TORREY'S RUSH	forb	3	0.07	1%
Leersia oryzoides	RICE CUT GRASS	grass	1	0.13	2%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.53	9%
Panicum capillare	WITCH GRASS	grass	1	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.60	10%
Polygonum sp.	NDA[c]	forb	NDA[c]	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.13	2%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.33	5%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.07	1%
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	sedge	2	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.80	13%
Solidago rigida	STIFF GOLDENROD	forb	8	0.07	1%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.07	1%
Ulmus americana	AMERICAN ELM	tree	2	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.13	2%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.07	1%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	forb	0	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.13	2%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.13	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.07	1%
Polygonum persicaria	**LADY'S THUMB**	forb	0	0.07	1%
Setaria sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.07	1%
Regreen	**NDA[c]**	grass	NDA[c]	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
			Native Species:	5.00	80%
			Non-Native Species:	1.27	20%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-13. FPAMDC Vegetation Monitoring Data Summary

Total Spp.:	42	**Mean CC[a]:**	1.53
Native Spp.:	26	**Total Cover:**	93%
Non-Native Spp.:	16	**FQAI[b]:**	9.88
Percent Native:	62%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.07	1%
Alopecurus sp.	NDA[c]	grass	NDA[c]	0.07	1%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.53	7%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.27	4%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.07	1%
Aster novae-angliae	NEW ENGLAND ASTER	forb	2	0.13	2%
Aster pilosus	AWL ASTER	forb	1	0.60	8%
Chamaecrista fasciculata	PARTRIDGE-PEA	forb	3	0.07	1%
Conyza canadensis	HORSEWEED	forb	0	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron annuus	DAISY FLEABANE	forb	0	0.20	3%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.07	1%
Heliopsis helianthoides	SMOOTH OXEYE	forb	5	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.07	1%
Juncus torreyi	TORREY'S RUSH	forb	3	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.40	6%
Oenothera biennis	COMMON EVENING-PRIMROSE	forb	1	0.07	1%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.33	5%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.33	5%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.13	2%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.07	1%
Scirpus pendulus	DROOPING BULRUSH	sedge	2	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.80	11%
Solidago rigida	STIFF GOLDENROD	forb	8	0.20	3%
Agrostis gigantea	**REDTOP**	grass	0	0.13	2%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.20	3%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.33	5%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.07	1%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	forb	0	0.07	1%
Echinochloa sp.	**NDA[c]**	grass	NDA[c]	0.13	2%
Festuca elatior	**TALL FESCUE**	grass	0	0.13	2%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.27	4%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.13	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.27	4%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.13	2%
Plantago major	**COMMON PLANTAIN**	forb	0	0.13	2%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.07	1%
Trifolium repens	**WHITE CLOVER**	forb	0	0.07	1%
Verbascum blattaria	**MOTH MULLEIN**	forb	0	0.07	1%
			Native Species:	4.93	69%
			Non-Native Species:	2.27	31%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
Species in bold are non-native

Table D-14. FSAPR1 Vegetation Monitoring Data Summary

Total Spp.:	58	**Mean CC[a]:**	1.20
Native Spp.:	29	**Total Cover:**	94%
Non-Native Spp.:	29	**FQAI[b]:**	9.14
Percent Native:	50%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acalypha rhomboidea	RHOMBIC THREE-SEEDED MERCURY	forb	0	0.07	1%
Acer rubrum	RED MAPLE	tree	2	0.07	1%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.53	5%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.33	3%
Aster pilosus	AWL ASTER	forb	1	0.60	6%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.07	1%
Chamaecrista fasciculata	PARTRIDGE-PEA	forb	3	0.07	1%
Conyza canadensis	HORSEWEED	forb	0	0.27	3%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Cyperus esculentus	YELLOW NUT-SEDGE	sedge	0	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.47	4%
Euphorbia maculata	SPOTTED SPURGE	forb	0	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.07	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.07	1%
Heliopsis helianthoides	SMOOTH OXEYE	forb	5	0.07	1%
Ipomoea sp.	NDA[c]	forb	NDA[c]	0.07	1%
Juglans nigra	BLACK WALNUT	tree	5	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.07	1%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.07	1%
Oenothera biennis	COMMON EVENING-PRIMROSE	forb	1	0.07	1%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.13	1%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	0.13	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.20	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.47	4%
Verbena hastata	BLUE VERVAIN	forb	4	0.07	1%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.40	4%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.47	4%
Cichorium intybus	**CHICORY**	forb	0	0.33	3%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.13	1%
Coronilla varia	**CROWN-VETCH**	forb	0	0.13	1%
Cress sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.60	6%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.07	1%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.07	1%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	forb	0	0.07	1%

Table D-14 (continued). FSAPR1 Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.07	1%
Festuca sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Lactuca serriola	**PRICKLY LETTUCE**	forb	0	0.07	1%
Lolium perenne	**PERENNIAL RYEGRASS**	grass	0	0.13	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.20	2%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.13	1%
Melilotus sp.	**NDA[c]**	forb	NDA[c]	0.20	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.33	3%
Phalaris arundinacea	**REED CANARY GRASS**	grass	0	0.07	1%
Phleum pratense	**TIMOTHY**	grass	0	0.20	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.20	2%
Polygonum aviculare	**COMMON KNOTWEED**	forb	0	0.07	1%
Sonchus sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.73	7%
Trifolium repens	**WHITE CLOVER**	forb	0	0.20	2%
Regreen	**REGREEN**	grass	NDA[c]	0.40	4%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.33	3%
			Native Species:	4.47	43%
			Non-Native Species:	5.93	57%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-15. FVCPR1 Vegetation Monitoring Data Summary

Total Species:	46	**Average CC[a]:**	2.45
Native Species:	28	**Total Cover:**	88%
Non-Native Species:	18	**FQAI[b]:**	16.60
Percent Native:	61%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acer negundo	BOX ELDER	tree	3	0.07	1%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.47	6%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.13	2%
Aster pilosus	AWL ASTER	forb	1	0.53	7%
Baptisia australis	BLUE FALSE INDIGO	forb	6	0.13	2%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.13	2%
Chamaecrista fasciculata	PARTRIDGE-PEA	forb	3	0.20	3%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Diodia teres	ROUGH BUTTONWEED	forb	3	0.07	1%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron annuus	DAISY FLEABANE	forb	0	0.13	2%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.13	2%
Eryngium yuccifolium	RATTLESNAKE-MASTER	forb	7	0.20	3%
Juncus tenuis	PATH RUSH	forb	1	0.13	2%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.60	8%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	0.07	1%
Pycnanthemum tenuifolium	NARROW-LEAVED MOUNTAIN-MINT	forb	4	0.13	2%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.40	5%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.07	1%
Silphium perfoliatum	CUP-PLANT	forb	6	0.20	3%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.47	6%
Solidago rigida	STIFF GOLDENROD	forb	8	0.07	1%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.13	2%
Verbesina alternifolia	WINGSTEM	forb	5	0.07	1%
Barbarea sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.07	1%
Cichorium intybus	**CHICORY**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.27	4%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	forb	NDA[c]	0.07	1%
Liatris sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.13	2%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.07	1%
Melilotus sp.	**NDA[c]**	forb	NDA[c]	0.13	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.47	6%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.27	4%
Plantago major	**COMMON PLANTAIN**	forb	0	0.07	1%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.13	2%
Trifolium repens	**WHITE CLOVER**	forb	0	0.27	4%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
Unknown grass	**UNKNOWN**	grass	NA[d]	0.07	1%
Unknown grass	**UNKNOWN**	grass	NA[d]	0.07	1%
			Native Species:	4.93	67%
			Non-Native Species:	2.40	33%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-16. FWPPR1 Vegetation Monitoring Data Summary

Total Species:	44	**Average CC[a]:**	1.56
Native Species:	23	**Total Cover:**	95%
Non-Native Species:	21	**FQAI[b]:**	10.35
Percent Native:	52%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.33	5%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.13	2%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.47	7%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.13	2%
Conyza canadensis	HORSEWEED	forb	0	0.33	5%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.07	1%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.33	5%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.07	1%
Eupatorium altissimum	TALL BONESET	forb	0	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.13	2%
Geum sp.	NDA[c]	forb	NDA[c]	0.07	1%
Heliopsis helianthoides	SMOOTH OXEYE	forb	5	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.13	2%
Panicum capillare	WITCH GRASS	grass	1	0.20	3%
Panicum virgatum	SWITCH GRASS	grass	4	0.33	5%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	0.07	1%
Platanus occidentalis	SYCAMORE	tree	7	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.47	7%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.07	1%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.13	2%
Agrostis gigantea	**REDTOP**	grass	0	0.20	3%
Alliaria petiolata	**GARLIC MUSTARD**	forb	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.33	5%
Carduus nutans	**NODDING THISTLE**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.13	2%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.07	1%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.07	1%
Lepidium campestre	**FIELD PEPPER-GRASS**	forb	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.07	1%
Melilotus sp.	**NDA[c]**	forb	0	0.13	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.27	4%
Phalaris arundinacea	**REED CANARY GRASS**	grass	0	0.07	1%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.20	3%
Polygonum persicaria	**LADY'S THUMB**	forb	0	0.07	1%
Setaria faberi	**GIANT FOXTAIL GRASS**	grass	0	0.27	4%
Setaria glauca	**YELLOW FOXTAIL GRASS**	grass	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.07	1%
Verbascum blattaria	**MOTH MULLEIN**	forb	0	0.07	1%
Verbascum thapsus	**COMMON MULLEIN**	forb	0	0.07	1%
Regreen	**REGREEN**	grass	NDA[c]	0.53	8%
Unknown	**UNKNOWN**	forb	NA[d]	0.07	1%
			Native Species:	3.93	57%
			Non-Native Species:	2.93	43%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-17. NDAA14 Vegetation Monitoring Data Summary

Total Species:	40	**Average CC[a]:**	1.33
Native Species:	17	**Total Cover:**	95%
Non-Native Species:	23	**FQAI[b]:**	8.43
Percent Native:	43%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.33	4%
Aster pilosus	AWL ASTER	forb	1	0.73	9%
Carex frankii	FRANK'S SEDGE	sedge	2	0.07	1%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.20	2%
Elymus canadensis	CANADA WILD RYE	grass	6	0.73	9%
Erigeron annuus	DAISY FLEABANE	forb	0	0.27	3%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.13	2%
Juncus torreyi	TORREY'S RUSH	forb	3	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.20	2%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.27	3%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.13	2%
Silphium perfoliatum	CUP-PLANT	forb	6	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.20	2%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.20	2%
Agrostis gigantea	**REDTOP**	grass	0	0.47	6%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.73	9%
Cichorium intybus	**CHICORY**	forb	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.13	2%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.07	1%
Coronilla varia	**CROWN-VETCH**	forb	0	0.13	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.27	3%
Festuca elatior	**TALL FESCUE**	grass	0	0.07	1%
Festuca sp.	**NDA[c]**	grass	NDA[c]	0.13	2%
Lepidium campestre	**FIELD PEPPER-GRASS**	forb	0	0.07	1%
Lolium multiflorum	**ITALIAN RYEGRASS**	grass	0	0.07	1%
Lolium sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.20	2%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.07	1%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.40	5%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.20	2%
Plantago major	**COMMON PLANTAIN**	forb	0	0.07	1%
Rumex crispus	**CURLY DOCK**	forb	0	0.13	2%
Trifolium hybridum	**ALSIKE CLOVER**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.33	4%
Trifolium repens	**WHITE CLOVER**	forb	0	0.27	3%
Regreen	**REGREEN**	grass	NDA[c]	0.13	2%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
			Native Species:	3.87	48%
			Non-Native Species:	4.20	52%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-18. NDAA6E Vegetation Monitoring Data Summary

Total Species:	46	**Average CC[a]:**	1.52
Native Species:	28	**Total Cover:**	88%
Non-Native Species:	18	**FQAI[b]:**	10.33
Percent Native:	61%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acalypha rhomboidea	RHOMBIC THREE-S. MERCURY	forb	0	0.07	1%
Alisma subcordatum	SOUTHERN WATER-PLANTAIN	forb	2	0.07	1%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.67	8%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.07	1%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.13	2%
Asclepias incarnata	SWAMP MILKWEED	forb	4	0.20	3%
Aster novae-angliae	NEW ENGLAND ASTER	forb	2	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.80	10%
Bidens connata	PURPLE-STEMMED BEGGAR'S-TICK	forb	3	0.07	1%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	0.20	3%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.07	1%
Conyza canadensis	HORSEWEED	forb	0	0.07	1%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	0.20	3%
Elymus canadensis	CANADA WILD RYE	grass	6	0.33	4%
Erigeron annuus	DAISY FLEABANE	forb	0	0.20	3%
Eupatorium altissimum	TALL BONESET	forb	0	0.07	1%
Eupatorium maculatum	SPOTTED JOE-PYE WEED	forb	6	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.07	1%
Juncus torreyi	TORREY'S RUSH	forb	3	0.07	1%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.07	1%
Phyla lanceolata	FOG-FRUIT	forb	3	0.07	1%
Populus deltoides	EASTERN COTTONWOOD	tree	3	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.27	3%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.27	3%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.13	2%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.27	3%
Cichorium intybus	**CHICORY**	forb	0	0.13	2%
Coronilla varia	**CROWN-VETCH**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.33	4%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.07	1%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.20	3%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.40	5%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.47	6%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.27	3%
Plantago major	**COMMON PLANTAIN**	forb	0	0.07	1%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.47	6%
Trifolium repens	**WHITE CLOVER**	forb	0	0.07	1%
Typha x glauca	**HYBRID CAT-TAIL**	forb	0	0.13	2%
Regreen	**NDA[c]**	grass	NDA[c]	0.13	2%
Unknown sedge	**UNKNOWN**	sedge	NA[d]	0.07	1%
			Native Species	4.53	57%
			Non-Native Species	3.40	43%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-19. NDAARA Vegetation Monitoring Data Summary

Total Species:	43	**Average CC[a]:**	1.59
Native Species:	22	**Total Cover:**	87%
Non-Native Species:	21	**FQAI[b]:**	10.42
Percent Native:	51%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.33	5%
Asclepias tuberosa	BUTTERFLY-WEED	forb	4	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.67	9%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.13	2%
Calystegia sepium	HEDGE BINDWEED	forb	1	0.07	1%
Campsis radicans	TRUMPET-CREEPER	vine	1	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.13	2%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Eupatorium altissimum	TALL BONESET	forb	0	0.13	2%
Eupatorium maculatum	SPOTTED JOE-PYE WEED	forb	6	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.07	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.13	2%
Geum canadense	WHITE AVENS	forb	2	0.07	1%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.40	6%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.13	2%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.80	11%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.07	1%
Toxicodendron radicans	POISON-IVY	vine	1	0.07	1%
Vernonia gigantea	TALL IRONWEED	forb	2	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.53	7%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.07	1%
Cichorium intybus	**CHICORY**	forb	0	0.27	4%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.47	6%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.13	2%
Festuca elatior	**TALL FESCUE**	grass	0	0.13	2%
Festuca sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.13	2%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.07	1%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.33	5%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.20	3%
Rosa multiflora	**MULTIFLORA ROSE**	shrub	0	0.07	1%
Rumex crispus	**CURLY DOCK**	forb	0	0.07	1%
Setaria sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.13	2%
Trifolium hybridum	**ALSIKE CLOVER**	forb	0	0.13	2%
Trifolium pratense	**RED CLOVER**	forb	0	0.27	4%
Trifolium repens	**WHITE CLOVER**	forb	0	0.07	1%
Regreen	**REGREEN**	grass	NDA[c]	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.13	2%
			Native Species:	3.80	52%
			Non-Native Species:	3.47	48%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-20. NDABAW Vegetation Monitoring Data Summary

Total Species:	40	**Average CC[a]:**	2.56
Native Species:	26	**Total Cover:**	96%
Non-Native Species:	14	**FQAI[b]:**	16.18
Percent Native:	65%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acer negundo	BOX ELDER	tree	3	0.07	1%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.60	7%
Aster pilosus	AWL ASTER	forb	1	0.47	5%
Baptisia australis	BLUE FALSE INDIGO	forb	6	0.07	1%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.07	1%
Carex frankii	FRANK'S SEDGE	sedge	2	0.07	1%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.13	2%
Echinacea purpurea	PURPLE CONEFLOWER	forb	6	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.13	2%
Eryngium yuccifolium	RATTLESNAKE-MASTER	forb	7	0.07	1%
Heliopsis helianthoides	SMOOTH OXEYE	forb	5	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.47	5%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.20	2%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	0.07	1%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.33	4%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.40	5%
Silphium perfoliatum	CUP-PLANT	forb	6	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.87	10%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.47	5%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.07	1%
Vernonia gigantea	TALL IRONWEED	forb	2	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.87	10%
Allium sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Cichorium intybus	**CHICORY**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.40	5%
Festuca sp.	**NDA[c]**	grass	NDA[c]	0.47	5%
Glechoma hederacea	**GROUND IVY**	forb	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.27	3%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.13	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.47	5%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.20	2%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.13	2%
Unknown sedge	**UNKNOWN**	sedge	NA[d]	0.07	1%
Unknown woody	**UNKNOWN**	sm tree	NA[d]	0.07	1%
			Native Species:	5.20	61%
			Non-Native Species:	3.33	39%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA= Not Applicable
Species in bold are non-native

Table D-21. NDACWT Wetland Vegetation Monitoring Data Summary

Total Species:	38	**Average CC[a]:**	1.35
Native Species:	17	**Total Cover:**	95%
Non-Native Species:	21	**FQAI[b]:**	8.34
Percent Native:	45%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acer negundo	BOX ELDER	sm tree	3	0.07	1%
Achillea millefolium	YARROW	forb	1	0.33	4%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.73	9%
Carex frankii	FRANK'S SEDGE	sedge	2	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.20	2%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.40	5%
Juncus tenuis	PATH RUSH	forb	1	0.13	2%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.07	1%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.13	2%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.60	7%
Solidago rigida	STIFF GOLDENROD	forb	8	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.60	7%
Allium sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.33	4%
Cichorium intybus	**CHICORY**	forb	0	0.40	5%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.33	4%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.07	1%
Festuca rubra	**RED FESCUE**	grass	0	0.33	4%
Festuca sp.	**NDA[c]**	grass	0	0.13	2%
Lolium perenne	**PERENNIAL RYEGRASS**	grass	0	0.13	2%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.27	3%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.47	6%
Phleum pratense	**TIMOTHY**	grass	0	0.13	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.73	9%
Polygonum persicaria	**LADY'S THUMB**	forb	0	0.07	1%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.13	2%
Tragopogon pratensis	**YELLOW GOAT'S-BEARD**	forb	0	0.27	3%
Trifolium pratense	**RED CLOVER**	forb	0	0.20	2%
Trifolium repens	**WHITE CLOVER**	forb	0	0.07	1%
Regreen	**REGREEN**	grass	NDA[c]	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
Unknown	**UNKNOWN**	NA[d]	NA[d]	0.07	1%
			Native Species:	3.20	39%
			Non-Native Species:	4.93	61%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-22. NDAEPL Vegetation Monitoring Data Summary

Total Species:	33	**Average CC[a]:**	1.77
Native Species:	17	**Total Cover:**	95%
Non-Native Species:	16	**FQAI[b]:**	10.15
Percent Native:	52%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.20	3%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.20	3%
Aster pilosus	AWL ASTER	forb	1	0.60	10%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.07	1%
Carex sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Carex cristatella	CRESTED SEDGE	sedge	3	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.27	4%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.13	2%
Eryngium yuccifolium	RATTLESNAKE-MASTER	forb	7	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.33	6%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	0.20	3%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.27	4%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.20	3%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.53	9%
Toxicodendron radicans	POISON-IVY	vine	1	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.47	8%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.20	3%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.13	2%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.07	1%
Echinochloa sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Festuca rubra	**RED FESCUE**	grass	0	0.20	3%
Lolium perenne	**PERENNIAL RYEGRASS**	grass	0	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.20	3%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.20	3%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.40	7%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.07	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.20	3%
Trifolium repens	**WHITE CLOVER**	forb	0	0.13	2%
Regreen	**NDA[c]**	grass	NDA[c]	0.07	1%
			Native Species:	3.40	57%
			Non-Native Species:	2.60	43%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
Species in bold are non-native

Table D-23. NDAFPP Vegetation Monitoring Data Summary

Total Species:	38	**Average CC[a]:**	1.71
Native Species:	22	**Total Cover:**	97%
Non-Native Species:	16	**FQAI[b]:**	10.52
Percent Native:	58%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.33	4%
Aster pilosus	AWL ASTER	forb	1	0.67	9%
Carex sp.	NDA[c]	sedge	NDA[c]	0.13	2%
Carex frankii	FRANK'S SEDGE	sedge	2	0.07	1%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.13	2%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.27	4%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.07	1%
Eupatorium altissimum	TALL BONESET	forb	0	0.07	1%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.07	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.07	1%
Heliopsis helianthoides	SMOOTH OXEYE	forb	5	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.27	4%
Juniperus virginiana	EASTERN RED CEDAR	tree	3	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.73	10%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.13	2%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.73	10%
Solidago rigida	STIFF GOLDENROD	forb	8	0.13	2%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.80	11%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.40	5%
Cichorium intybus	**CHICORY**	forb	0	0.20	3%
Dactylis glomerata	**ORCHARD GRASS**	grass	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.27	4%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.07	1%
Festuca rubra	**RED FESCUE**	grass	0	0.27	4%
Festuca sp.	**NDA[c]**	grass	NDA[c]	0.13	2%
Lolium perenne	**PERENNIAL RYEGRASS**	grass	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.13	2%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.33	4%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.13	2%
Rumex crispus	**CURLY DOCK**	forb	0	0.07	1%
Trifolium repens	**WHITE CLOVER**	forb	0	0.13	2%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
			Native Species:	4.33	58%
			Non-Native Species:	3.20	42%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-24. NDARP Vegetation Monitoring Data Summary

Total Species:	40	**Average CC[a]:**	1.26
Native Species:	21	**Total Cover:**	93%
Non-Native Species:	19	**FQAI[b]:**	7.95
Percent Native:	53%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.20	3%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.40	6%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.13	2%
Aster pilosus	AWL ASTER	forb	1	0.33	5%
Carex sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.07	1%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.20	3%
Eupatorium altissimum	TALL BONESET	forb	0	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.80	12%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.13	2%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.07	1%
Scirpus atrovirens	GREEN BULRUSH	sedge	1	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.20	3%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.47	7%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.20	3%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.13	2%
Agrostis gigantea	**REDTOP**	grass	0	0.60	9%
Barbarea vulgaris	**YELLOW ROCKET**	forb	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.33	5%
Cichorium intybus	**CHICORY**	forb	0	0.13	2%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.13	2%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.13	2%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.20	3%
Festuca rubra	**RED FESCUE**	grass	0	0.13	2%
Festuca sp.	**NDA[c]**	grass	NDA[c]	0.20	3%
Lolium multiflorum	**ITALIAN RYEGRASS**	grass	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.07	1%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.07	1%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.40	6%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.13	2%
Rumex crispus	**CURLY DOCK**	forb	0	0.07	1%
Trifolium hybridum	**ALSIKE CLOVER**	forb	0	0.07	1%
Regreen	**REGREEN**	grass	NDA[c]	0.07	1%
Unknown	**UNKNOWN**	NA[d]	NA[d]	0.07	1%
			Native Species:	3.87	56%
			Non-Native Species:	3.00	44%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA= Not Applicable
Species in bold are non-native

Table D-25. NDASP7 Vegetation Monitoring Data Summary

Total Species:	42	**Average CC[a]:**	2.10
Native Species:	22	**Total Cover:**	92%
Non-Native Species:	20	**FQAI[b]:**	13.63
Percent Native:	52%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.27	3%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.13	1%
Asclepias tuberosa	BUTTERFLY-WEED	forb	4	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.80	9%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.13	1%
Conyza canadensis	HORSEWEED	forb	0	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.53	6%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.40	4%
Eupatorium altissimum	TALL BONESET	forb	0	0.07	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.07	1%
Heliopsis helianthoides	SMOOTH OXEYE	forb	5	0.13	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.07	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.20	2%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	0.13	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Schizachyrium scoparium	LITTLE BLUESTEM	grass	5	0.07	1%
Silphium laciniatum	COMPASS PLANT	forb	8	0.13	1%
Silphium perfoliatum	CUP-PLANT	forb	6	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.40	4%
Solidago rigida	STIFF GOLDENROD	forb	8	0.07	1%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.13	1%
Vitis riparia	RIVERBANK GRAPE	vine	3	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.33	4%
Barbarea vulgaris	**YELLOW ROCKET**	forb	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.60	6%
Cichorium intybus	**CHICORY**	forb	0	0.53	6%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.87	9%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.13	1%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.07	1%
Echinochloa crusgalli	**BARNYARD GRASS**	grass	0	0.07	1%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	forb	0	0.07	1%
Festuca sp.	**NDA[c]**	grass	NDA[c]	0.07	1%
Lepidium campestre	**FIELD PEPPER-GRASS**	forb	0	0.07	1%
Lotus corniculatus	**BIRD'S-FOOT TREFOIL**	forb	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.40	4%
Melilotus alba	**WHITE SWEET-CLOVER**	forb	0	0.27	3%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.47	5%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.60	6%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.13	1%
Trifolium pratense	**RED CLOVER**	forb	0	0.13	1%
Regreen	**NDA[c]**	grass	NDA[c]	0.20	2%
Unknown	**UNKNOWN**	NA[d]	NA[d]	0.07	1%
			Native Species:	4.07	44%
			Non-Native Species:	5.20	56%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-26. NPPBR1 Vegetation Monitoring Data Summary

Total Species:	31	**Average CC[a]:**	1.89
Native Species:	21	**Total Cover:**	97%
Non-Native Species:	10	**FQAI[b]:**	10.52
Percent Native:	68%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.07	1%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.60	9%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.20	3%
Aster pilosus	AWL ASTER	forb	1	0.07	1%
Baptisia australis	BLUE FALSE INDIGO	forb	6	0.13	2%
Elymus canadensis	CANADA WILD RYE	grass	6	0.27	4%
Humulus lupulus	COMMON HOPS	vine	2	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.20	3%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.53	8%
Panicum virgatum	SWITCH GRASS	grass	4	0.73	11%
Paspalum pubiflorum	HAIRY-FLOWERED PASPALUM	grass	3	0.07	1%
Rhus sp.	NDA[c]	shrub	NDA[c]	0.20	3%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.53	8%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.27	4%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	0.07	1%
Ulmus sp.	NDA[c]	tree	NDA[c]	0.07	1%
Verbesina alternifolia	WINGSTEM	forb	5	0.07	1%
Vernonia gigantea	TALL IRONWEED	forb	2	0.07	1%
Vitis sp.	NDA[c]	vine	NDA[c]	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.67	10%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.13	2%
Cirsium vulgare	**BULL THISTLE**	forb	0	0.07	1%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.20	3%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.27	4%
Festuca elatior	**TALL FESCUE**	grass	0	0.27	4%
Festuca sp.	**NDA[c]**	grass	0	0.20	3%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.07	1%
Regreen	**REGREEN**	grass	NDA[c]	0.07	1%
			Native Species:	4.47	69%
			Non-Native Species:	2.00	31%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
Species in bold are non-native

Table D-27. PREPR1 Vegetation Monitoring Data Summary

Total Species:	53	**Average CC[a]:**	2.00
Native Species:	36	**Total Cover:**	97%
Non-Native Species:	17	**FQAI[b]:**	14.56
Percent Native:	68%		

Species	Common Name	Type	CC[a]	Number of quadrats present	Frequency (species/quadrat)	Relative Frequency
Acer negundo	BOX ELDER	tree	3	1	0.07	1%
Achillea millefolium	YARROW	forb	1	2	0.13	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	12	0.80	9%
Apocynum cannabinum	INDIAN HEMP	forb	1	1	0.07	1%
Asclepias tuberosa	BUTTERFLY-WEED	forb	4	1	0.07	1%
Aster pilosus	AWL ASTER	forb	1	2	0.13	2%
Baptisia australis	BLUE FALSE INDIGO	forb	6	2	0.13	2%
Boehmeria cylindrica	FALSE NETTLE	forb	4	1	0.07	1%
Campsis radicans	TRUMPET-CREEPER	vine	1	1	0.07	1%
Desmodium canadense	CANADA TICK-TREFOIL	forb	4	1	0.07	1%
Desmodium canescens	HOARY TICK-TREFOIL	forb	4	6	0.40	5%
Elymus canadensis	CANADA WILD RYE	grass	6	1	0.07	1%
Elymus virginicus	VIRGINIA WILD RYE	grass	3	1	0.07	1%
Equisetum arvense	FIELD HORSETAIL	fern	0	1	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	1	0.07	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	2	0.13	2%
Galium aparine	CLEAVERS	forb	0	1	0.07	1%
Geum laciniatum	ROUGH AVENS	forb	2	2	0.13	2%
Juglans nigra	BLACK WALNUT	tree	5	1	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	2	0.13	2%
Panicum virgatum	SWITCH GRASS	grass	4	8	0.53	6%
Physalis sp.	NDA[c]	forb	NDA[c]	1	0.07	1%
Prunella vulgaris	SELF-HEAL	forb	0	1	0.07	1%
Ratibida pinnata	GRAY-HEADED CONEFLOWER	forb	5	1	0.07	1%
Rhus glabra	SMOOTH SUMAC	shrub	2	1	0.07	1%
Rubus allegheniensis	COMMON BLACKBERRY	shrub	1	1	0.07	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	2	0.13	2%
Solidago canadensis	CANADA GOLDENROD	forb	1	12	0.80	9%
Sorghastrum nutans	INDIAN GRASS	grass	5	4	0.27	3%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	1	0.07	1%
Toxicodendron radicans	POISON-IVY	vine	1	3	0.20	2%
Ulmus americana	AMERICAN ELM	tree	2	5	0.33	4%
Verbesina alternifolia	WINGSTEM	forb	5	1	0.07	1%
Viola sp.	NDA[c]	forb	NDA[c]	1	0.07	1%
Vitis sp.	NDA[c]	vine	NDA[c]	2	0.13	2%
Vitis vulpina	FROST GRAPE	vine	3	2	0.13	2%

Table D-27 (continued). PREPR1 Vegetation Monitoring Data Summary

Species	Common Name	Type	CC[a]	Number of quadrats present	Frequency (species/quadrat)	Relative Frequency
Agrostis gigantea	**REDTOP**	grass	0	7	0.47	5%
Allium vineale	**FIELD GARLIC**	forb	0	1	0.07	1%
Barbarea vulgaris	**YELLOW ROCKET**	forb	0	1	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	3	0.20	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	7	0.47	5%
Dipsacus fullonum	**WILD TEASEL**	forb	0	5	0.33	4%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	1	0.07	1%
Echinacea pallida	**PALE PURPLE CONEFLOWER**	FORB	NDA[c]	1	0.07	1%
Hypericum perforatum	**COMMON ST. JOHN'S-WORT**	forb	0	1	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	2	0.13	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	2	0.13	2%
Rosa multiflora	**MULTIFLORA ROSE**	shrub	0	2	0.13	2%
Silene noctiflora	**NIGHT-FLOWERING CATCHFLY**	forb	0	1	0.07	1%
Trifolium repens	**WHITE CLOVER**	forb	0	2	0.13	2%
Unknown	**UNKNOWN**	grass	NA[d]	1	0.07	1%
Unknown 1	**UNKNOWN**	grass	NA[d]	1	0.07	1%
Unknown	**UNKNOWN**	sedge	NA[d]	2	0.13	2%
			Native Species:	88	5.87	69%
			Non-Native Species:	40	2.67	31%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA= Not Applicable
Species in bold are non-native

Table D-28. PRWPR1 Vegetation Monitoring Data Summary

Total Species:	36	**Average CC[a]:**	1.68
Native Species:	24	**Total Cover:**	96%
Non-Native Species:	12	**FQAI[b]:**	10.06
Percent Native:	67%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.13	2%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.80	14%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.07	1%
Asclepias incarnata	SWAMP MILKWEED	forb	4	0.07	1%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.07	1%
Asclepias tuberosa	BUTTERFLY-WEED	forb	4	0.13	2%
Aster pilosus	AWL ASTER	forb	1	0.27	5%
Conyza canadensis	HORSEWEED	forb	0	0.13	2%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.07	1%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.07	1%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.13	2%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.20	3%
Panicum virgatum	SWITCH GRASS	grass	4	0.07	1%
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	forb	2	0.07	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.20	3%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.53	9%
Solidago gigantea	SMOOTH GOLDENROD	forb	3	0.07	1%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.13	2%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.13	2%
Vernonia gigantea	TALL IRONWEED	forb	2	0.33	6%
Vitis vulpina	FROST GRAPE	vine	3	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.33	6%
Allium vineale	**FIELD GARLIC**	forb	0	0.07	1%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.27	5%
Festuca sp.	**NDA[c]**	grass	0	0.27	5%
Lysimachia nummularia	**MONEYWORT**	forb	0	0.07	1%
Phleum pratense	**TIMOTHY**	grass	0	0.20	3%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.07	1%
Rumex crispus	**CURLY DOCK**	forb	0	0.07	1%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.33	6%
Xanthium strumarium	**COMMON COCKLEBUR**	forb	0	0.13	2%
Unknown	**UNKNOWN**	forb	NA[d]	0.07	1%
Unknown	**UNKNOWN**	grass	NA[d]	0.07	1%
			Native Species:	3.93	67%
			Non-Native Species:	1.93	33%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-29. PRWPR2 Vegetation Monitoring Data Summary

Total Species:	49	**Average CC[a]:**	1.35
Native Species:	27	**Total Cover:**	97%
Non-Native Species:	22	**FQAI[b]:**	9.44
Percent Native:	55%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.07	1%
Aster sp.	NDA[c]	forb	NDA[c]	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.07	1%
Campsis radicans	TRUMPET-CREEPER	vine	1	0.07	1%
Carex sp.	NDA[c]	sedge	NDA[c]	0.07	1%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.20	3%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Epilobium angustifolium	FIREWEED	forb	7	0.07	1%
Erigeron annuus	DAISY FLEABANE	forb	0	0.07	1%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	0.20	3%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.07	1%
Geum laciniatum	ROUGH AVENS	forb	2	0.07	1%
Humulus lupulus	COMMON HOPS	vine	2	0.07	1%
Juncus tenuis	PATH RUSH	forb	1	0.07	1%
Juniperus virginiana	EASTERN RED CEDAR	tree	3	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.07	1%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.07	1%
Rubus allegheniensis	COMMON BLACKBERRY	shrub	1	0.07	1%
Rubus sp.	NDA[c]	N/A	NDA[c]	0.07	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.67	10%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.07	1%
Toxicodendron radicans	POISON-IVY	vine	1	0.07	1%
Verbesina alternifolia	WINGSTEM	forb	5	0.07	1%
Vernonia gigantea	TALL IRONWEED	forb	2	0.47	7%
Vitis vulpina	FROST GRAPE	vine	3	0.20	3%
Agrostis gigantea	**REDTOP**	grass	0	0.67	10%
Alliaria petiolata	**GARLIC MUSTARD**	forb	0	0.07	1%
Allium sp.	**NDA[c]**	forb	NDA[c]	0.07	1%
Allium vineale	**FIELD GARLIC**	forb	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.40	6%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.33	5%
Conium maculatum	**POISON-HEMLOCK**	forb	0	0.07	1%
Dactylis glomerata	**ORCHARD GRASS**	grass	0	0.13	2%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.07	1%
Festuca sp.	**NDA[c]**	grass	0	0.73	11%
Glechoma hederacea	**GROUND IVY**	forb	0	0.07	1%
Lolium perenne	**PERENNIAL RYEGRASS**	grass	0	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.13	2%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.13	2%
Phleum pratense	**TIMOTHY**	grass	0	0.13	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.07	1%
Setaria sp.	**NDA[c]**	grass	0	0.07	1%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.07	1%
Sorghum halepense	**JOHNSON GRASS**	grass	0	0.07	1%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.07	1%
Unknown	**UNKNOWN**	forb	NA[d]	0.07	1%
Unknown	**UNKNOWN**	grass	NA[d]	0.07	1%
			Native Species:	3.20	47%
			Non-Native Species:	3.60	53%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-30. PRWPR3 Vegetation Monitoring Data Summary

Total Species:	49	**Average CC[a]:**	2.24
Native Species:	33	**Total Cover:**	97%
Non-Native Species:	16	**FQAI[b]:**	15.67
Percent Native:	67%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Acer negundo	BOX ELDER	tree	3	0.07	1%
Acer rubrum	RED MAPLE	tree	2	0.07	1%
Acer saccharinum	SILVER MAPLE	tree	3	0.07	1%
Achillea millefolium	YARROW	forb	1	0.27	3%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.07	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.67	8%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.13	2%
Baptisia australis	BLUE FALSE INDIGO	forb	6	0.13	2%
Cyperus sp.	NDA[c]	sedge	NDA[c]	0.27	3%
Elymus canadensis	CANADA WILD RYE	grass	6	0.07	1%
Eryngium yuccifolium	RATTLESNAKE-MASTER	forb	7	0.20	2%
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	forb	2	0.07	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.40	5%
Gleditsia triacanthos	HONEY LOCUST	tree	4	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.40	5%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.27	3%
Panicum capillare	WITCH GRASS	grass	1	0.13	2%
Panicum virgatum	SWITCH GRASS	grass	4	0.07	1%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.27	3%
Prunella vulgaris	SELF HEAL	forb	0	0.07	1%
Quercus rubra	RED OAK	tree	6	0.07	1%
Rhus glabra	SMOOTH SUMAC	shrub	2	0.07	1%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	0.07	1%
Rubus sp.	NDA[c]	shrub	NDA[c]	0.07	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.13	2%
Silphium laciniatum	COMPASS PLANT	forb	8	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.93	11%
Solidago rigida	STIFF GOLDENROD	forb	8	0.07	1%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.40	5%
Toxicodendron radicans	POISON-IVY	vine	1	0.13	2%
Tradescantia ohiensis	OHIO SPIDERWORT	forb	5	0.13	2%
Vernonia gigantea	TALL IRONWEED	forb	2	0.47	6%
Agrostis gigantea	**REDTOP**	grass	0	0.47	6%
Dactylis glomerata	**ORCHARD GRASS**	grass	0	0.07	1%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.13	2%
Festuca sp.	**NDA[c]**	grass	0	0.07	1%
Ipomoea coccinea	**RED MORNING-GLORY**	forb	0	0.07	1%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.07	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.07	1%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.20	2%
Plantago major	**COMMON PLANTAIN**	forb	0	0.07	1%
Potentilla recta	**ROUGH-FRUITED CINQUEFOIL**	forb	NA[d]	0.13	2%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.13	2%
Trifolium repens	**WHITE CLOVER**	forb	0	0.07	1%
Unknown grass	**UNKNOWN**	grass	NA[d]	0.07	1%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.07	1%
Unknown forb 1	**UNKNOWN**	forb	NA[d]	0.07	1%
Unknown grass 1	**UNKNOWN**	grass	NA[d]	0.07	1%
			Native Species:	6.40	78%
			Non-Native Species:	1.80	22%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-31. WM1PR1 Vegetation Monitoring Data Summary

Total Species:	35	**Average CC[a]:**	1.06
Native Species:	16	**Total Cover:**	97%
Non-Native Species:	19	**FQAI[b]:**	6.27
Percent Native:	46%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.20	3%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.67	11%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.07	1%
Aster pilosus	AWL ASTER	forb	1	0.07	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.07	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.13	2%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.07	1%
Leersia oryzoides	RICE CUT GRASS	grass	1	0.07	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.13	2%
Panicum virgatum	SWITCH GRASS	grass	4	0.27	4%
Parthenocissus quinquefolia	VIRGINIA CREEPER	vine	2	0.20	3%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	0.07	1%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.60	10%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.33	5%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	0.13	2%
Toxicodendron radicans	POISON-IVY	vine	1	0.07	1%
Agrostis gigantea	**REDTOP**	grass	0	0.33	5%
Alliaria petiolata	**GARLIC MUSTARD**	forb	0	0.07	1%
Barbarea vulgaris	**YELLOW ROCKET**	forb	0	0.07	1%
Bromus japonicus	**JAPANESE BROME**	grass	0	0.27	4%
Cichorium intybus	**CHICORY**	forb	0	0.13	2%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.40	7%
Dactylis glomerata	**ORCHARD GRASS**	grass	0	0.07	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.27	4%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.07	1%
Festuca elatior	**TALL FESCUE**	grass	0	0.20	3%
Festuca sp.	**NDA[c]**	grass	0	0.20	3%
Lonicera maackii	**AMUR HONEYSUCKLE**	shrub	0	0.13	2%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.07	1%
Melilotus officinalis	**YELLOW SWEET-CLOVER**	forb	0	0.13	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.13	2%
Pyrus communis	**PEAR**	tree	0	0.07	1%
Verbascum thapsus	**COMMON MULLEIN**	forb	0	0.07	1%
Regreen	**REGREEN**	grass	NDA[c]	0.20	3%
Unknown	**UNKNOWN**	grass	NA[d]	0.07	1%
			Native Species:	3.13	52%
			Non-Native Species:	2.93	48%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination
[d]NA=Not Applicable
Species in bold are non-native

Table D-32. Amphibian Monitoring Summary

Restoration Project Area	Wetland Area	Species and Number of Individuals										
		Cricket Frog (*Acris crepitans*)	Marbled Salamander (*Ambystoma opacum*)	Salamander Species (*Ambystomid sp*)	Tiger Salamander (*Ambystoma tigrinum*)	American and Fowlers Toad (*Anaxyrus species*)	Toad Species (*Anaxyrus sp*)	American Bull Frog (*Lithobates catesbeiana*)	Green Frog (*Lithobates clamitans*)	Northern Leopard Frog (*Lithobates pipiens*)	Frog Species (*Lithobates sp*)	Spring Peeper (*Pseudacris crucifer*)
Borrow Area (BAP)	BAPW2	0	0	0	0	0	0	0	0	0	12	0
	BAPW4	1	0	0	0	0	0	1	25	0	9	3
	BAPW7	3	0	0	0	0	0	1	0	0	4	5
Former Production Area (FPA)	FPAW2	5	0	0	0	0	0	0	0	0	0	0
	FPAW7	9	0	0	0	0	0	0	0	0	0	5
	FPAW9	5	0	0	0	0	0	0	0	0	0	0
	PREW6	0	0	0	0	0	0	0	1	3	10	10
Northern Pine Plantation Enhancement (NPP)	NPPW4	2	2	2	0	0	0	2	0	0	52	0
	NPPW5	60	0	0	0	0	0	6	0	0	57	1
Wetland Mitigation Phase I (WM1)	WM1W1	0	0	0	0	0	0	1	1	0	7	4
	WM1W4	0	0	0	0	0	0	1	0	0	0	4
	WM1W7	0	0	2	0	0	0	0	0	0	0	16
Wetland Mitigation Phase II (WM2)	WM2W1	0	0	0	0	1	0	0	0	0	14	0
	WM2W2	0	0	1	0	0	0	0	0	1	9	45
	WM2W3	5	0	3	0	0	0	6	1	0	9	18
Paddys Run Tributary (PRT)	PRTW1	0	0	1	0	44	0	0	0	0	0	34

Table D-33. Amphibian Index of Biotic Integrity

Restoration Project Area	Wetland Area	AIBI[a] Score 2011	2012	2013
Borrow Area (BAP)	BAPW2	0	10	10
	BAPW4	0	10	3
	BAPW7	13	10	10
Former Production Area (FPA)	FPAW2	13	10	23
	FPAW7	0	20	24
	FPAW9	10	20	23
	PREW6	13	13	10
Northern Pine Plantation Enhancement (NPP)	NPPW4	33	13	13
	NPPW5	0	16	13
Wetland Mitigation Phase I (WM1)	WM1W1	3	10	13
	WM1W4	3	13	10
	WM1W7	0	10	3
Wetland Mitigation Phase II (WM2)	WM2W1	13	20	10
	WM2W2	6	16	10
	WM2W3	19	16	14
Paddys Run Tributary (PRT)	PRTW1	NA[b]	NA[b]	3

[a]AIBI= Amphibian Index of Biotic Integrity

[b]NA= not applicable; PRT wetland was created in 2012

Table D-34. Implementation Monitoring
Herbaceous Cover Data Summary

				Native Species (Percent)		Relative Frequency of Native Species (Percent)		Total Cover (Percent)	
Restoration Project Area	**Sub-Area**	**Total Species**	**Native Species**	**2013**	**2012**	**2013**	**2012**	**2013**	**2012**
Paddys Run Tributary	mesic prairie	29	14	58%	63%	57%	67%	88%	97%
	wetland	28	16	71%	61%	69%	55%	95%	83%
Triangle Area	wet mesic prairie	30	17	61%	67%	57%	68%	95%	94%
	mesic prairie	25	16	58%	65%	58%	56%	97%	97%

Table D-35. Implementation Monitoring
Herbaceous Cover Data Summary
Paddys Run Tributary Project—Mesic Prairie

Total Species:	38	**Average CC[a]:**	1.08
Native Species:	22	**Total Cover:**	88%
Non-Native Species:	16	**FQAI[b]:**	6.68
Percent Native:	58%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.4	3%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.2	1%
Asclepias syriaca	COMMON MILKWEED	forb	1	0.2	1%
Aster pilosus	AWL ASTER	forb	1	0.8	6%
Chamaecrista fasciculata	PARTRIDGE-PEA	forb	3	0.2	1%
Conyza canadensis	HORSEWEED	forb	0	0.4	3%
Elymus canadensis	CANADA WILD RYE	grass	6	0.4	3%
Erigeron annuus	DAISY FLEABANE	forb	0	0.4	3%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.4	3%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.2	1%
Juncus tenuis	PATH RUSH	forb	1	0.2	1%
Lepidium virginicum	COMMON PEPPER-GRASS	forb	1	0.2	1%
Monarda fistulosa	WILD BERGAMOT	forb	3	0.2	1%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.4	3%
Panicum virgatum	SWITCH GRASS	grass	4	0.2	1%
Populus deltoides	EASTERN COTTONWOOD	tree	3	0.4	3%
Prunella vulgaris	SELF-HEAL	forb	0	0.2	1%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.4	3%
Solidago canadensis	CANADA GOLDENROD	forb	1	1.0	7%
Vernonia gigantea	TALL IRONWEED	forb	2	0.4	3%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.4	3%
Vitis sp.	NDA[c]	vine	NDA[c]	0.2	1%
Agrostis gigantea	**REDTOP**	grass	0	0.4	3%
Barbarea vulgaris	**YELLOW ROCKET**	forb	0	0.2	1%
Cichorium intybus	**CHICORY**	forb	0	1.0	7%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.2	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.4	3%
Dianthus armeria	**DEPTFORD-PINK**	forb	0	0.4	3%
Festuca sp.	**NDA[c]**	grass	0	0.6	4%
Lysimachia nummularia	**MONEYWORT**	forb	0	0.2	1%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.4	3%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.2	1%
Plantago major	**COMMON PLANTAIN**	forb	0	0.2	1%
Rumex crispus	**CURLY DOCK**	forb	0	0.2	1%
Taraxacum officinale	**COMMON DANDELION**	forb	0	0.6	4%
Trifolium repens	**WHITE CLOVER**	forb	0	0.2	1%
Verbascum blattaria	**MOTH MULLEIN**	forb	0	0.6	4%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.2	1%
			Native Species:	7.8	57%
			Non-Native Species:	6.0	43%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA= No Determination Available
[d]NA= Not Applicable
Species in bold are non-native

Table D-36. Implementation Monitoring
Herbaceous Cover Data Summary
Paddys Run Tributary Project—Wetland

Total Species:	48	**Average CC[a]:**	1.73
Native Species:	34	**Total Cover:**	95%
Non-Native Species:	14	**FQAI[b]:**	11.97
Percent Native:	71%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.2	1%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.6	4%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.2	1%
Asimina triloba	PAWPAW	sm tree	6	0.2	1%
Aster pilosus	AWL ASTER	forb	1	0.8	5%
Bidens frondosa	DEVIL'S BEGGAR'S-TICK	forb	2	0.2	1%
Carya sp.	NDA[c]	tree	NDA[c]	0.2	1%
Cephalanthus occidentalis	BUTTONBUSH	shrub	6	0.4	3%
Chamaecrista fasciculata	PARTRIDGE-PEA	forb	3	0.2	1%
Carex vulpinoidea	FOX SEDGE	sedge	1	0.2	1%
Cyperus sp.	ND[c]	sedge	0	0.2	1%
Cyperus esculentus	YELLOW NUT-SEDGE	sedge	0	0.2	1%
Desmodium canescens	HOARY TICK-TREFOIL	forb	4	0.2	1%
Eleocharis obtusa	BLUNT SPIKE-RUSH	sedge	1	0.2	1%
Epilobium sp.	NDA[c]	forb	NDA[c]	0.2	1%
Erigeron annuus	DAISY FLEABANE	forb	0	0.2	1%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.4	3%
Eupatorium perfoliatum	COMMON BONESET	forb	3	0.4	3%
Eupatorium serotinum	LATE-FLOWERING BONESET	forb	2	0.2	1%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.6	4%
Hibiscus laevis	HALBERD-LEAVED ROSE-MALLOW	forb	7	0.2	1%
Juncus tenuis	PATH RUSH	forb	1	0.2	1%
Lindera benzoin	SPICEBUSH	shrub	5	0.2	1%
Lobelia sp.	NDA[c]	forb	NDA[c]	0.2	1%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.2	1%
Panicum capillare	WITCH GRASS	grass	1	0.2	1%
Panicum virgatum	SWITCH GRASS	grass	4	0.4	3%
Plantago rugelii	RUGEL'S PLANTAIN	forb	0	0.2	1%
Populus deltoides	EASTERN COTTONWOOD	tree	3	0.4	3%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.6	4%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.8	5%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.2	1%
Spartina pectinata	PRAIRIE CORD GRASS	grass	5	0.2	1%
Verbena urticifolia	WHITE VERVAIN	forb	3	0.4	3%
Agrostis gigantea	**REDTOP**	grass	0	0.6	4%
Cirsium arvense	**CANADA THISTLE**	forb	0	0.2	1%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.2	1%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.2	1%
Dianthus armeria	**DEPTFORD-PINK**	forb	0	0.4	3%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.2	1%
Festuca sp.	**NDA[c]**	grass	0	0.4	3%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.2	1%
Solanum carolinense	**HORSE NETTLE**	forb	0	0.4	3%
Trifolium repens	**WHITE CLOVER**	forb	0	0.4	3%
Verbascum blattaria	**MOTH MULLEIN**	forb	0	0.4	3%
Verbascum thapsus	**COMMON MULLEIN**	forb	0	0.2	1%
Regreen	**NDA[c]**	grass	0	0.4	3%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.4	3%
			Native Species:	10.4	69%
			Non-Native Species:	4.6	31%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA = No Determination Available
[d]NA= Not Applicable
Species in bold are non-native

Table D-37. Implementation Monitoring
Herbaceous Cover Data Summary
Triangle—Mesic Prairie

Total Species:	33	**Average CC[a]:**	1.10
Native Species:	20	**Total Cover:**	97%
Non-Native Species:	13	**FQAI[b]:**	6.34
Percent Native:	61%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.2	2%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.2	2%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.2	2%
Aster pilosus	AWL ASTER	forb	1	0.4	4%
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	grass	8	0.2	2%
Campsis radicans	TRUMPET-CREEPER	vine	1	0.6	5%
Conyza canadensis	HORSEWEED	forb	0	0.2	2%
Desmodium canescens	HOARY TICK-TREFOIL	forb	4	0.2	2%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.2	2%
Lolium sp.	NDA[c]	grass	NDA[c]	0.2	2%
Oenothera biennis	COMMON EVENING-PRIMROSE	forb	1	0.2	2%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.4	4%
Panicum virgatum	SWITCH GRASS	grass	4	0.2	2%
Phytolacca americana	POKEWEED	forb	1	0.2	2%
Prunella vulgaris	SELF-HEAL	forb	0	0.2	2%
Rubus occidentalis	BLACK RASPBERRY	shrub	1	0.6	5%
Rudbeckia hirta	BLACK-EYED SUSAN	forb	1	0.6	5%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.6	5%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.4	4%
Toxicodendron radicans	POISON-IVY	vine	1	0.4	4%
Agrostis gigantea	**REDTOP**	grass	0	0.6	5%
Cirsium vulgare	**BULL THISTLE**	forb	0	0.2	2%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.8	7%
Conium maculatum	**POISON-HEMLOCK**	forb	0	0.2	2%
Dactylis glomerata	**ORCHARD GRASS**	grass	0	0.4	4%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.2	2%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.4	4%
Festuca sp.	**UNKNOWN**	grass	0	0.6	5%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.2	2%
Verbascum blattaria	**MOTH MULLEIN**	forb	0	0.2	2%
Unknown	**UNKNOWN**	NA[d]	NA[d]	0.6	5%
Unknown forb	**UNKNOWN**	forb	NA[d]	0.2	2%
Unknown grass	**UNKNOWN**	grass	NA[d]	0.2	2%
			Native Species:	6.40	57%
			Non-Native Species:	4.80	43%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]NDA = No Determination Available
[d]NA= Not Applicable
Species in bold are non-native

Table D-38. Implementation Monitoring
Herbaceous Cover Data Summary
Triangle—Wet Mesic Prairie

Total Species:	33	**Average CC[a]:**	1.03
Native Species:	19	**Total Cover:**	95%
Non-Native Species:	14	**FQAI[b]:**	5.93
Percent Native:	58%		

Species	Common Name	Type	CC[a]	Frequency (species/quadrat)	Relative Frequency
Achillea millefolium	YARROW	forb	1	0.2	2%
Ambrosia artemisiifolia	COMMON RAGWEED	forb	0	0.4	3%
Andropogon gerardii	BIG BLUESTEM	grass	5	0.6	5%
Apocynum cannabinum	INDIAN HEMP	forb	1	0.2	2%
Aster pilosus	AWL ASTER	forb	1	0.4	3%
Conyza canadensis	HORSEWEED	forb	0	0.2	2%
Desmodium canescens	HOARY TICK-TREFOIL	forb	4	0.6	5%
Erigeron strigosus	ROUGH FLEABANE	forb	1	0.6	5%
Fraxinus pennsylvanica	GREEN ASH	tree	3	0.2	2%
Helianthus sp.	NDA[c]	forb	NDA[c]	0.2	2%
Hypericum punctatum	SPOTTED ST. JOHN'S-WORT	forb	2	0.2	2%
Lactuca biennis	TALL BLUE LETTUCE	forb	1	0.2	2%
Oxalis stricta	COMMON YELLOW WOOD-SORREL	forb	0	0.4	3%
Panicum virgatum	SWITCH GRASS	grass	4	0.2	2%
Prunella vulgaris	SELF-HEAL	forb	0	0.4	3%
Solidago canadensis	CANADA GOLDENROD	forb	1	0.6	5%
Sorghastrum nutans	INDIAN GRASS	grass	5	0.4	3%
Toxicodendron radicans	POISON-IVY	vine	1	0.6	5%
Vernonia gigantea	TALL IRONWEED	forb	2	0.6	5%
Agrostis gigantea	**REDTOP**	grass	0	0.4	3%
Cichorium intybus	**CHICORY**	forb	0	0.2	2%
Convolvulus arvensis	**FIELD BINDWEED**	forb	0	0.6	5%
Daucus carota	**QUEEN-ANNE'S-LACE**	forb	0	0.6	5%
Dipsacus fullonum	**WILD TEASEL**	forb	0	0.2	2%
Dipsacus laciniatus	**CUT-LEAVED TEASEL**	forb	0	0.8	6%
Festuca sp.	**NDA[c]**	grass	0	0.6	5%
Medicago lupulina	**BLACK MEDICK**	forb	0	0.2	2%
Plantago lanceolata	**ENGLISH PLANTAIN**	forb	0	0.2	2%
Plantago major	**COMMON PLANTAIN**	forb	0	0.2	2%
Trifolium pratense	**RED CLOVER**	forb	0	0.4	3%
Verbascum blattaria	**MOTH MULLEIN**	forb	0	0.2	2%
Regreen	**NDA[c]**	grass	0	0.4	3%
Unknown grass	**UNKNOWN**	grass	NA[d]	0.2	2%
			Native Species:	7.2	58%
			Non-Native Species:	5.2	42%

[a]CC= Coefficient of Conservatism
[b]FQAI= Floristic Quality Assessment Index
[c]ND= No Determination
[d]NA=Not Applicable
Species in bold are non-native

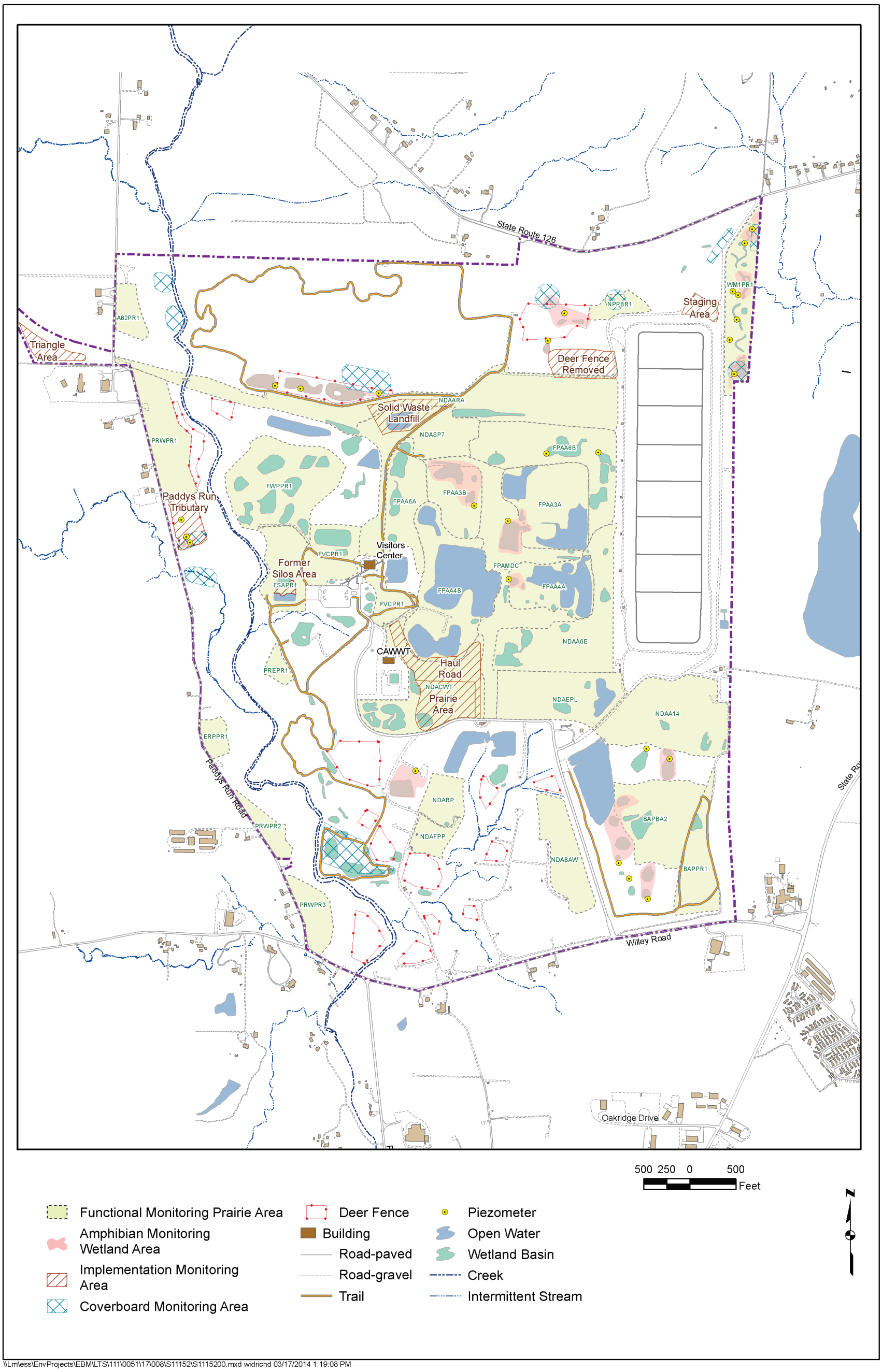
Table D-39. Implementation Monitoring Woody Vegetation Survival

Species	Common Name	Total Number Planted	Alive	Resprout	Vitality (<50% alive)	Dead or Unaccounted	2013 Survival (Percent)	2012 Survival (Percent)
Paddys Run Tributary								
Acer rubrum	RED MAPLE	5	5	0	0	0	100%	100%
Acer saccharum	SUGAR MAPLE	14	14	0	0	0	100%	79%
Asimina triloba	PAWPAW	150	29	2	4	115	19%	30%
Carpinus caroliniana	BLUE-BEECH	50	22	0	0	28	44%	74%
Carya cordiformis	BITTERNUT HICKORY	50	20	0	0	30	40%	50%
Carya ovata	SHAGBARK HICKORY	12	4	0	0	8	33%	42%
Cephalanthus occidentalis	BUTTONBUSH	150	147	0	3	0	98%	100%
Cornus amomum	SILKY DOGWOOD	150	134	0	0	16	89%	89%
Fagus grandifolia	AMERICAN BEECH	75	5	1	1	68	7%	4%
Lindera benzoin	SPICEBUSH	150	15	12	9	114	10%	22%
Quercus bicolor	SWAMP WHITE OAK	7	7	0	0	0	100%	100%
Quercus imbricaria	SHINGLE OAK	75	2	5	0	68	3%	20%
Quercus macrocarpa	BUR OAK	75	44	2	1	28	59%	85%
Quercus palustris	PIN OAK	15	15	0	0	0	100%	80%
Quercus rubra	RED OAK	20	15	0	1	4	75%	90%
Rosa palustris	SWAMP ROSE	150	134	0	1	15	89%	81%
Ulmus americana	AMERICAN ELM	7	4	0	2	1	57%	100%
	Totals	1155	616	22	22	495	53%	58%
Former Silos Area								
Acer rubrum	RED MAPLE	4	4	0	0	0	100%	NA[a]
Acer saccharum	SUGAR MAPLE	3	3	0	0	0	100%	NA[a]
Cephalanthus occidentalis	BUTTONBUSH	15	14	0	1	0	93%	NA[a]
Cercis canadensis	REDBUD	3	3	0	0	0	100%	NA[a]
Cornus amomum	SILKY DOGWOOD	15	5	0	8	2	33%	NA[a]
Ilex verticulata	WINTERBERRY	15	13	0	1	1	87%	NA[a]
Quercus bicolor	SWAMP WHITE OAK	3	3	0	0	0	100%	NA[a]
Quercus macrocarpa	BUR OAK	4	4	0	0	0	100%	NA[a]
Quercus palustris	PIN OAK	3	3	0	0	0	100%	NA[a]
Rosa palustris	SWAMP ROSE	15	9	0	4	2	60%	NA[a]
	Totals	80	61	0	14	5	76%	NA[a]

[a]NA = Not Applicable

Table D-40. Coverboard Monitoring Summary

	Restoration Project Area	Northern Pine Plantation Enhancement			Paddys Run Tributary	Paddys Run Corridor Expansion West	Southern Waste Units	Wetland Mitigation Phase I	Wetland Mitigation Phase II		
Species	**Common Name**	**NPPBR1**	**NPPPP1**	**NPPW4**	**PRTWET**	**PRWPR1**	**SWUPR1**	**WM1PR1**	**WM2W3**	**Frequency**	**Relative Frequency**
Acris crepitans	CRICKET FROG	0	0	2	0	0	0	0	0	2	3%
Ambystoma barbouri	STREAMSIDE SALAMANDER	7	0	2	0	0	0	0	13	22	29%
Ambystoma jeffersonianum	JEFFERSON SALAMANDER	0	0	1	0	0	0	0	0	1	1%
Ambystoma maculatum	SPOTTED SALAMANDER	0	0	1	0	0	0	0	0	1	1%
Ambystoma opacum	MARBLED SALAMANDER	0	0	2	0	0	0	0	0	2	3%
Blarnia brevicauda	SHORT-TAILED SHREW	0	0	0	0	0	1	0	0	1	1%
Coluber constrictor	EASTERN RACER	0	3	0	0	0	0	0	0	3	4%
Cryptotis parva	LEAST SHREW	0	1	3	0	0	4	2	0	10	13%
Microtus pennsylvanicus	MEADOW VOLE	0	0	4	1	0	1	0	6	12	16%
Microtus pinetorum	WOODLAND VOLE	0	0	0	0	0	0	0	1	1	1%
Pantherophis alleghaniensis	EASTERN RAT SNAKE	0	2	0	0	0	1	0	0	3	4%
Peromyscus leucopus	WHITE-FOOTED MOUSE	0	0	1	0	0	0	0	0	1	1%
Peromyscus maniculatus	DEER MOUSE	0	0	12	2	0	2	0	2	18	24%
Plethodon cinereus	REDBACK SALAMANDER	0	0	10	0	0	0	0	0	10	13%
Pseudacris crucifer	SPRING PEEPER	0	0	2	0	0	0	0	0	2	3%
Nerodia sipedon	NORTHERN WATER SNAKE	0	0	1	0	0	0	0	1	2	3%
Scalopus aquaticus	EASTERN MOLE	1	0	0	0	0	0	0	0	1	1%
Thamnophis sirtalis sirtalis	EASTERN GARTER SNAKE	0	0	7	0	2	1	0	2	12	16%
									Total Frequency:	**76**	



\\Lm\ess\EnvProjects\EBM\LTS\111\0051\17\008\S11152\S1115200.mxd widrichd 03/17/2014 1:19:08 PM

Figure D-1. Ecological Monitoring Areas

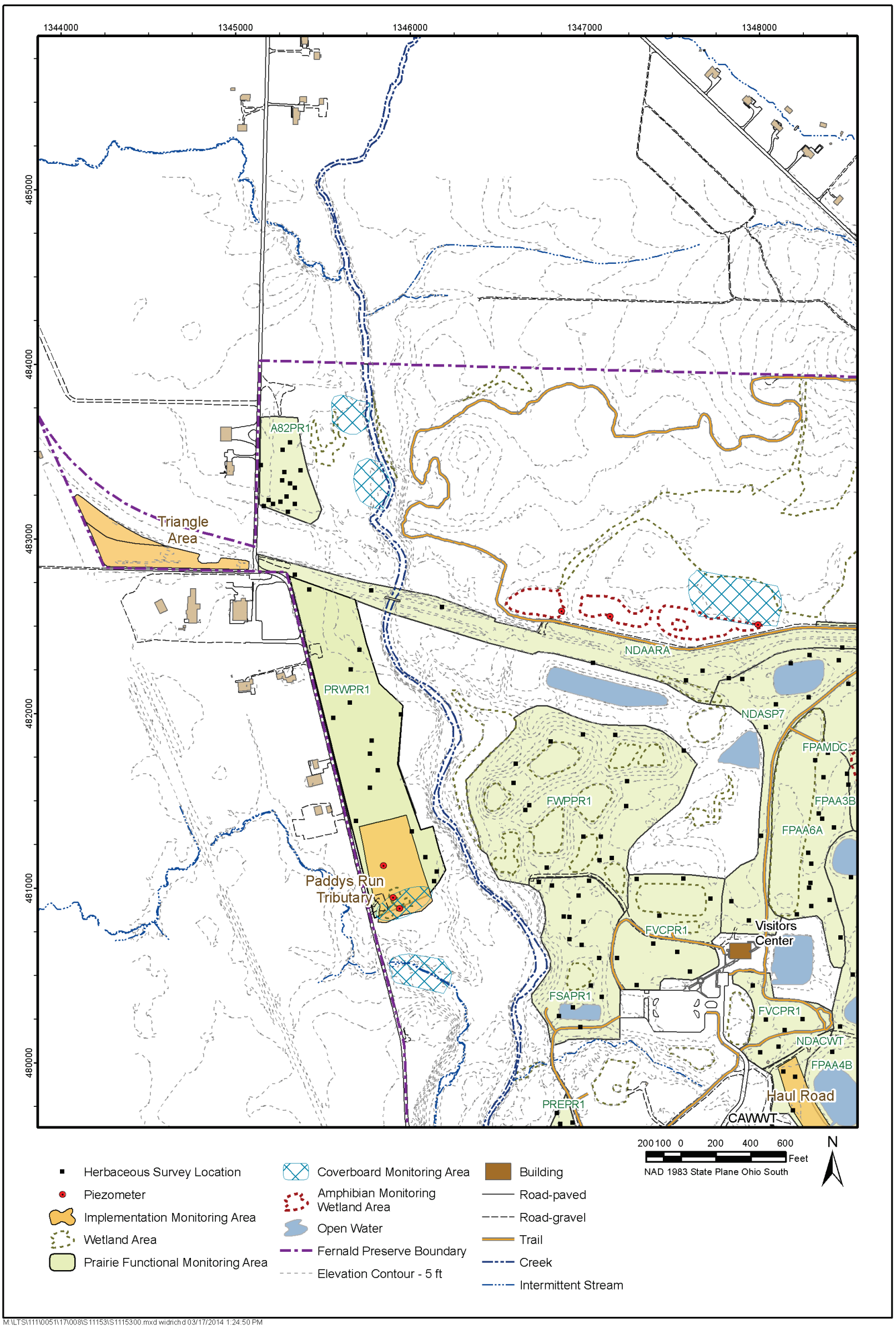


Figure D-2A. Ecological Monitoring Survey Areas—Northwest Site Quadrant

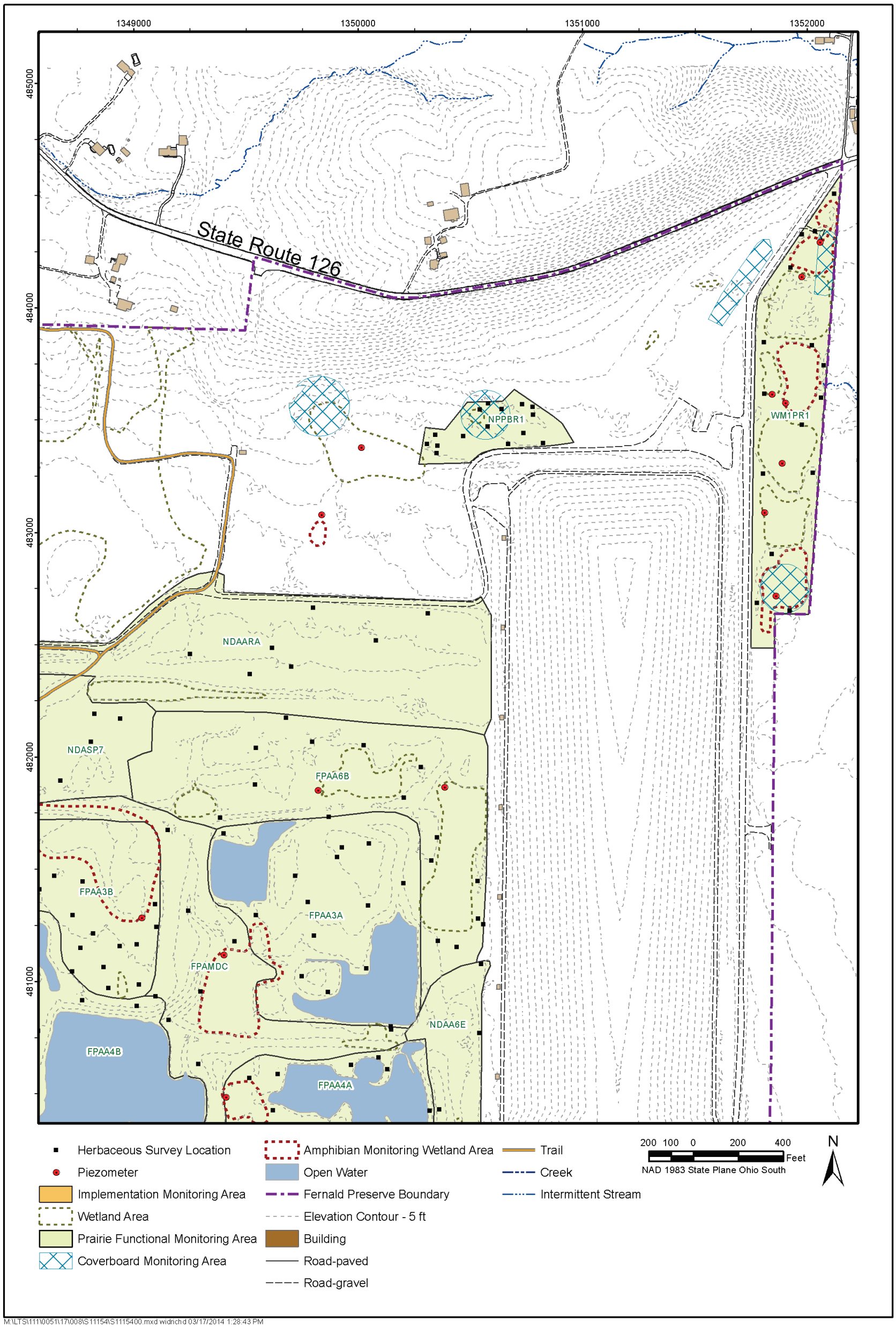


Figure D–2B. Ecological Monitoring Survey Areas—Northeast Site Quadrant

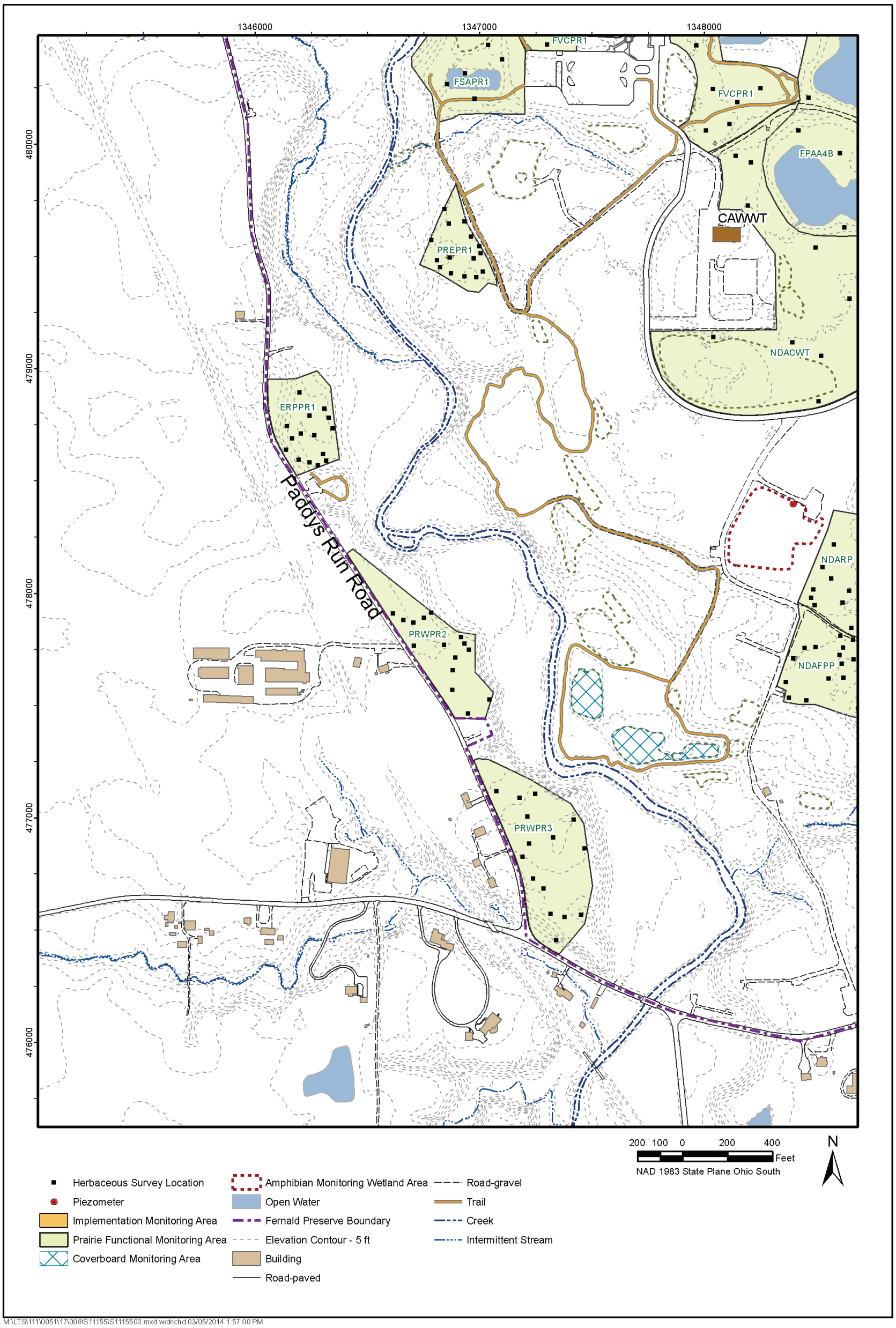


Figure D–2C. Ecological Monitoring Survey Areas—Southwest Site Quadrant

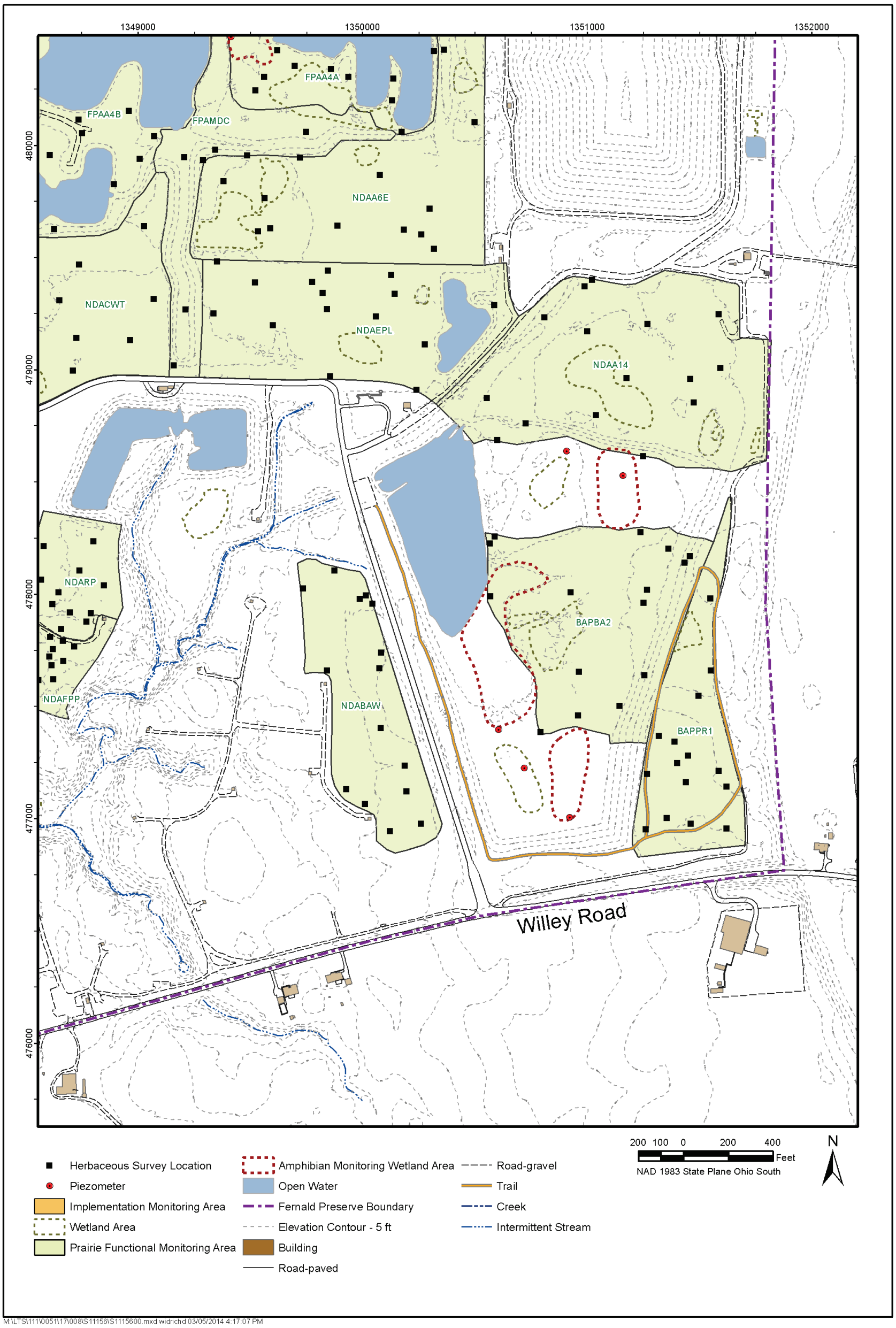


Figure D–2D. Ecological Monitoring Survey Areas—Southeast Site Quadrant

This page intentionally left blank

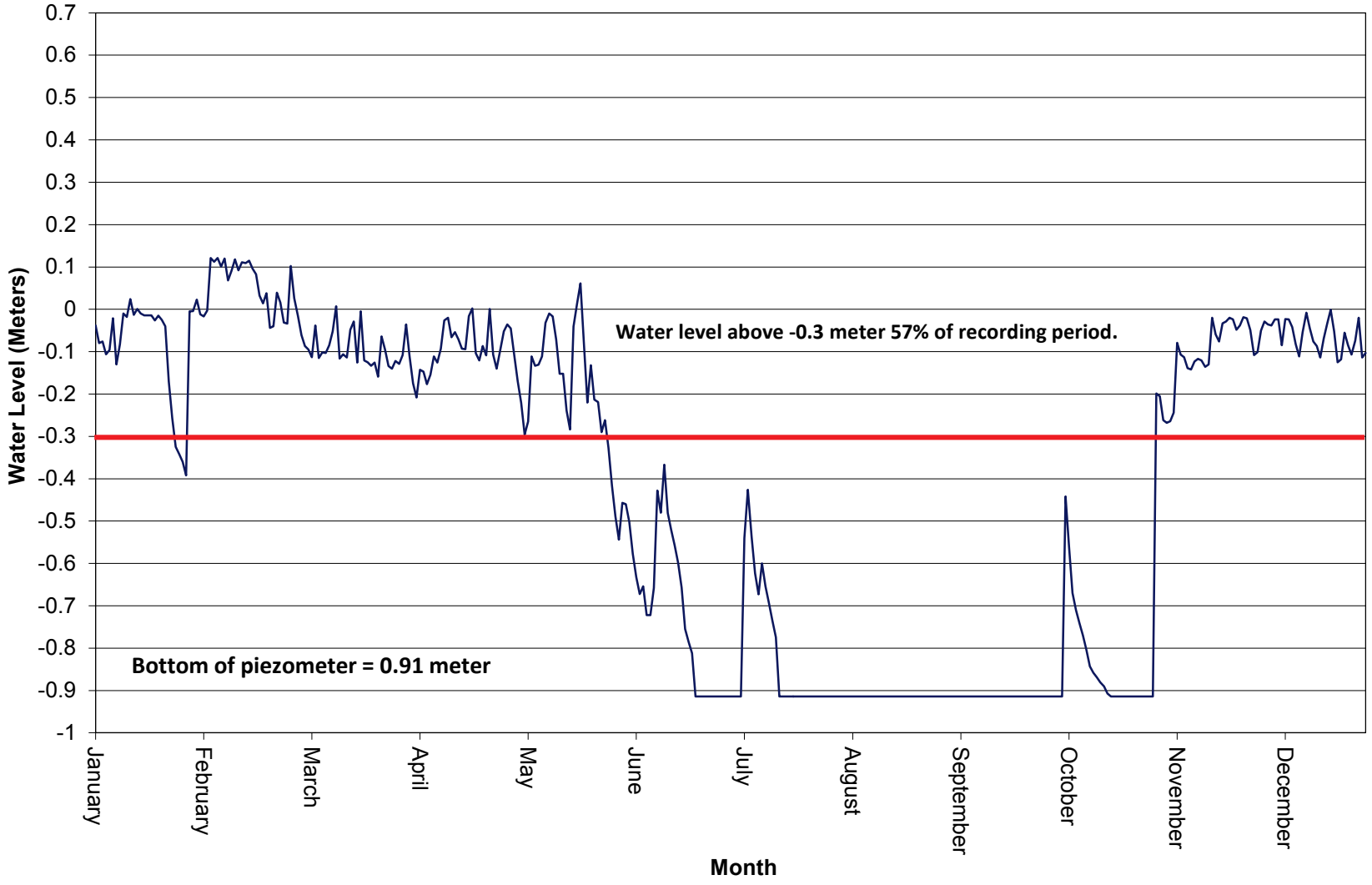


Figure D-3A. Wetland Area BAPW2 Hydrograph

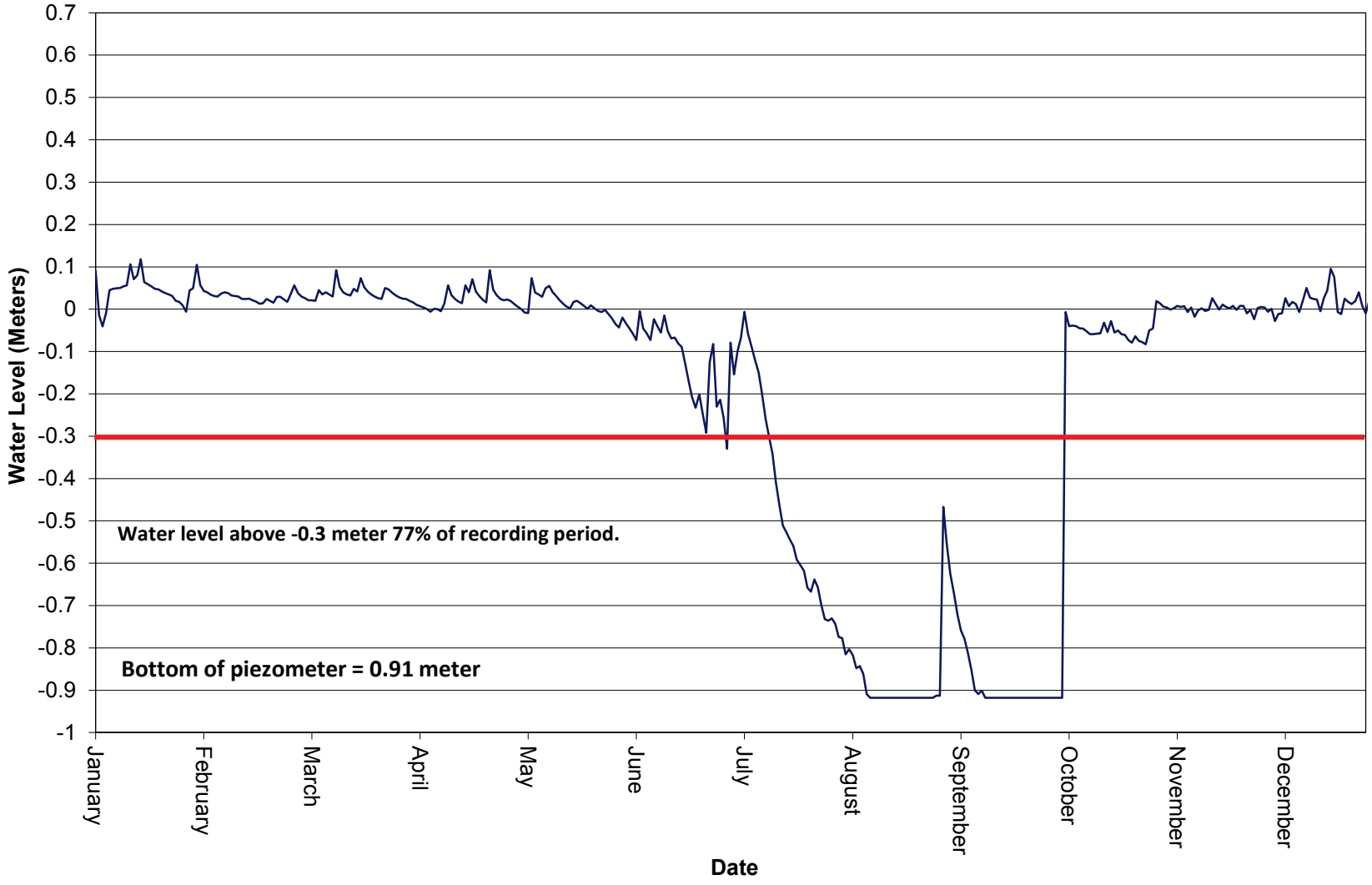


Figure D–3B. Wetland Area BAPW3 Hydrograph

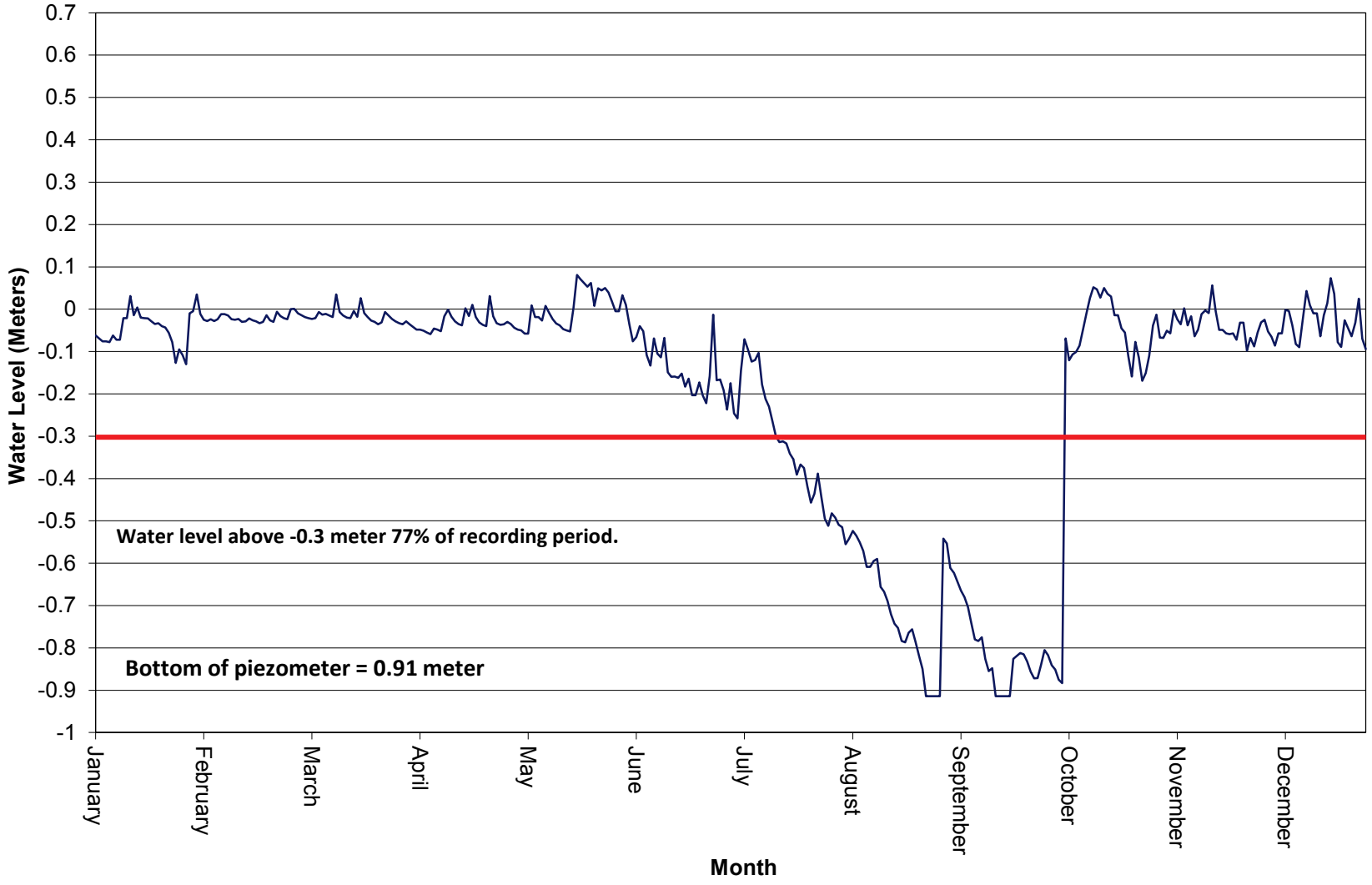


Figure D–3C. Wetland Area BAPW4 Hydrograph

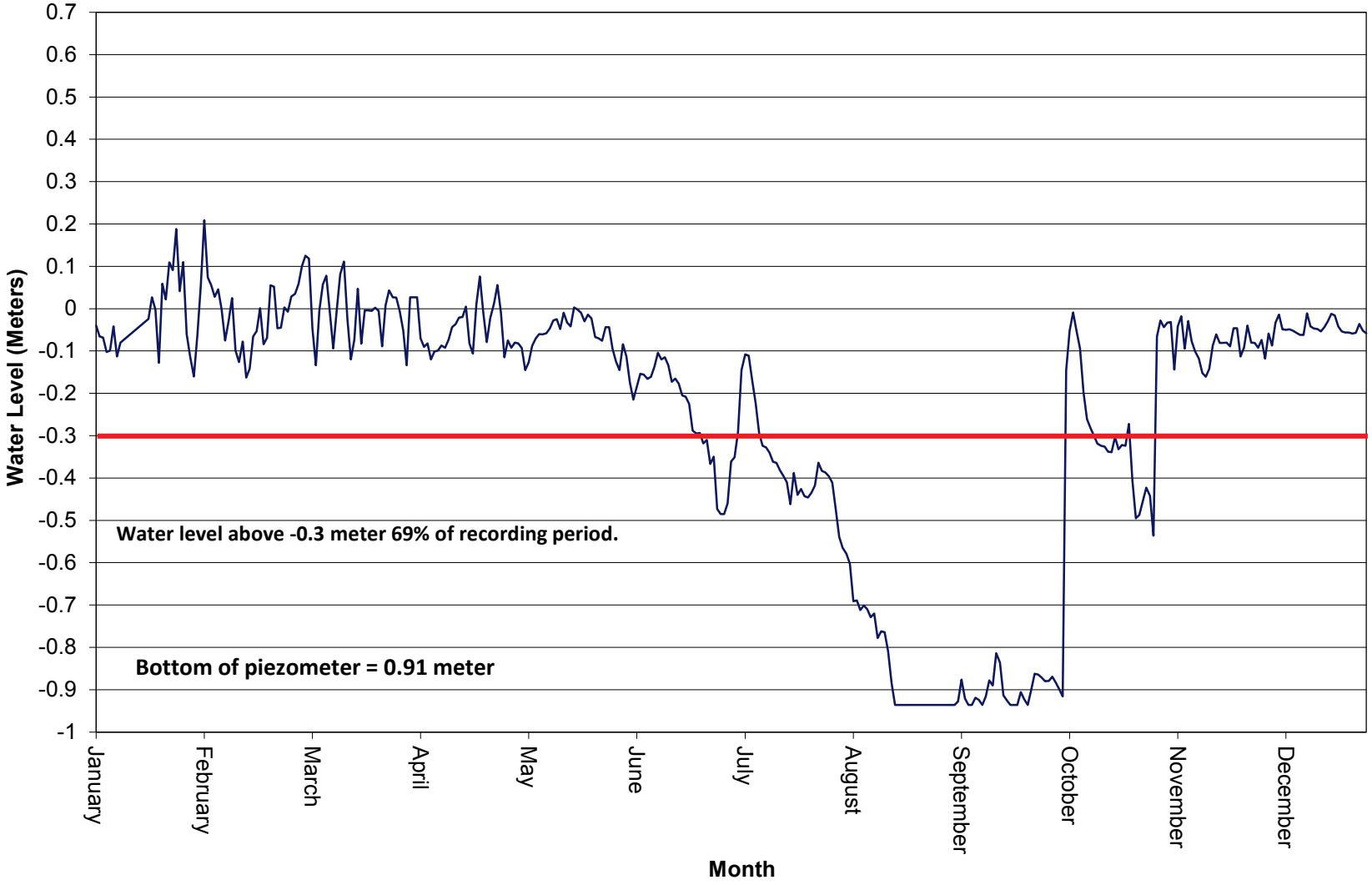


Figure D–3D. Wetland Area BAPW7 Hydrograph

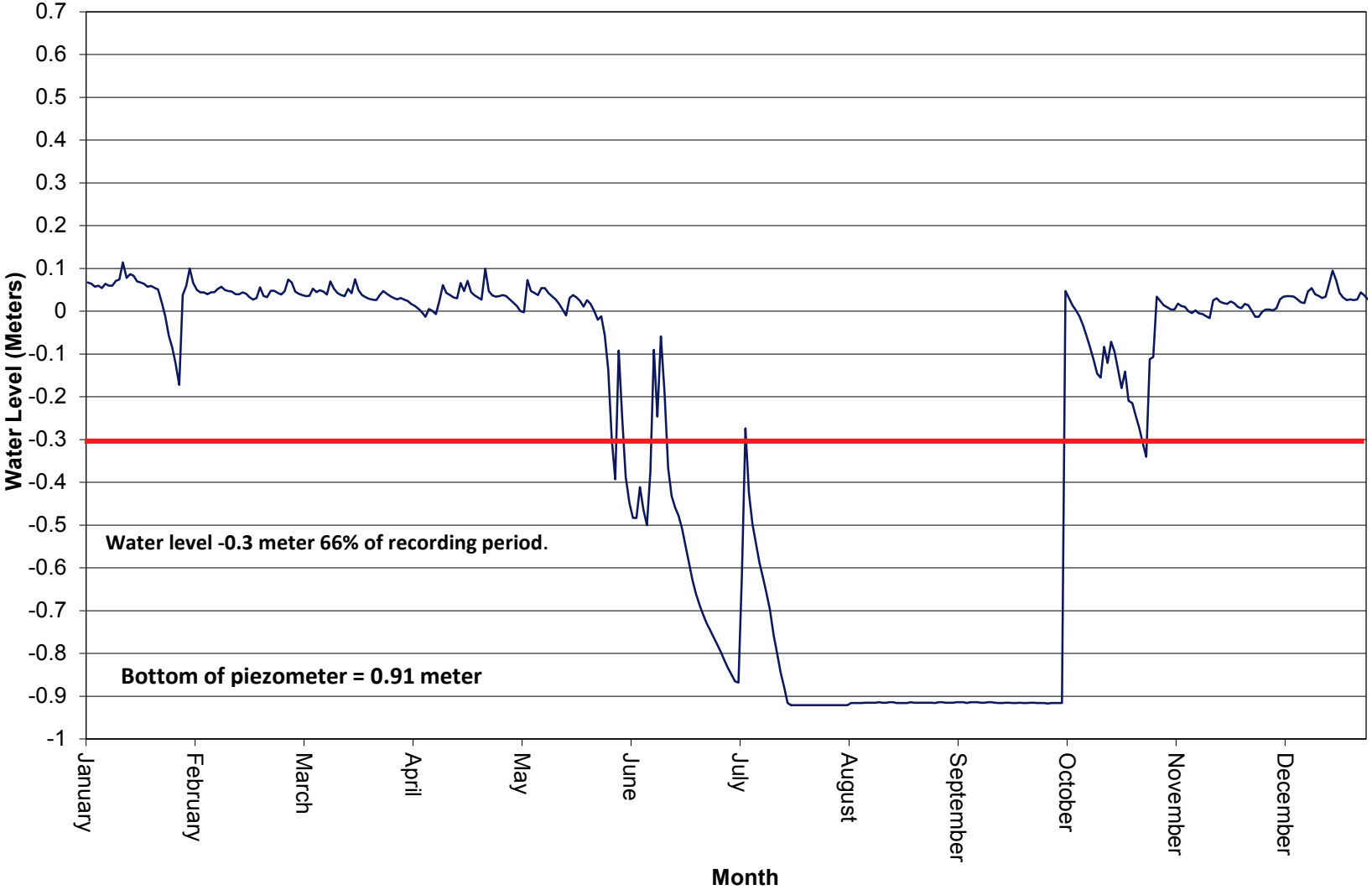


Figure D–3E. Wetland Area BAPW9 Hydrograph

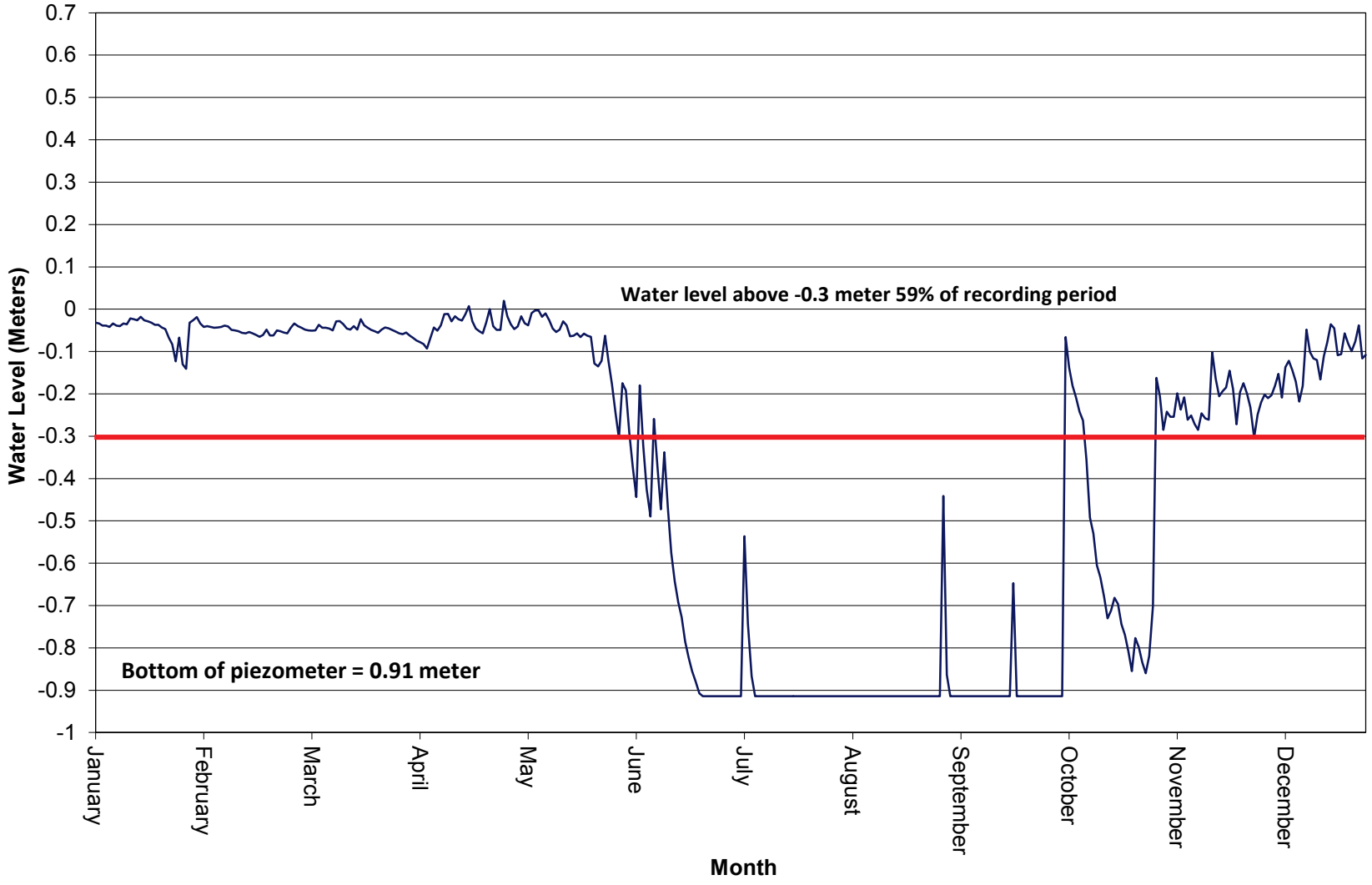


Figure D–3F. Wetland Area FPAW2 Hydrograph

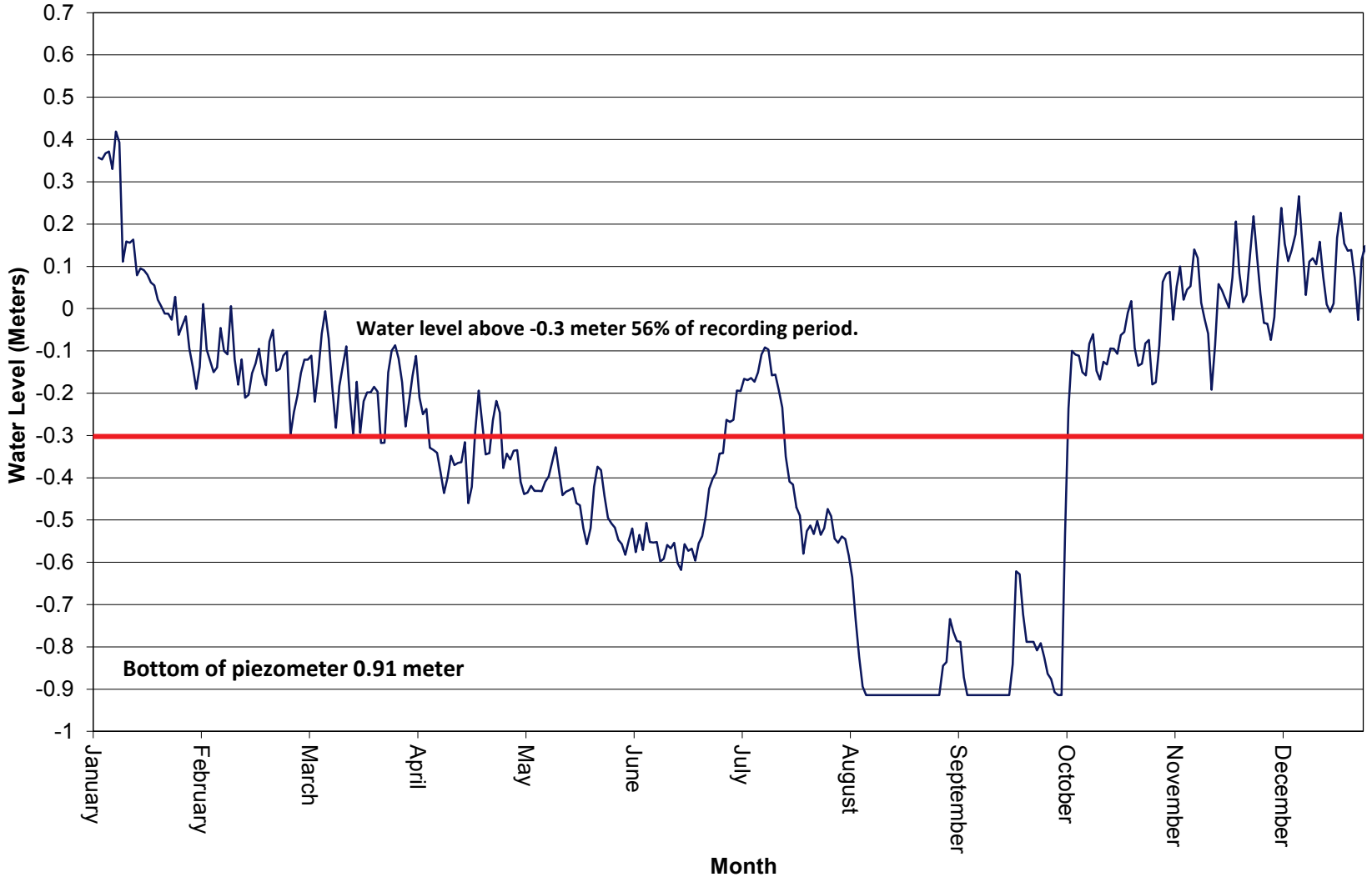


Figure D–3G. Wetland Area FPAW4 Hydrograph

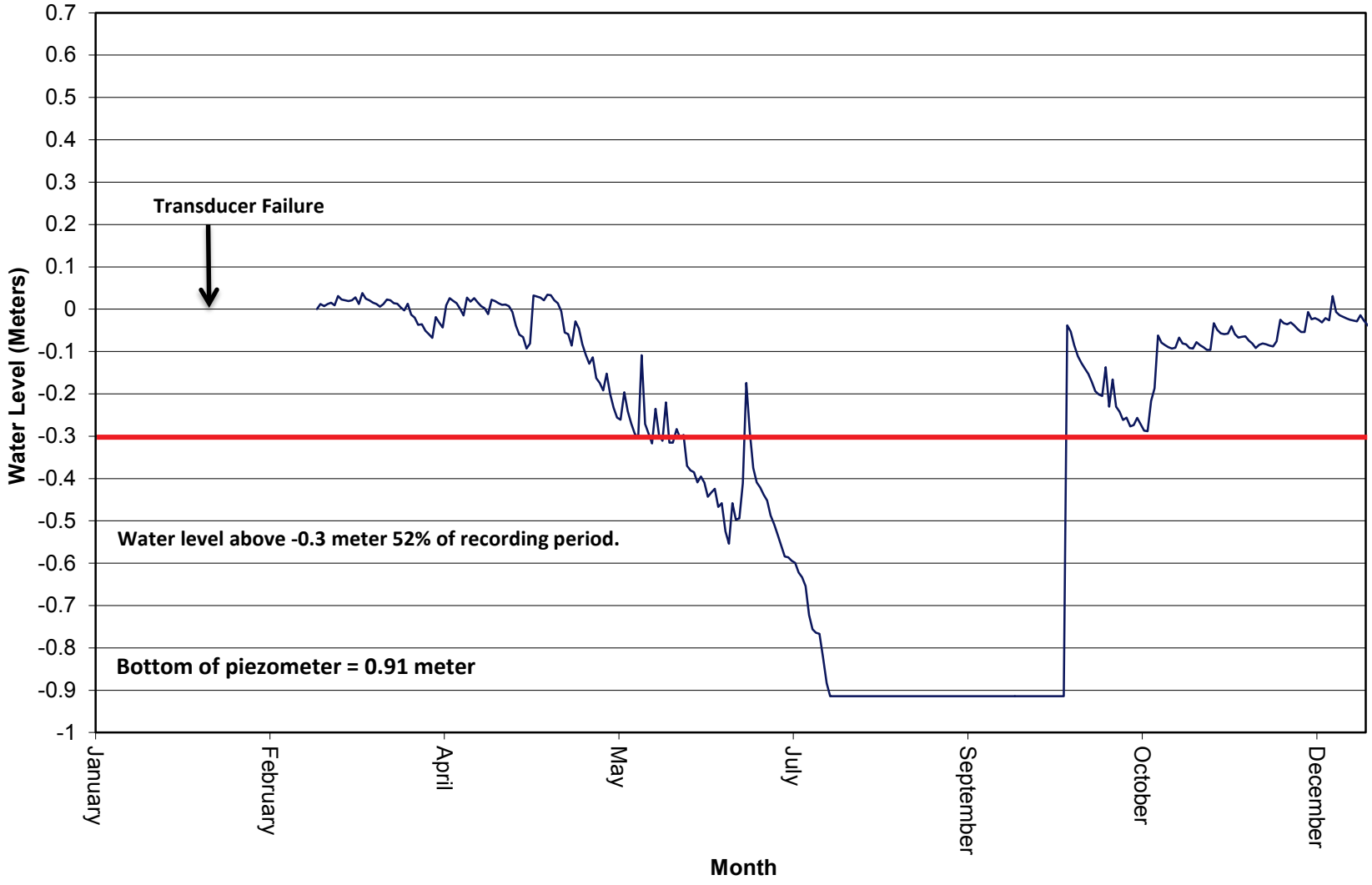


Figure D–3H. Wetland Area FPAW5 Hydrograph

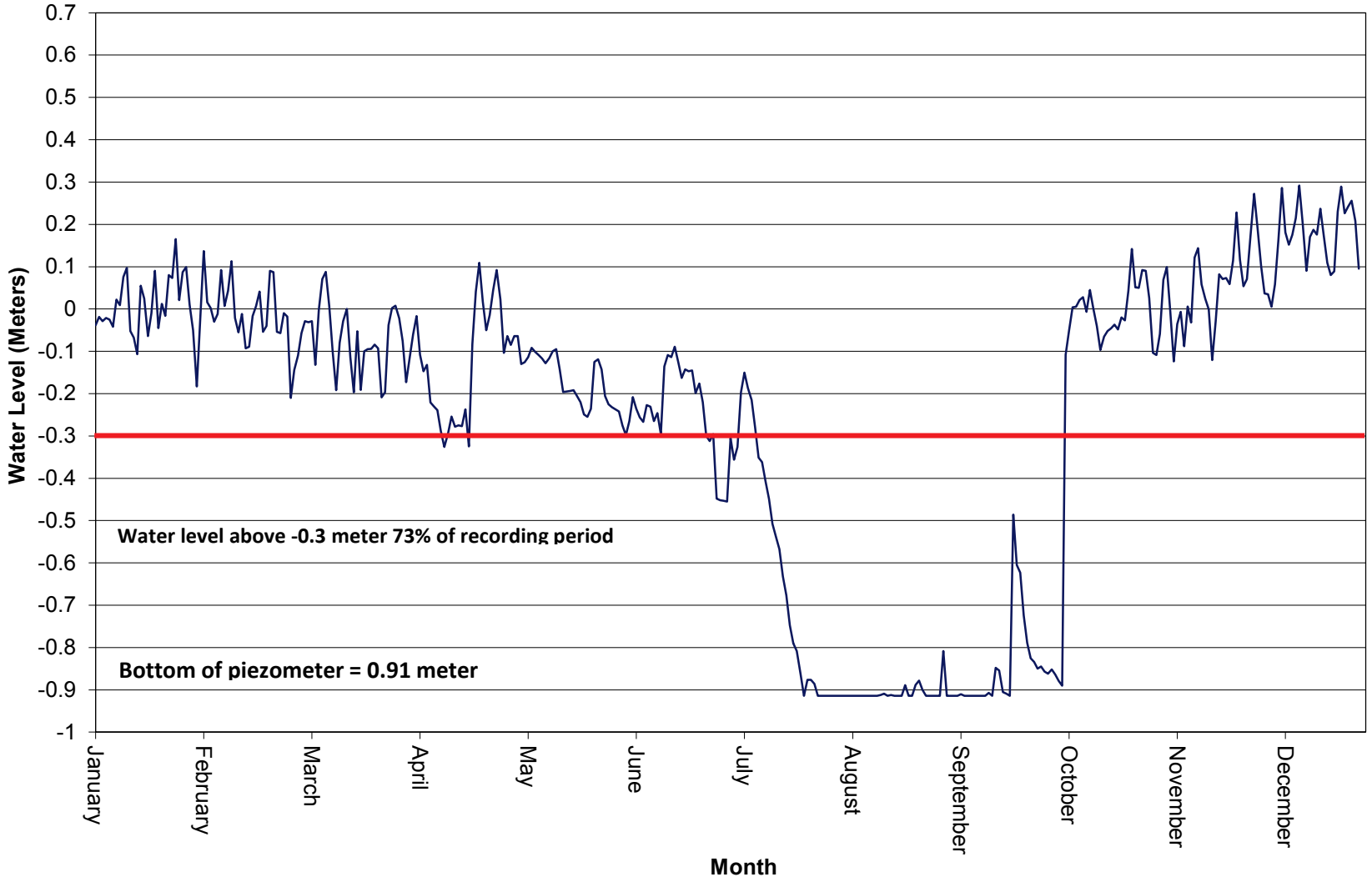


Figure D–3l. Wetland Area FPAW7 Hydrograph

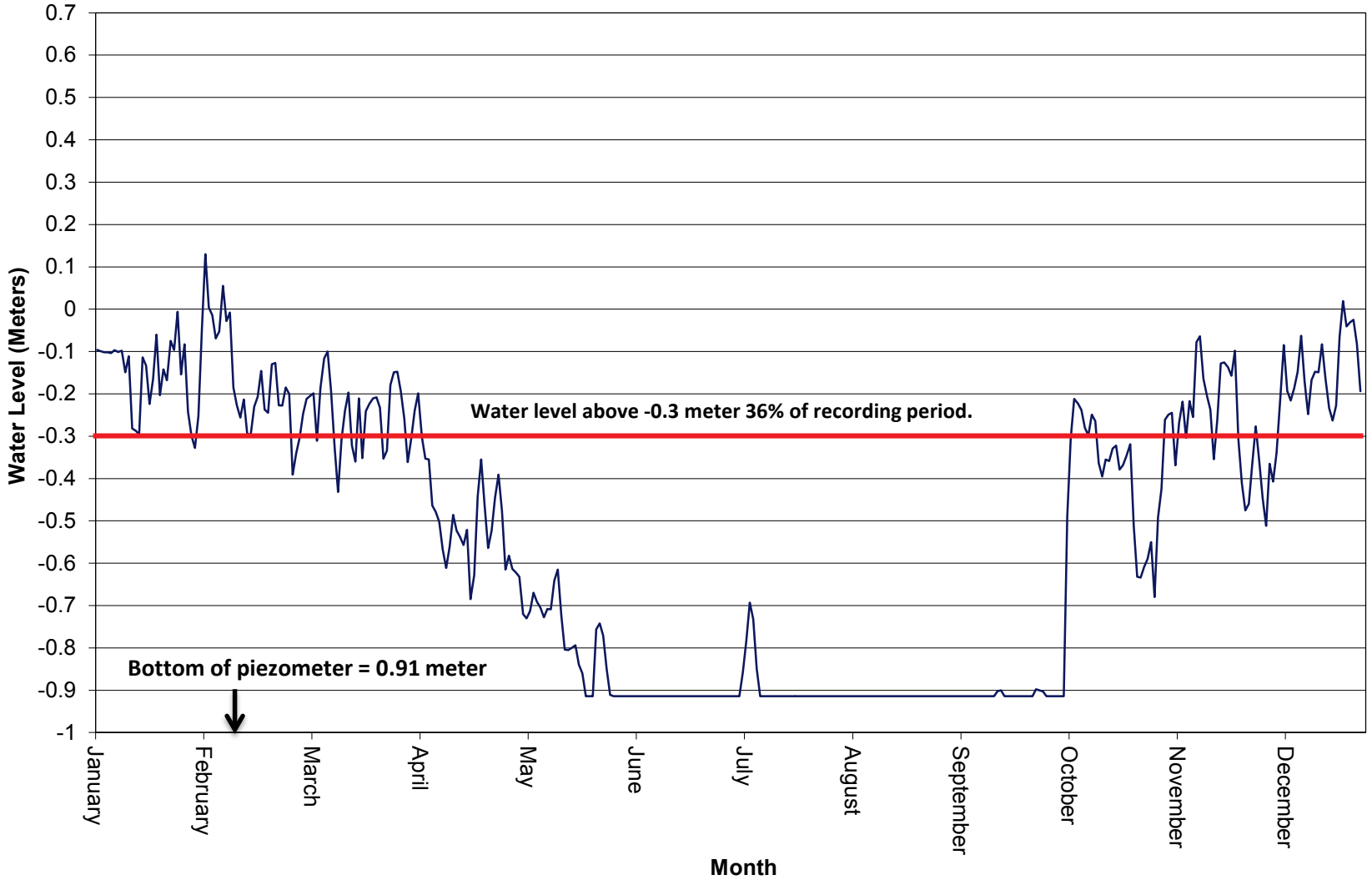


Figure D–3J. Wetland Area FPAW9 Hydrograph

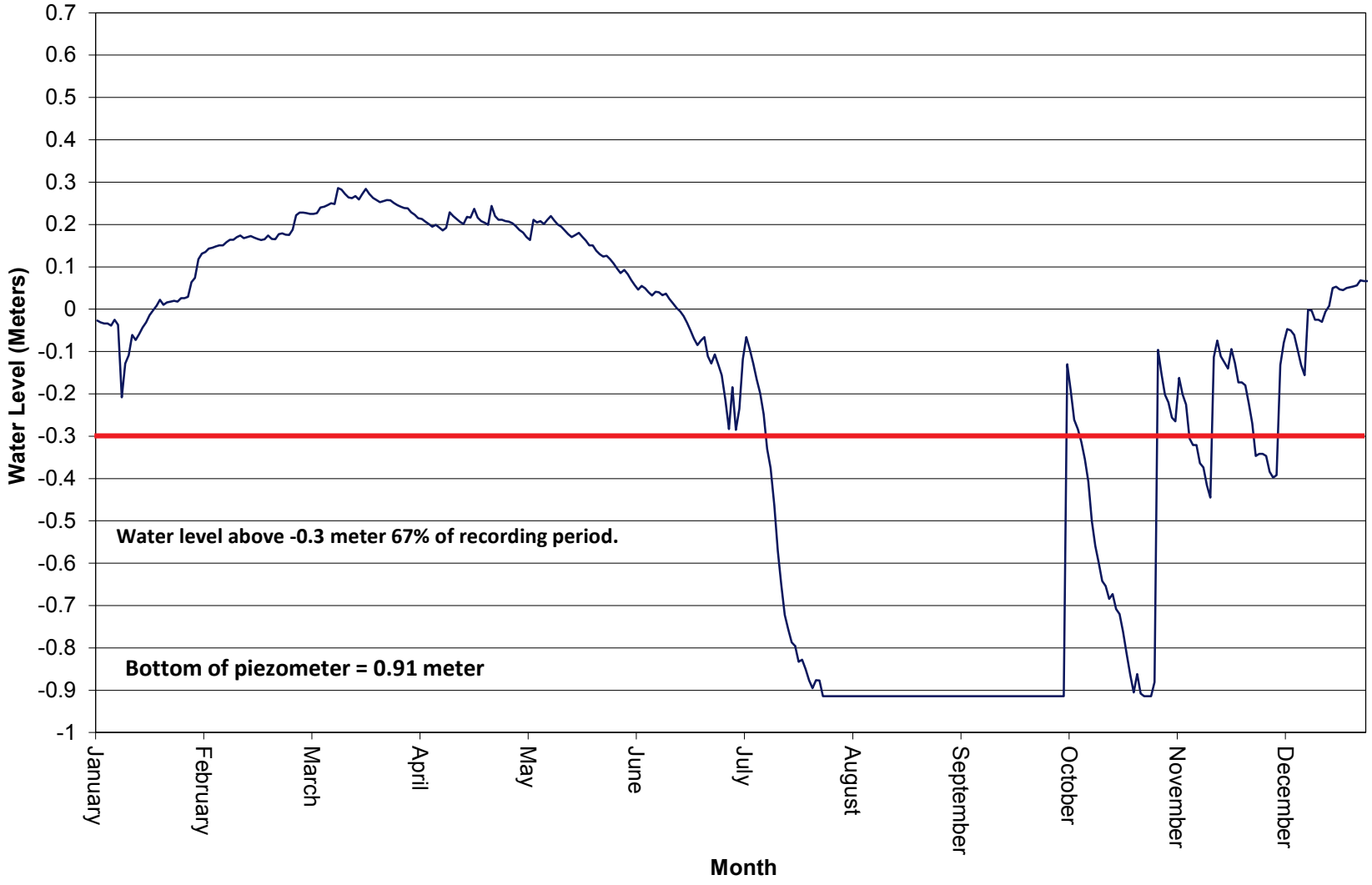


Figure D–3K. Wetland Area PREW6 Hydrograph

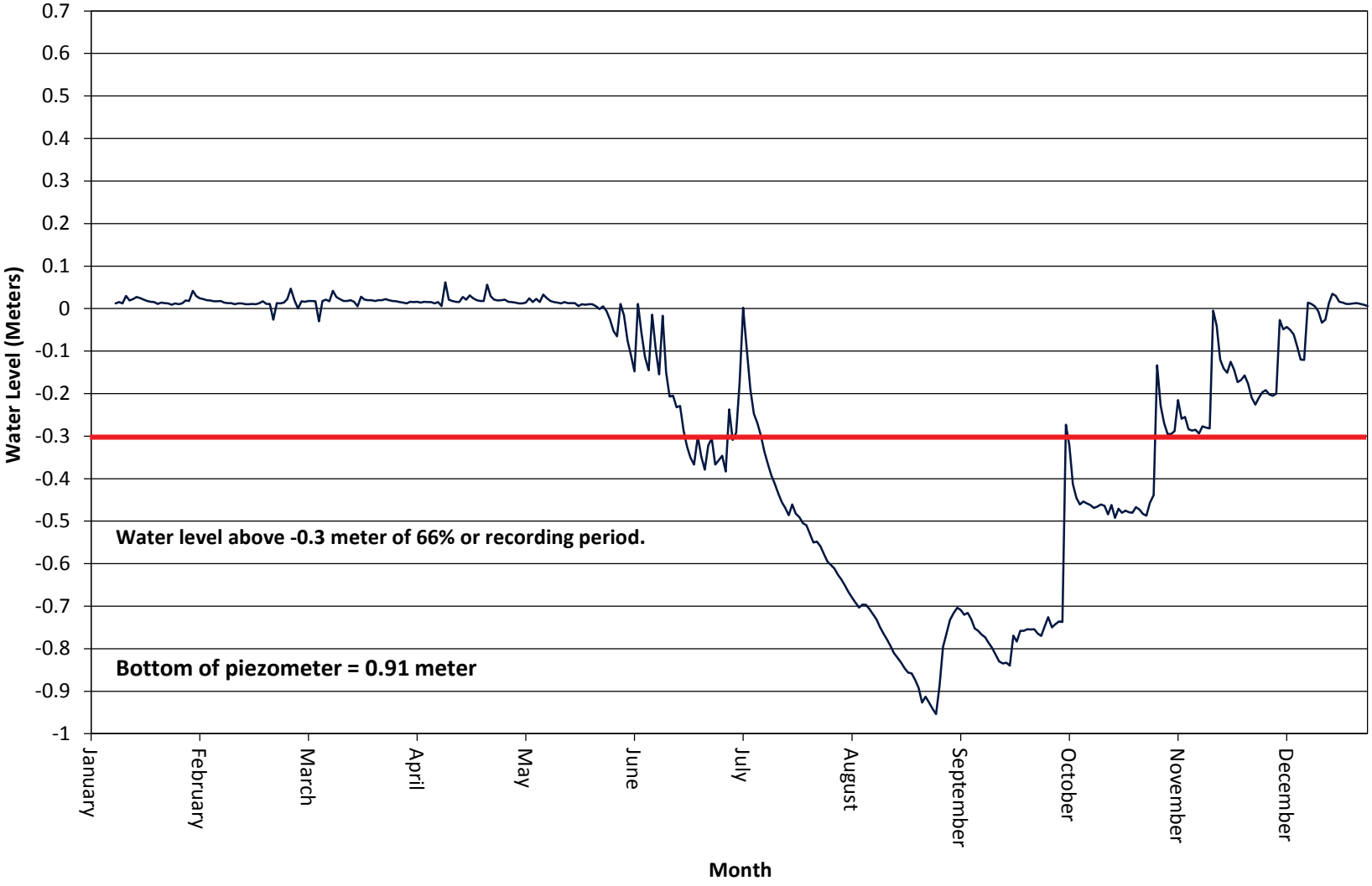


Figure D–3L. Wetland Area NPPW4 Hydrograph

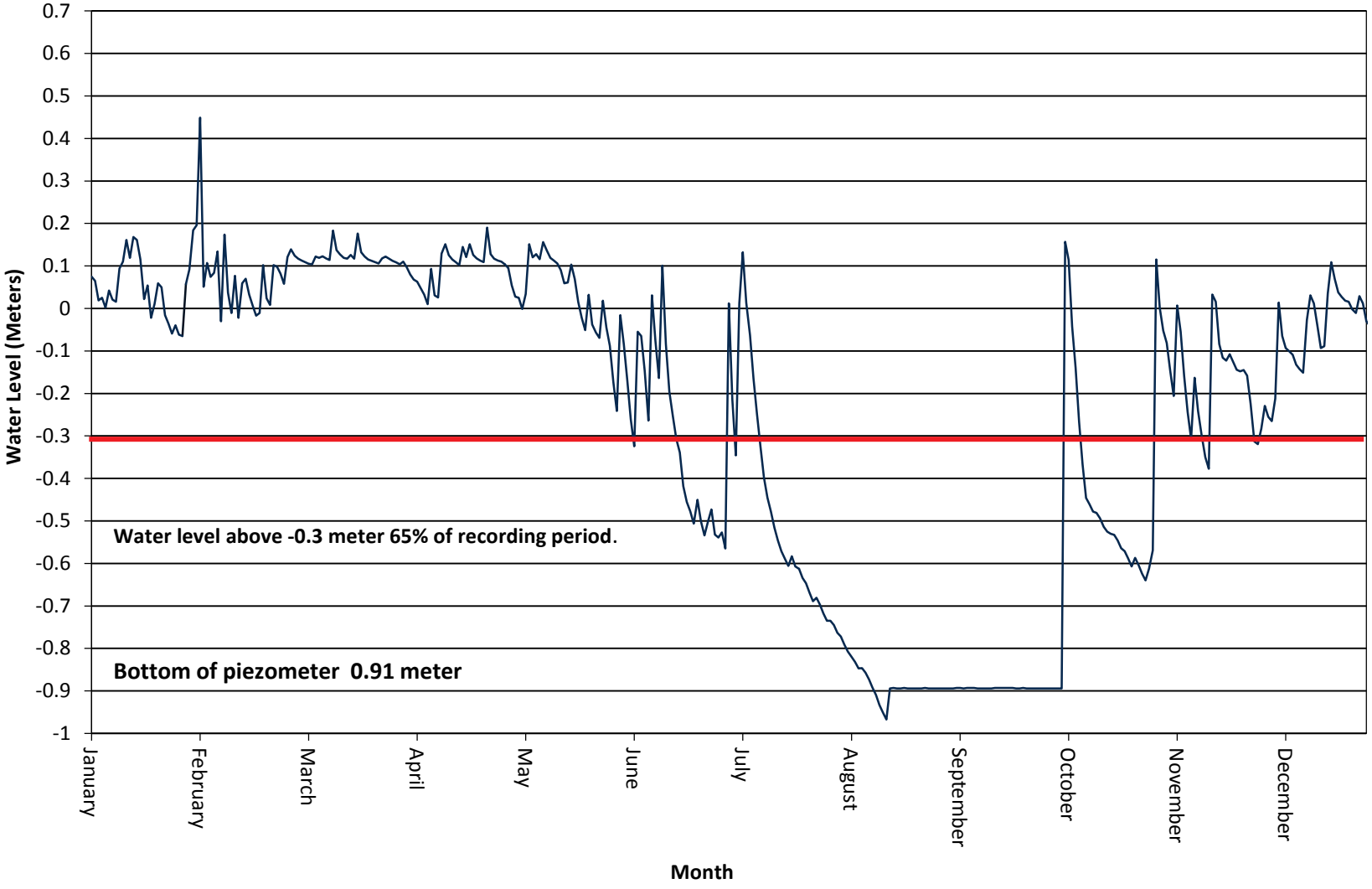


Figure D–3M. Wetland Area NPPW5 Hydrograph

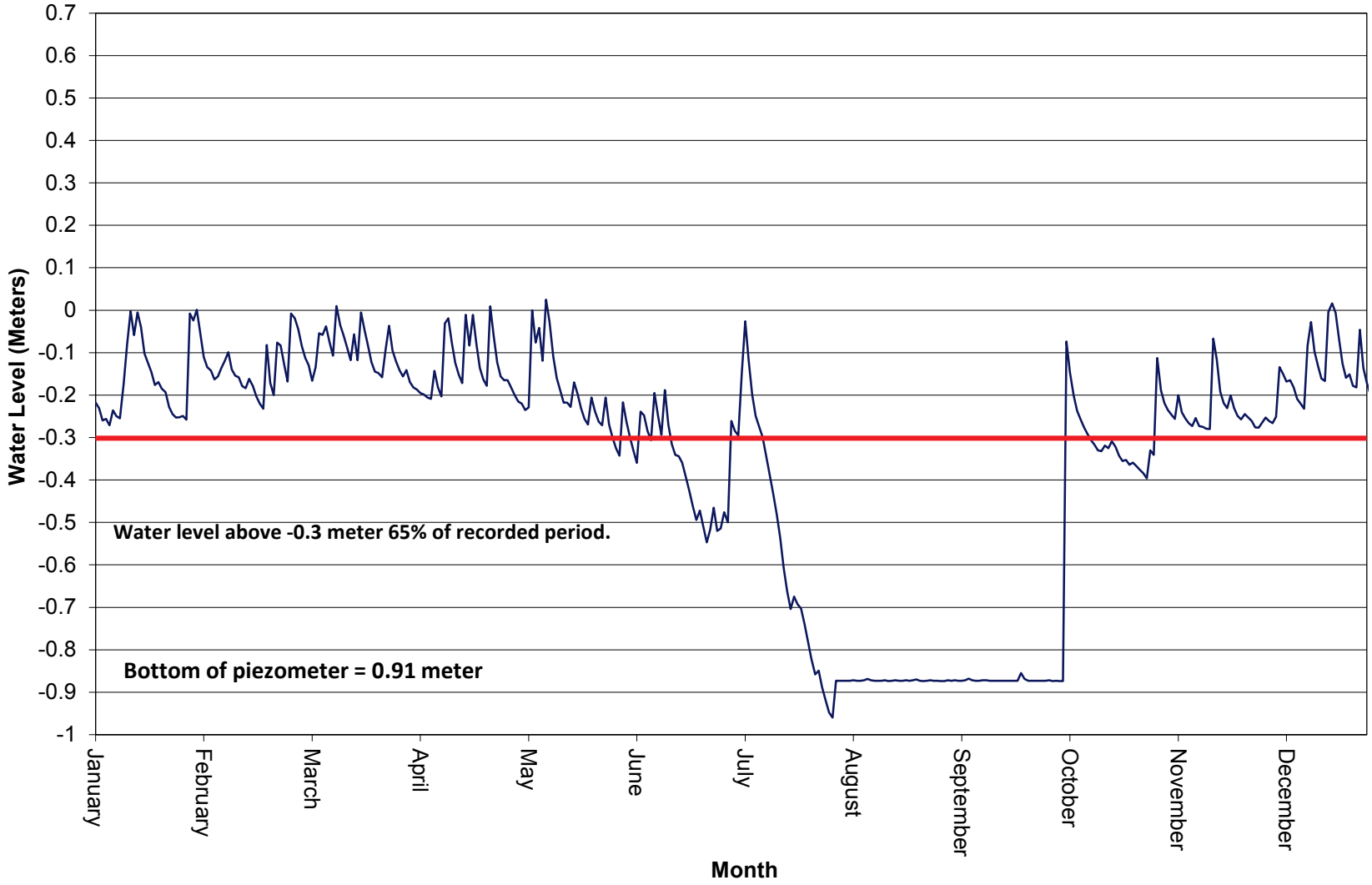


Figure D–3N. Wetland Area WM1W1 Hydrograph

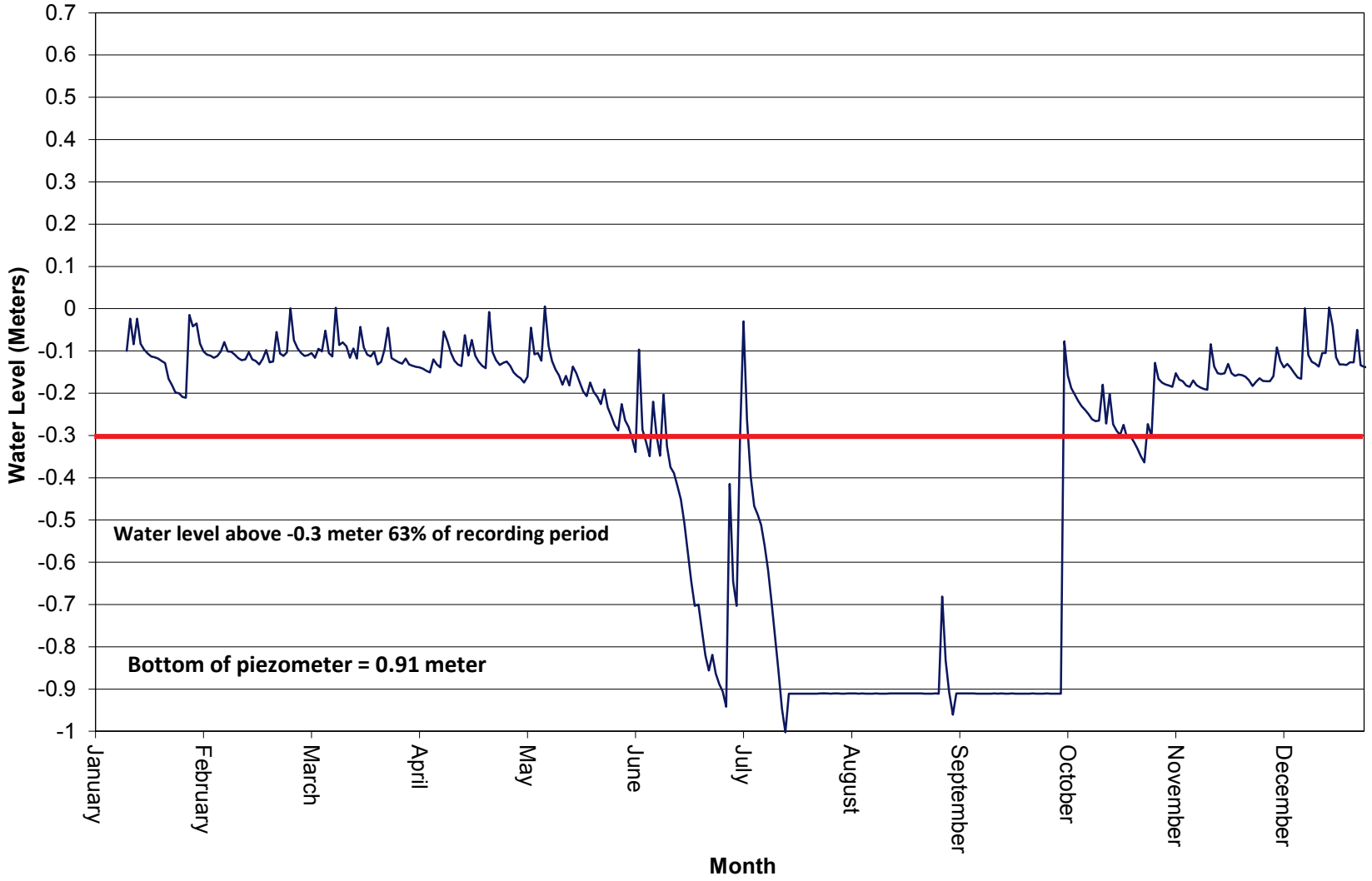


Figure D–3O. Wetland Area WM1W2 Hydrograph

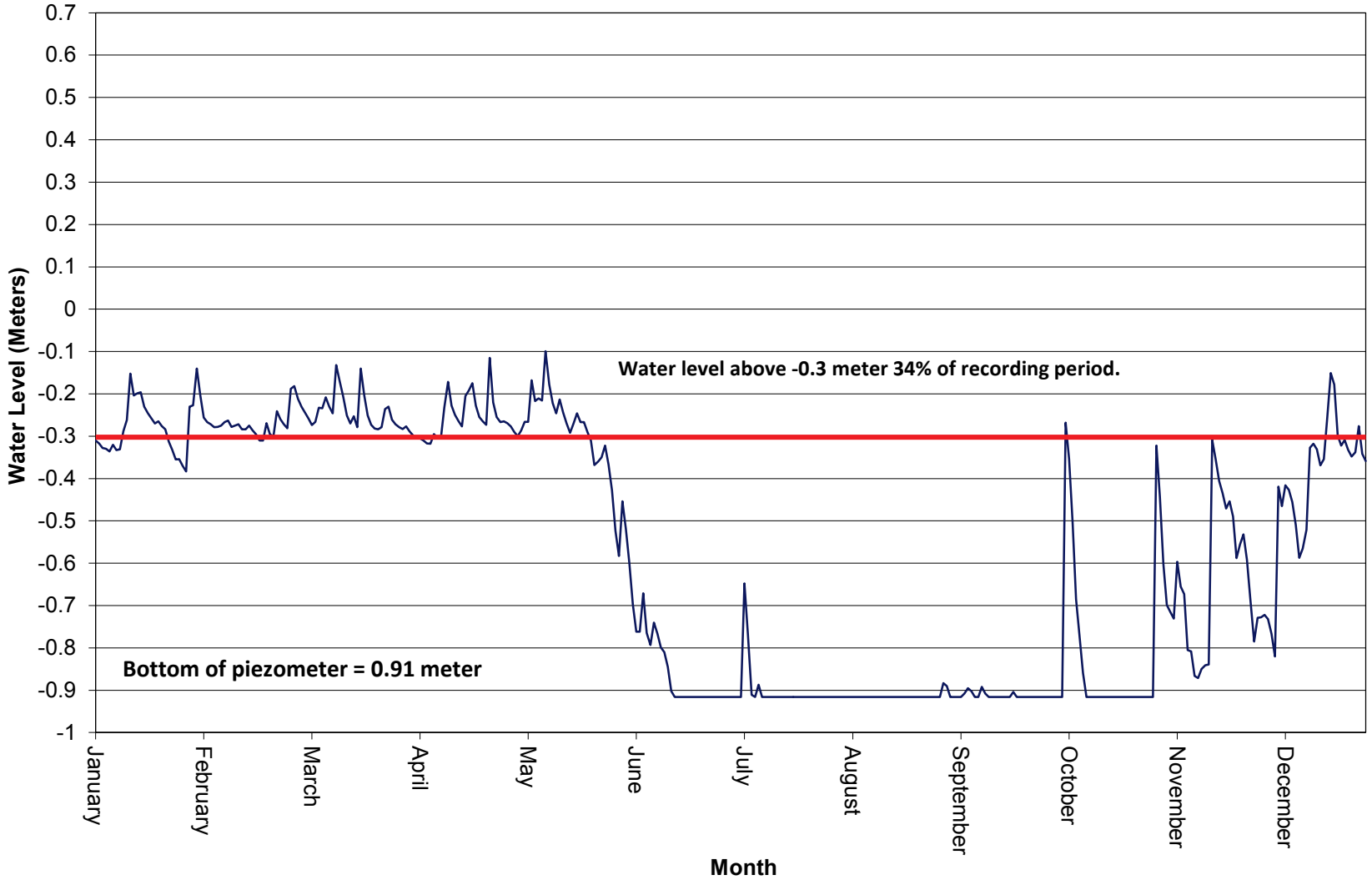


Figure D–3P. Wetland Area WM1W3 Hydrograph

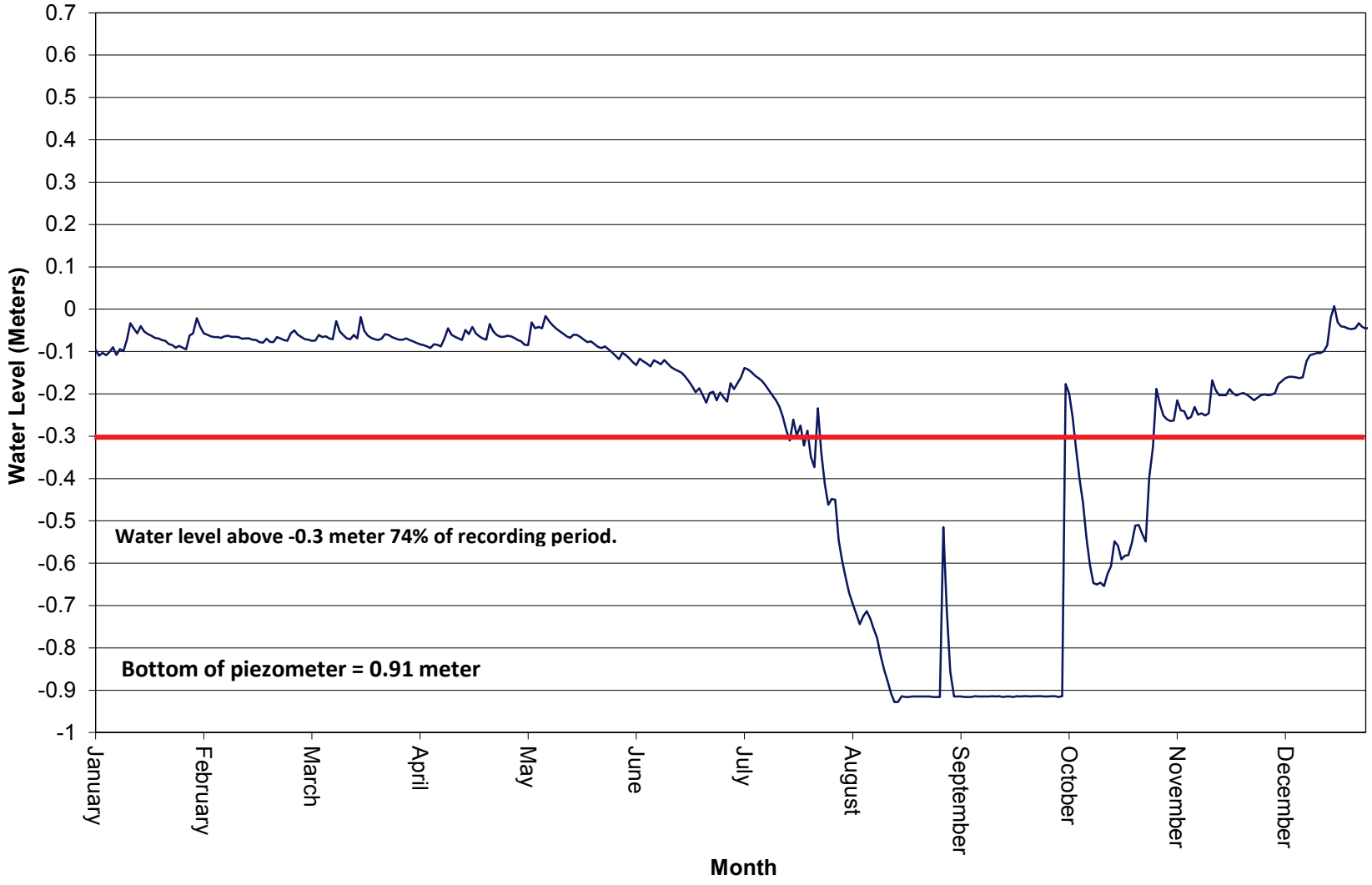


Figure D–3Q. Wetland Area WM1W4 Hydrograph

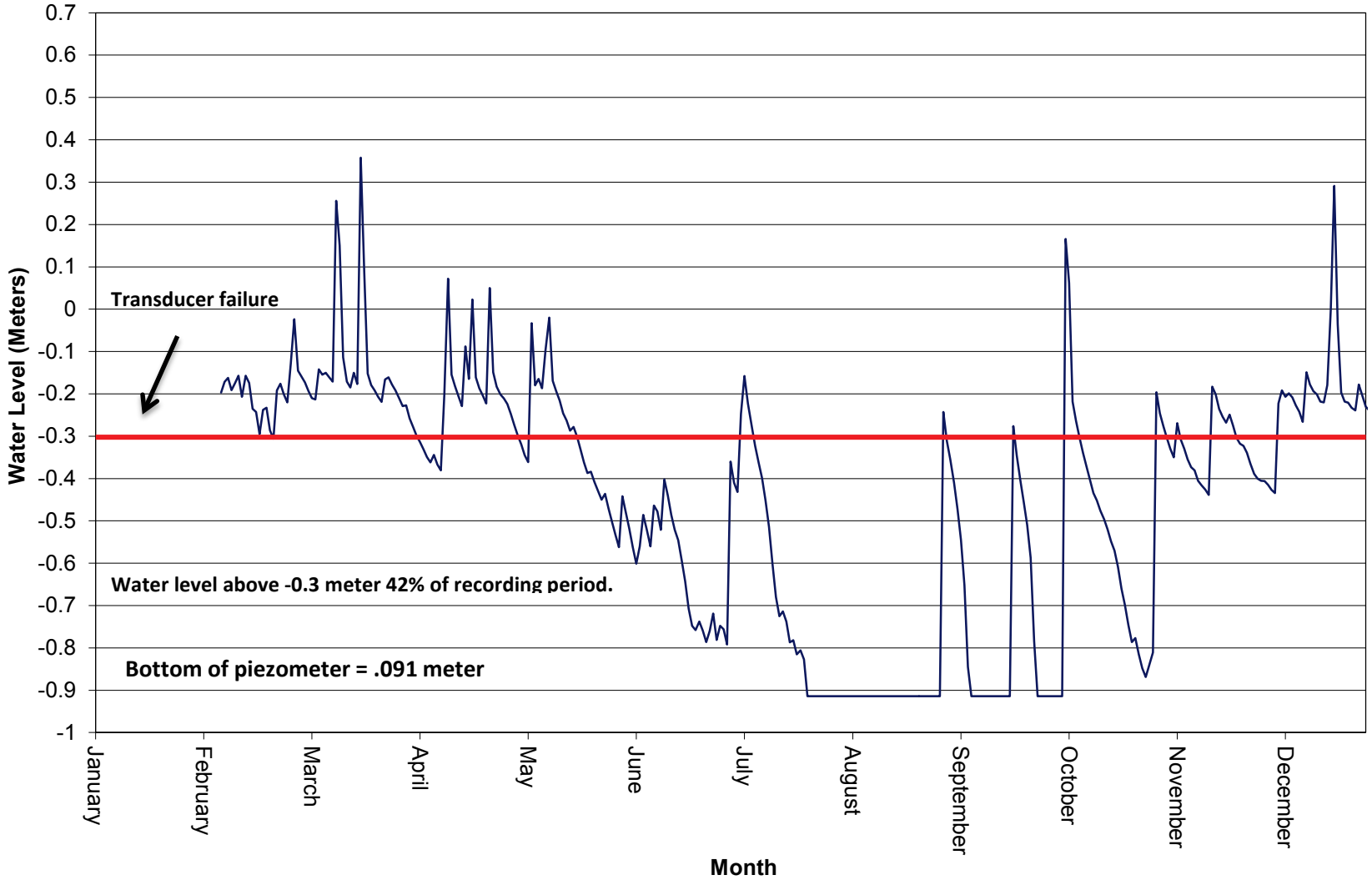


Figure D–3R. Wetland Area WM1W5 Hydrograph

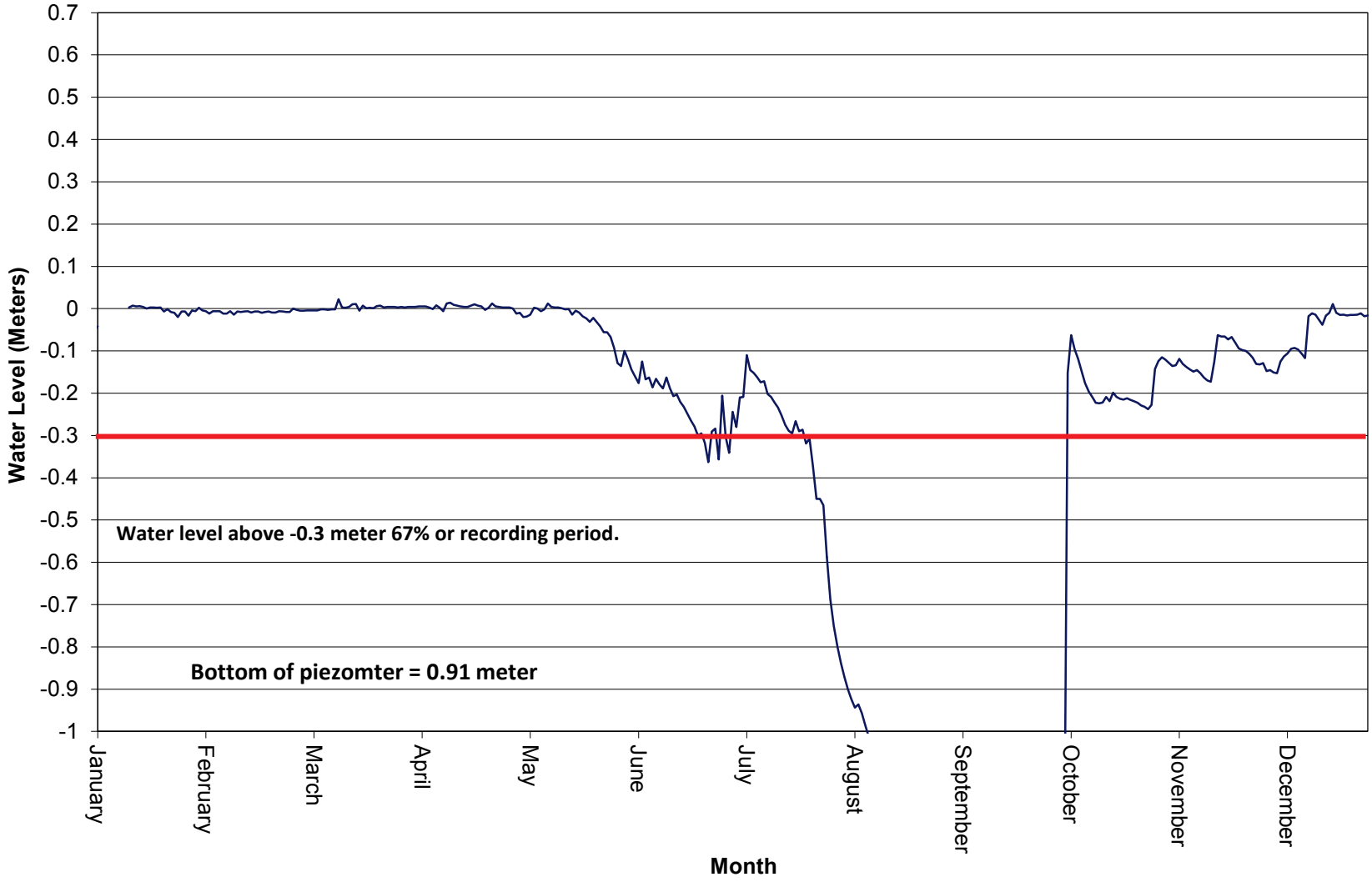


Figure D–3S. Wetland Area WM1W6 Hydrograph

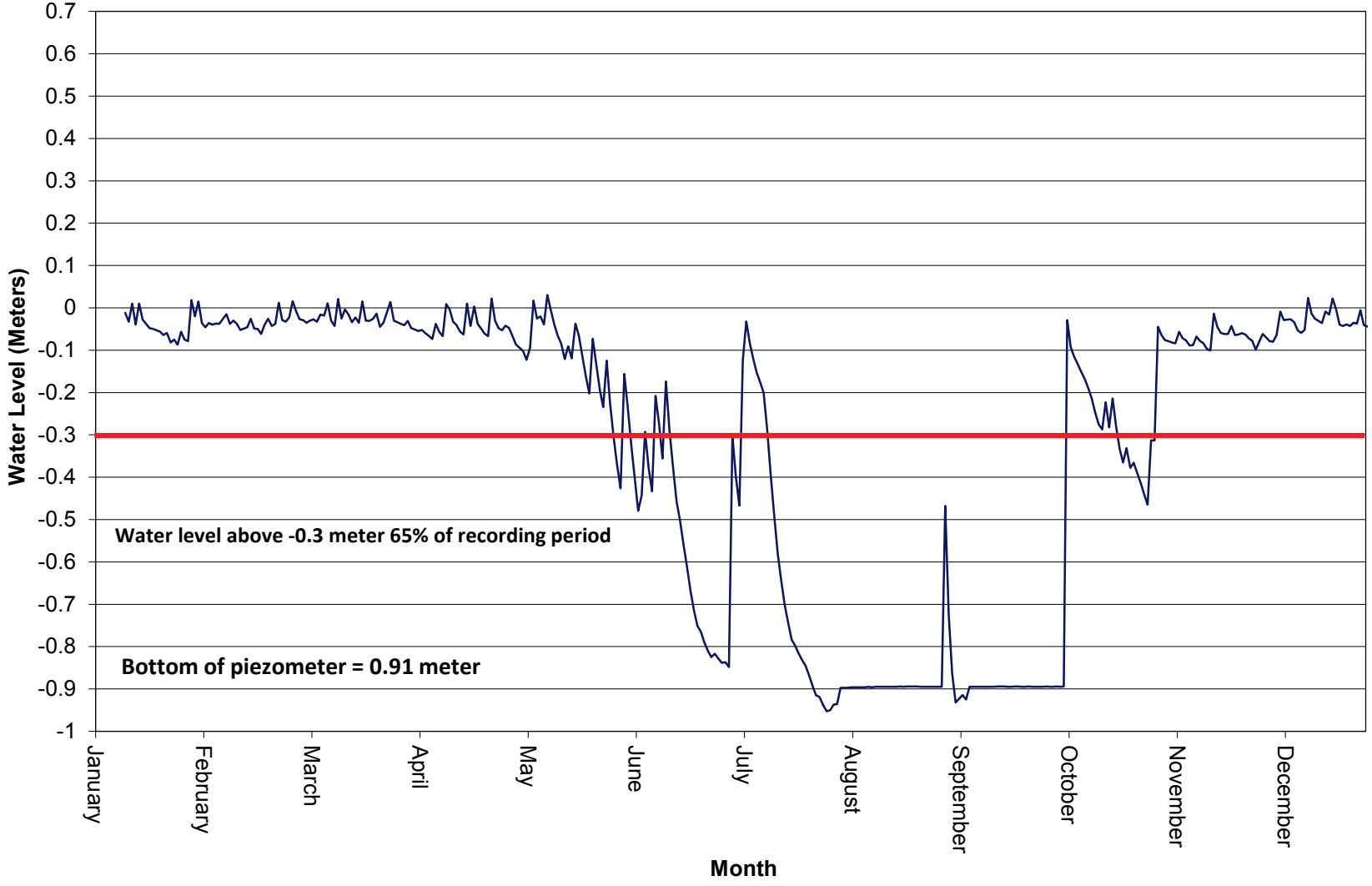


Figure D–3T. Wetland Area WM1W7 Hydrograph

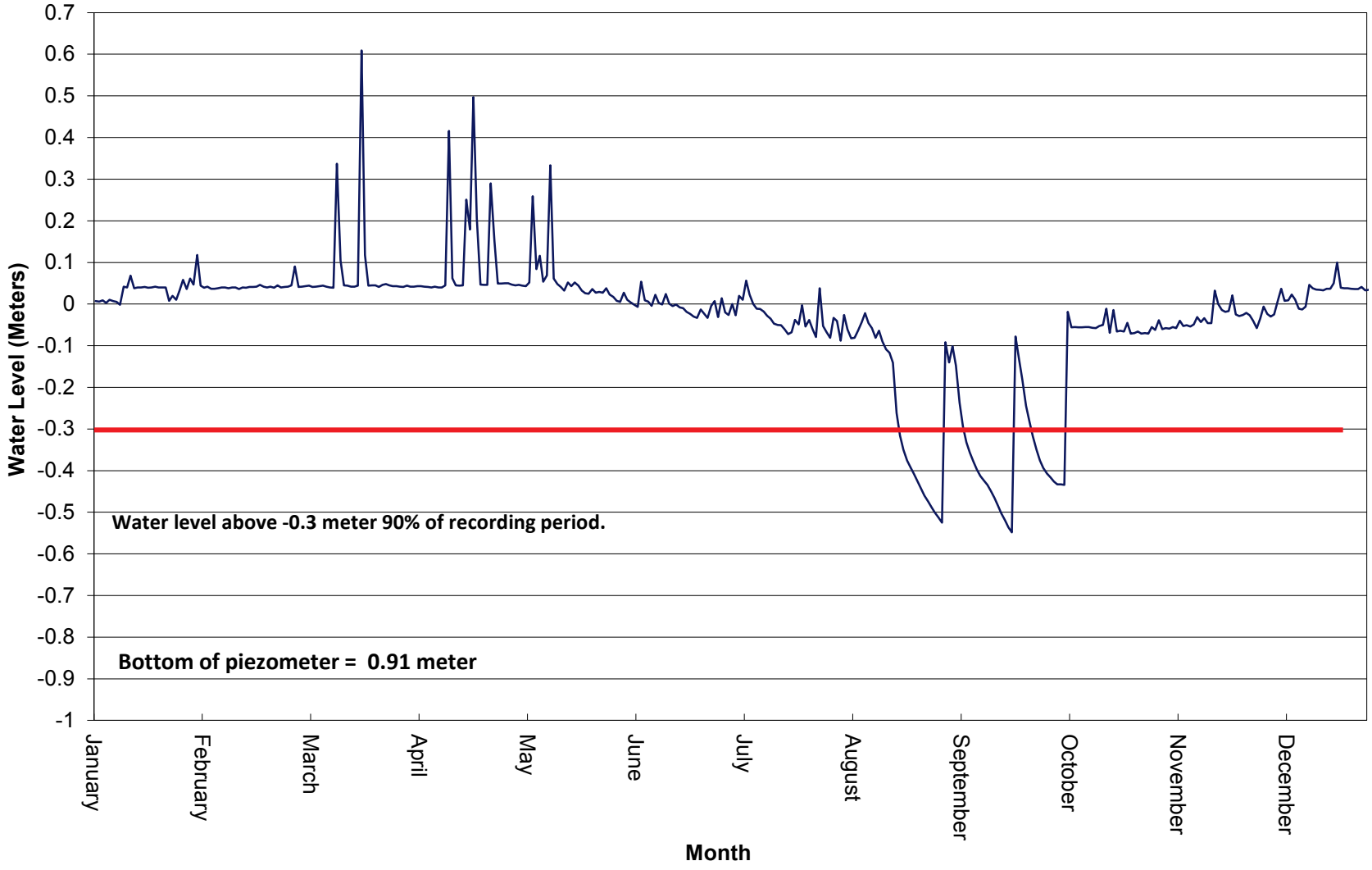


Figure D–3U. Wetland Area WM2W1 Hydrograph

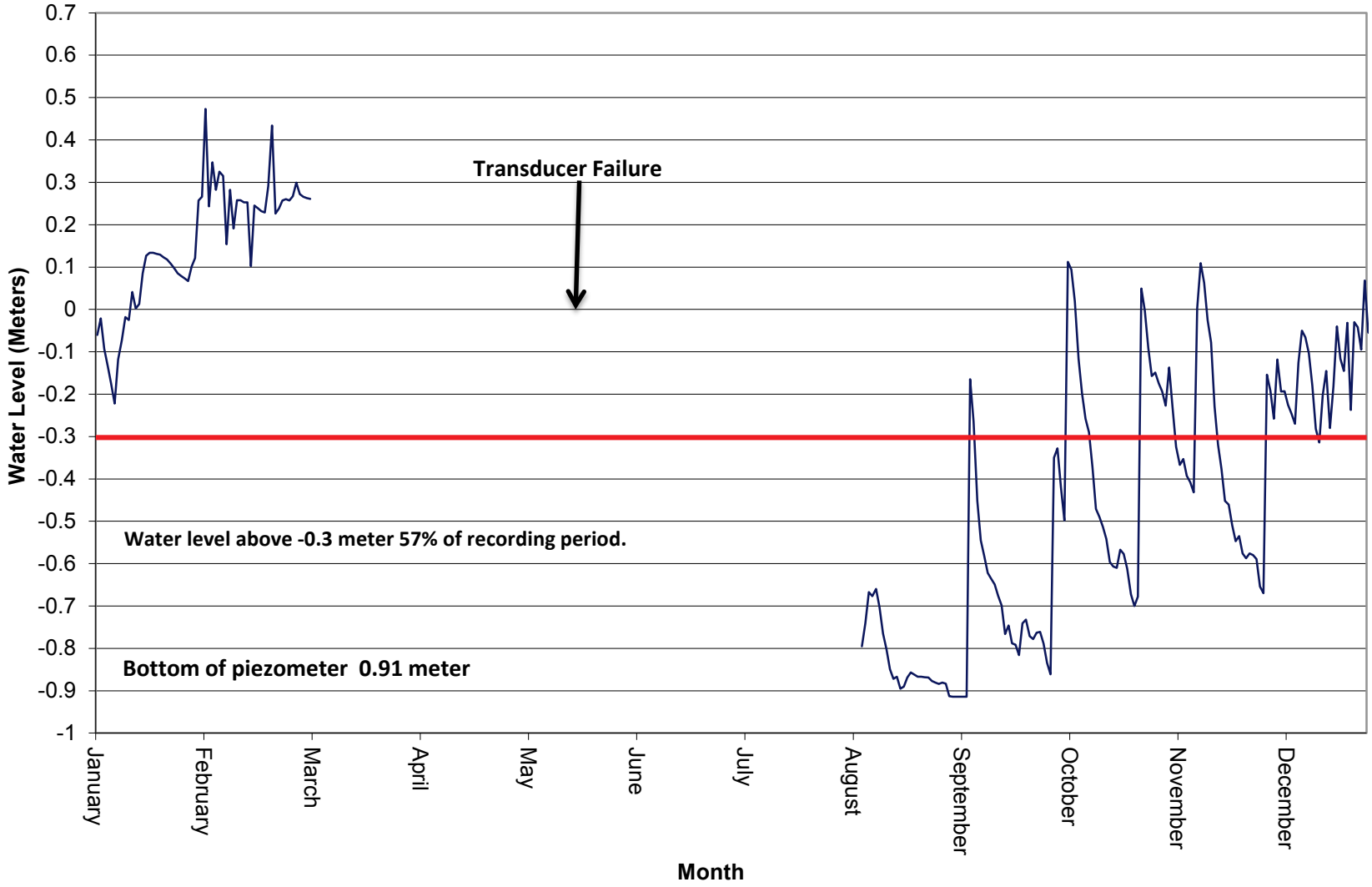


Figure D–3V. Wetland Area WM2W2 Hydrograph

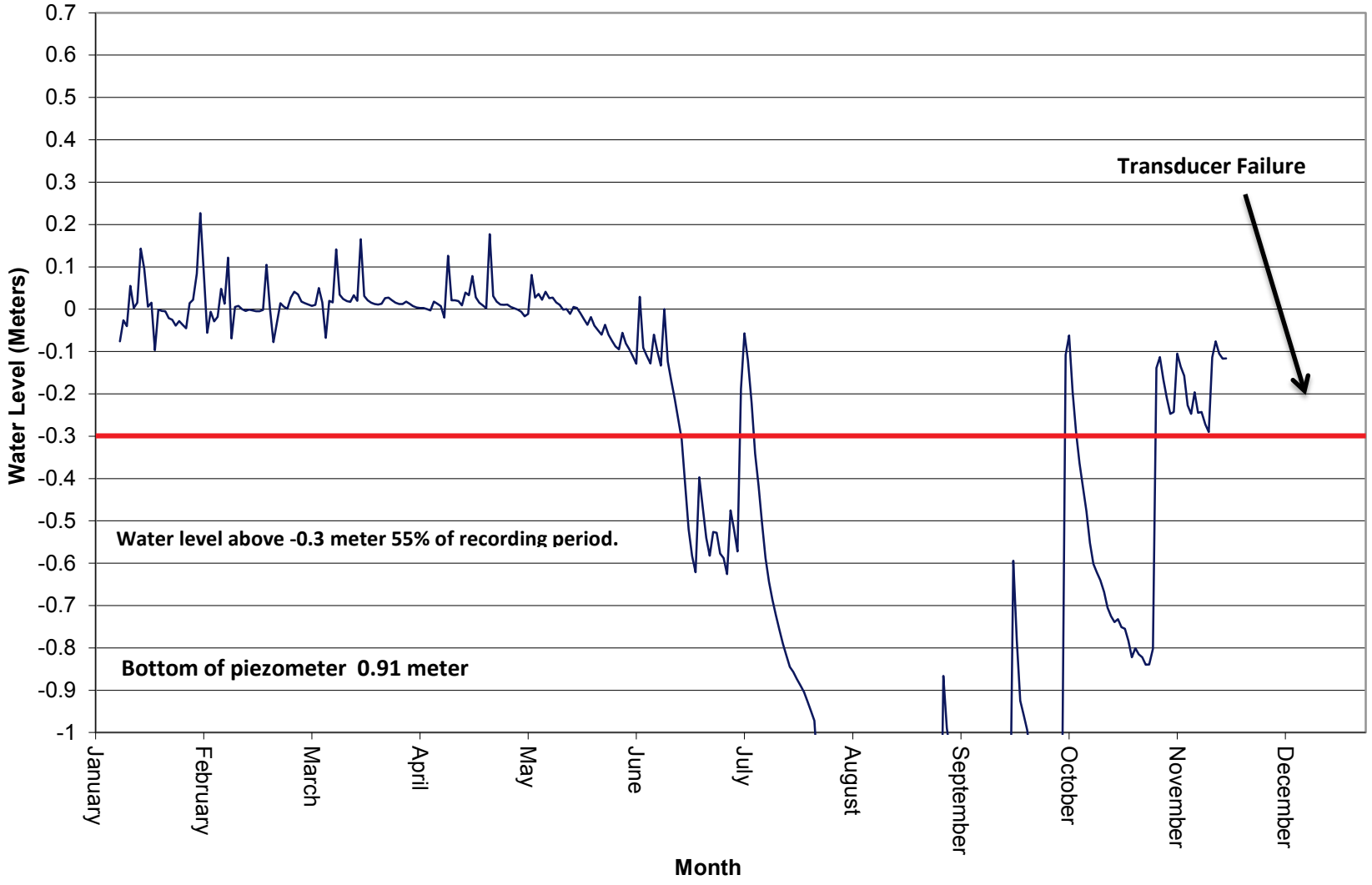


Figure D–3W. Wetland Area WM2W3 Hydrograph

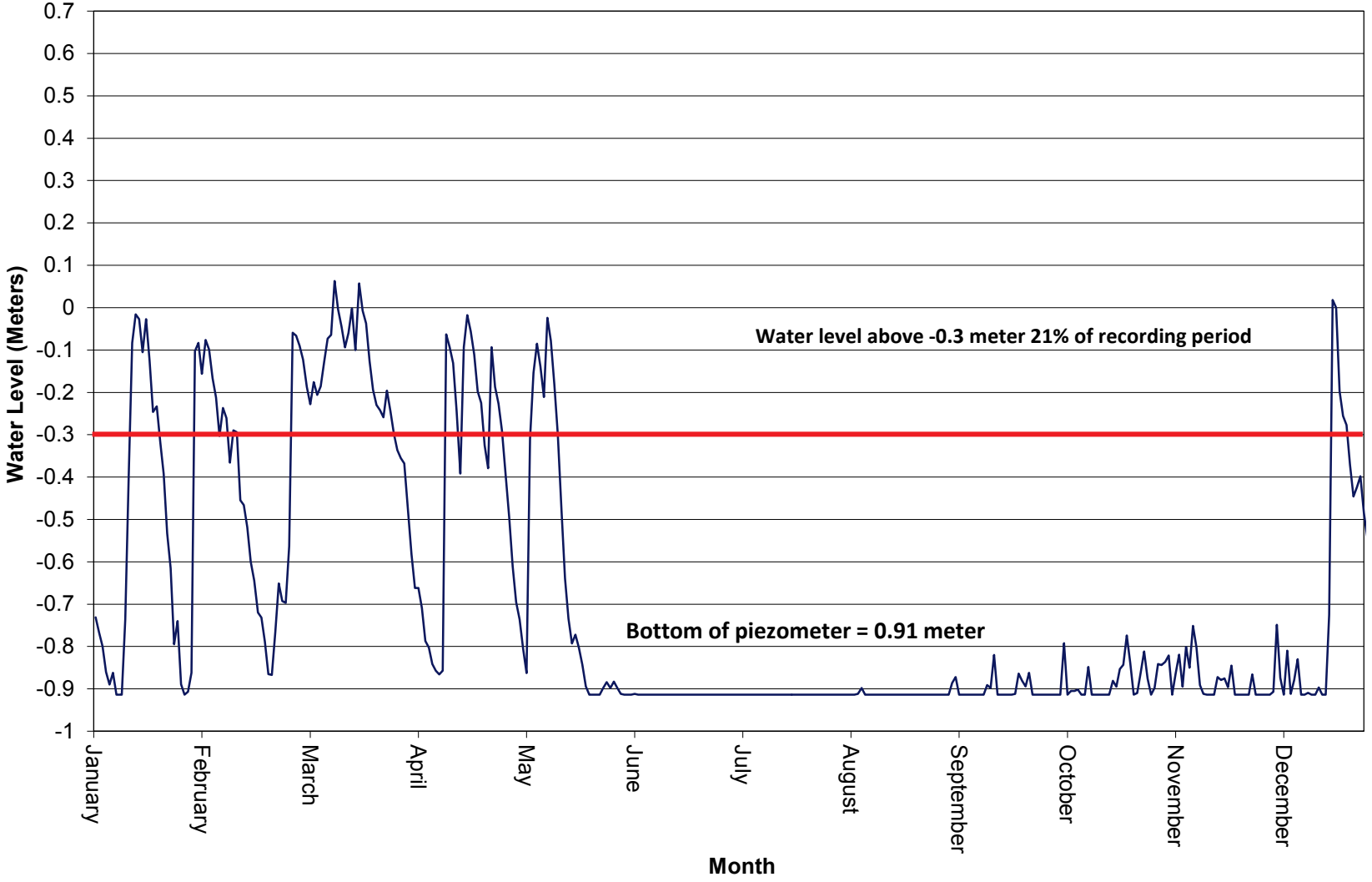


Figure D–3X. Wetland Area PRTW1 Hydrograph

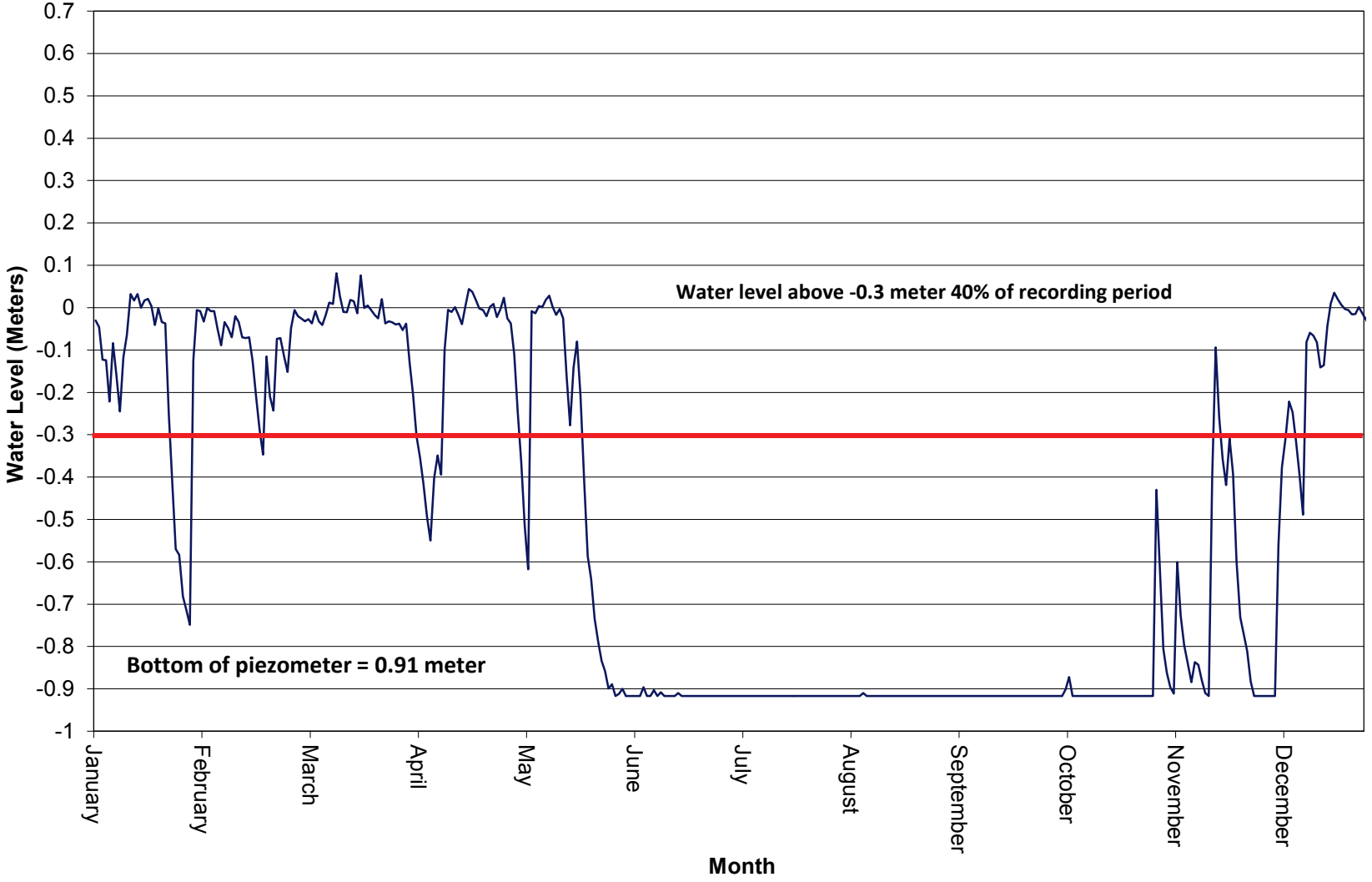


Figure D–3Y. Wetland Area PRTW2 Hydrograph

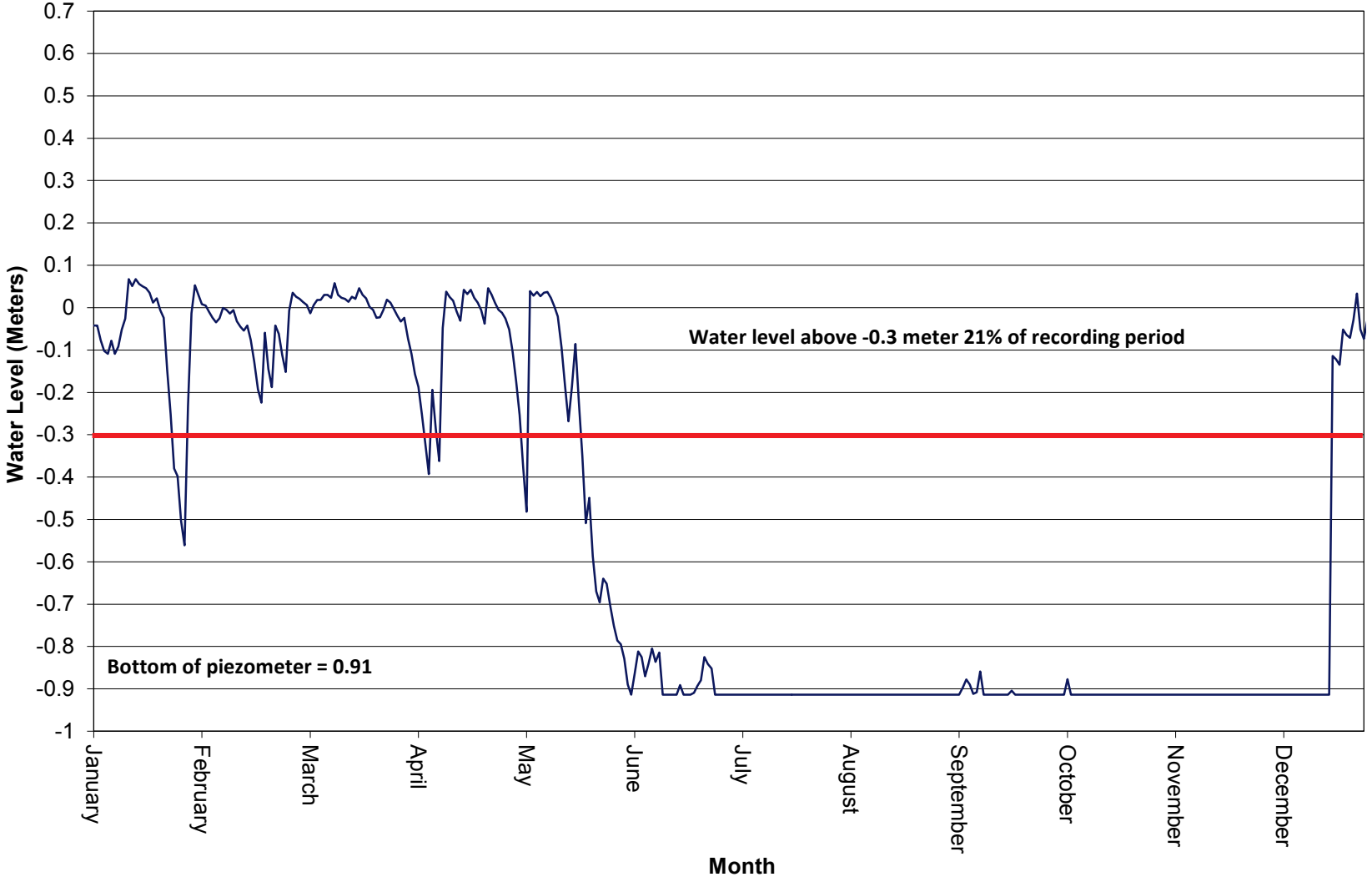


Figure D–3Z. Wetland Area PRTW3 Hydrograph