Rich Sloping Fen Baseline Assessment in Support of Construction-Related Activities for the Landfill 1 Closure Former Griffiss Air Force Base Rome, New York

Contract No. DACA41-01-D-0004

Prepared for

U.S. Army Corps of Engineers–New York District
Fort Drum Resident Office
Building T-4895
Watertown, New York 13602-5200

Submitted by

Conti Environmental, Inc.
3001 South Clinton Avenue
South Plainfield, New Jersey 07080

Prepared in Association with

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EA Science and Technology
3 Washington Center
Newburgh, New York 12550

February 2004
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Charles E. McLeod, Jr., P.E., Vice President — Date
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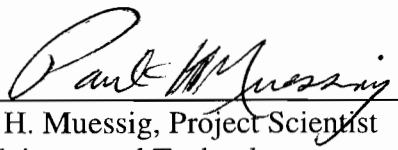

Paul H. Muessig, Project Scientist — Date
EA Science and Technology

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1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE)–Kansas City District issued Task Order No. 0003 under Contract No. DACA41-01-D-0004 to Conti Environmental, Inc. Under this Task Order, EA Engineering, P.C. and its affiliate EA Science and Technology were tasked as a subcontractor to conduct closure activities at Landfill 1 at the former Griffiss Air Force Base, Rome, New York. Conti contracted EA to prepare this Rich Sloping Fen Baseline Assessment Report as part of the closure of Landfill 1.

Landfill 1 at the former Griffiss Air Force Base, Rome, New York, is the subject of construction activity related to closure including consolidation, regrading, and capping. An area (approximately 3.1 acres) classified as rich sloping fen was previously delineated in a groundwater seep zone located between the southwestern edge of the landfill and Six Mile Creek (Figure 1).

A collection trench and treatment plant have been designed and are being installed to capture and treat leachate along the toe of Landfill 1 adjacent to this fen. In order to sustain the hydrologic conditions that support and preserve the fen subsequent to completion of the closure, effluent from the treatment plant will be discharged to the fen via a series of four engineered seeps located between the leachate collection trench and the fen.

As part of long-term monitoring associated with the closure of Landfill 1, a work plan[1] was developed to assess the success of the engineered seeps for preservation of the fen. The monitoring plan includes a baseline assessment survey conducted prior to activation of the collection trench, the treatment plant, and engineered seeps. Subsequent annual surveys will be conducted following activation of the system and compared to the baseline survey conditions to document the relative condition of the fen before and following activation of the leachate collection, treatment, and discharge system. This report provides a summary of the results of the baseline assessment survey conducted by EA on 29 September 2003.

1. EA Engineering P.C. and Its Affiliate EA Science and Technology. 2003. Proposed Work Elements for a Groundwater and Leachate Collection Trench Pump Test and Rich Sloping Fen Baseline Assessment in Support of Construction-Related Activities for the Landfill 1 Closure, Former Griffiss Air Force Base, Rome, New York.

2. SURVEY METHODS

The baseline assessment consisted of photo-documentation of vegetative cover and vegetation plot surveys along fixed transects across the fen between the collection trench and Six Mile Creek. Vegetation survey plots were established consistent with vegetation survey methods provided by the U.S. Army Corps of Engineers and Interagency wetland delineation guidance manuals (USACE 1987[2]; Federal Interagency Committee 1989[3]). The *Comprehensive Onsite Determination Method* (Federal Interagency Committee 1989, Section 4.19, Page 39) was implemented for this inventory.

Six transects were established and staked for use in the baseline assessment and post-construction assessments (Figure 2). Transects were laid out approximately perpendicular to the slope contours. Four transects run from the proposed engineered seeps to Six Mile Creek. Additional transects were established approximately mid-way between engineered seep 2 and seep 3 and between engineered seep 3 and seep 4. Photo-documentation points were selected and their geographic coordinates (Table 1) were surveyed to assure that sampling locations will be comparable among annual vegetation assessment surveys. Photographs were taken downslope along each transect from the location of the collection trench and upslope from Six Mile Creek (Figure 2; PDP01-PDP12). Photographs are provided in Appendix A (Photo Nos. 1-18).

Eight fixed vegetation survey plots were established with surveyed geographic coordinates (Table 2) to assure comparability of sampling locations among annual surveys. Two vegetation plots (P01 and P02) were selected along each of four transects (TA, TB, TC, and TD). No vegetation plots were placed along the northern and southern-most transects (Figure 2); however, both transects were photographed from the top and bottom of the slope.

An inventory of vegetation and approximate percent cover was performed for each cover strata type (herbaceous, shrub, woody vines, saplings, and trees) within each plot. Photographs were taken at each plot to provide permanent documentation of conditions at each vegetation plot (Appendix A) for comparison with future post-construction annual vegetation surveys. A 30-ft radius was measured from the center stake at each vegetation plot. Six Mile Creek runs closer to the collection trench at the northern end of the fen; transect TA is, therefore, relatively short and 30-ft radius vegetation plots overlapped. The plots for transect TA were reduced to a 20-ft radius. The species and estimated percent areal cover within each plot were recorded on field data forms for the shrub, vine, and sapling strata (Appendix B).

2. U.S. Army Corps of Engineers Environmental Laboratory. 1987. Wetlands Delineation Manual. Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. plus appendixes.
3. Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S. Department of Agriculture Soil Conservation Service, Washington, D.C. Cooperative Technical Publication. 76 pp. plus appendixes.

Consistent with U.S. Army Corps of Engineers guidance, individual tree specimens were classified as saplings that were less than 5 in. in diameter breast height (DBH) or as trees with a DBH 5 in. or greater. The *Plot Sampling Technique* (Federal Interagency Committee 1989, Page 44) was used to assess the tree stratum. DBH was measured for individual trees using a diameter tape. Basal area (BA) was calculated from DBH to estimate the coverage by species within the plot:

$$BA = \pi \, DBH^2 / 4$$

BA for individual trees is summed within each sample plot to provide an estimate of tree stratum BA coverage (ft^2) for the plot.

The herbaceous stratum was inventoried using four quadrats within each sampling plot. Each 30-ft radius plot was divided into quarters, and a 36-$in.^2$ quadrat frame was randomly dropped in each quarter. The percent areal cover for each species within each quadrat was recorded on field data forms. The mean percent areal cover for the four quadrats in each plot was calculated; and the species were ranked in descending order by mean areal cover. The mean areal cover for the highest ranked species was summed until the cumulative sum accounted for greater than 50 percent cover; the species accounting for that cumulative sum plus any additional species accounting for 20 percent or more of the cover were considered dominant species for that plot.

3. SUMMARY OF OBSERVATIONS

The baseline assessment was conducted on 29 September 2003 near the end of the vegetation growing season after an unusually wet summer. The day of the survey was generally overcast with periods of sun and a few brief, light showers; air temperature was in the upper 50s to low 60s. The soil substrate was generally saturated to the surface; groundwater was observed discharging to the surface and flowing downslope in several areas. During the October-November 2003 leachate collection trench pump test, surface water samples were collected in the vicinity of four of these seeps (Figure 2), LF1-L1, LF1-L2, LF1-LL1, and LF1-LL2. The weather on the day of the seep water quality sampling was overcast with temperatures in the mid- to upper 40s. The analytical results for these samples are presented in Appendix C and summarized in Table C-1; analytes included metals, pesticides, semivolatile organic compounds, volatile organic compounds, and conventional water quality indicators. Results were generally similar among the four sampled seeps (Table 3). Field measurements of pH ranged from 6.8 to 8.0, within the range typically reported in the scientific literature for rich sloping fen ecosystems (Glaser et al. 1990[4]; Bendell-Young 1999[5]; Bendell-Young and Pick 1997[6]; Wassen et al. 1990[7]). Alkalinity (240-447 mg $CaCO_3$/L), $CaCO_3$ hardness (600-1,000 mg/L), total dissolved solids (586-670 mg/L), and total sulfate (114-278 mg/L) were relatively high in the samples. Iron (1.91-120 mg/L) and manganese (0.5-5.7 mg/L) consistently exceeded New York State Ambient Surface Water Quality Standards for protection of aquatic life (chronic). Calcium was also relatively high, generally exceeding 200 mg/L. Of the few pesticides/polychlorinated biphenyls, volatile organic compounds, and semivolatile organic compounds detected, only 1,4-dichlorobenzene was slightly above Ambient Surface Water Quality Standards and only in sample LF1-L1 (5.6 µg/L). Two polychlorinated biphenyls were detected (decachlorobiphenyl and tetrachloro-m-xylene) at mean concentrations of 0.255 µg/L and 0.325 µg/L, respectively.

Baseline hydrologic conditions were evaluated as part of the leachate collection trench pump test (Table 4). In support of pump testing for the leachate collection trench, a piezometer (PZ-06) was installed in the fen near the top of the slope between monitoring transects TC and TD. Piezometer PZ-05 is located outside of the fen northeast of PZ-06 between the fen boundary and the leachate collection trench. On 3 November 2003, prior to the initiation of pump testing, the groundwater level at PZ-06 was at an elevation of 503.46 ft, within 1 ft of ground surface; groundwater elevation at PZ-05 was 504.17 ft, a little more than 1 ft below ground surface. Soil at PZ-06 was wet at the surface. This is consistent with groundwater modeling (MODFLOW) conducted in conjunction with design of the leachate collection trench that indicates the potentiometric water surface is above the ground surface in the fen downslope of the location of

4. Glaser, P.H., J.A. Janssens, and D.I. Siegel. 1990. The Response of Vegetation to Chemical and Hydrological Gradients in the Lost River Peatland, Northern Minnesota. *J. of Ecology* 78, 1,021-1,048.
5. Bendell-Young, L. 1999. Contrasting the sorption of Zn by oxyhydroxides of Mn and Fe, and organic matter along a mineral-poor to mineral-rich fen gradient. *Applied Geochemistry* 14, 719-734.
6. Bendell-Young, L. and F.R. Pick. 1997. Base Cation Composition of Pore Water, Peat, and Pool Water of Fifteen Ontario Peatlands: Implications for Peatland Acidification. *Water, Air, and Soil Pollution* 96, 155-173.
7. Wassen M.J., A. Barendregt, A. Palczynski, J.T. De Smidt, and H. De Mars. 1990. The Relationship between Fen Vegetation Gradients, Groundwater Flow, and Flooding in an Undrained Valley Mire at Biebrza, Poland. *J. of Ecology* 78, 1,106 –1,122.

the leachate collection trench. The water surface elevation at gauge SG-03 (located between baseline assessment transects TC and TD) (Figure 2) in Six Mile Creek before the start of the pump test was 493.69 ft, and 24 hours later, at the end of the test, was 493.48 ft. No significant precipitation occurred during the test period, although significant storm events occurred the week prior to the test. Leachate trench pump stations PS-04, PS-05, PS-06, and PS-07 are located in a northwest to southeast line 30-50 ft to the northeast of the fen (Figure 2). Prior to the pump test on 3 November 2003, groundwater levels at these 4 locations ranged from 503.7 to 504.3 ft, approximately 3-8 ft below ground surface. Two monitoring wells are located northeast of the leachate trench in proximity to the fen (LF 1P-2 and LF 1P-3) (Figure 2); water level in these two wells prior to the pump test was 2-3 ft below ground surface.

Fifty-four plant species were identified within the inventory sampling plots, including 46 in the herb stratum, 6 in the shrub stratum, 7 in the sapling stratum, and 2 in the tree stratum (Table 5). The tree/sapling strata are dominated by northern white cedar; although relatively dense patches of cedar were observed throughout the fen, relatively few cedars were classified in the tree stratum based on a DBH of greater than 5 in. The shrub stratum was sparse and the woody vine stratum was absent. The total number of plant species at each sampling plot ranged from 16 to 24 taxa (Table 6). The hydrophytic indicator status (Table 7) for only 5 of 54 taxa observed was less than facultative, that is, more typically non-wetland; 6 additional taxa, including *Sphagnum* spp., are not classified on the *National List* (USFWS 1996[8]). The herbaceous understory was characterized through most of the site by a diverse variety of species of moss, hydrophytic ferns, sedge, goldenrod, and aster. In excess of 50 percent of the substrate surface is covered by *Sphagnum* spp. at most of the inventory sampling plots; coverage by *Sphagnum* in many of the sample quadrats was 100 percent. The most common ferns and related taxa included marsh horsetail, sensitive fern, royal fern, and marsh fern. New York, New England, and panicled were the most common asters. Rough-leaved, fragrant flat-topped, and rough-stemmed were the dominant goldenrod species. A dense patch of common reed, *Phragmites australis*, dominated Plot 1 on Transect A (TAP01); however, *P. australis* was uncommon throughout the rest of the fen. A short (maximum 10-12 in. high) sedge (*Carex* spp) with no identifying inflorescence was common in many of the sampling quadrats. This may have been young tussock sedge (*Carex stricta*) that had not begun to exhibit the characteristic tussock growth form. The orchid species, Nodding Lady's Tresses (*Spiranthes cernua*), was common in the vicinity of the lower portion of Transect D (Appendix A, Photo No. 34). The dominant taxa based on cumulative cover (Federal Interagency Committee 1989) were typically sphagmum, marsh horsetail, sensitive fern, and the unidentified sedge in most of the sampling plots (Table 6).

8. U.S. Fish and Wildlife Service (USFWS). 1996. National List of Vascular Plant Species that Occur in Wetlands. http://www.nwi.fws.gov/bha

4. FINDINGS AND RECOMMENDATIONS

4.1 VEGETATION

The baseline assessment survey was conducted at the end of September, approaching the end of the growing season; thus, some early season species may be under-represented in this inventory. Information collected in this baseline assessment related to species composition, wetland indicator status, and relative coverage within the fen will be compared with similar data collected during future annual vegetation surveys to assess the community character of the fen vegetation as a basis for evaluating the effectiveness of the mitigation system.

The Summer of 2003 was relatively wet as a result of above average precipitation. The vegetation, particularly the herbaceous stratum, throughout most of the fen was diverse, dense, and relatively healthy. The cumulative species counts (field data forms are provided in Appendix B) for approximately half of the sampling plots begin to level off with four quadrats which indicates that four sample quadrats per sampling plot are adequate to capture a representative sample of species diversity in the herbaceous stratum. However, the species count for the other four sample plots did not begin to level off with four quadrats. It is recommended that the number of sampling quadrats be increased to five per sampling plot during the next annual assessment to assess the most appropriate sampling density necessary to document the species diversity at the site.

The species *P. australis* and *Typha angustifolia*, known in many areas for their invasive growth character and monotypic stands, occurred in the fen as scattered individual plants in low density (e.g., Appendix A, Pages 13 and 14, Photo Nos. 28 and 25) at several locations in the study site. One exception was a dense patch of *P. australis* that dominated Plot 1 on Transect A (TAP01) (Appendix A; Page 7, Photo No. 13); the edge of this patch was relatively sharply defined.

4.2 SUBSTRATE CONDITION

The substrate in the vicinity of Transect C Plot 2 (TCP02) was moist, but considerably drier than the other sample plots. This sampling plot is downslope from the proposed location of engineered seep 4 (ES-4). Marsh horsetail (*Equisetum palustre*), one of the most common species throughout the study area, was generally still green and upright except in the vicinity of TCP02. Nearly all marsh horsetail at TCP02 was dead, fallen over, and dried to a brown straw-like condition. This condition is documented on Pages 14-16 of Appendix A (Photo Nos. 28-31). There was also extensive iron staining of the soil surface in this area.

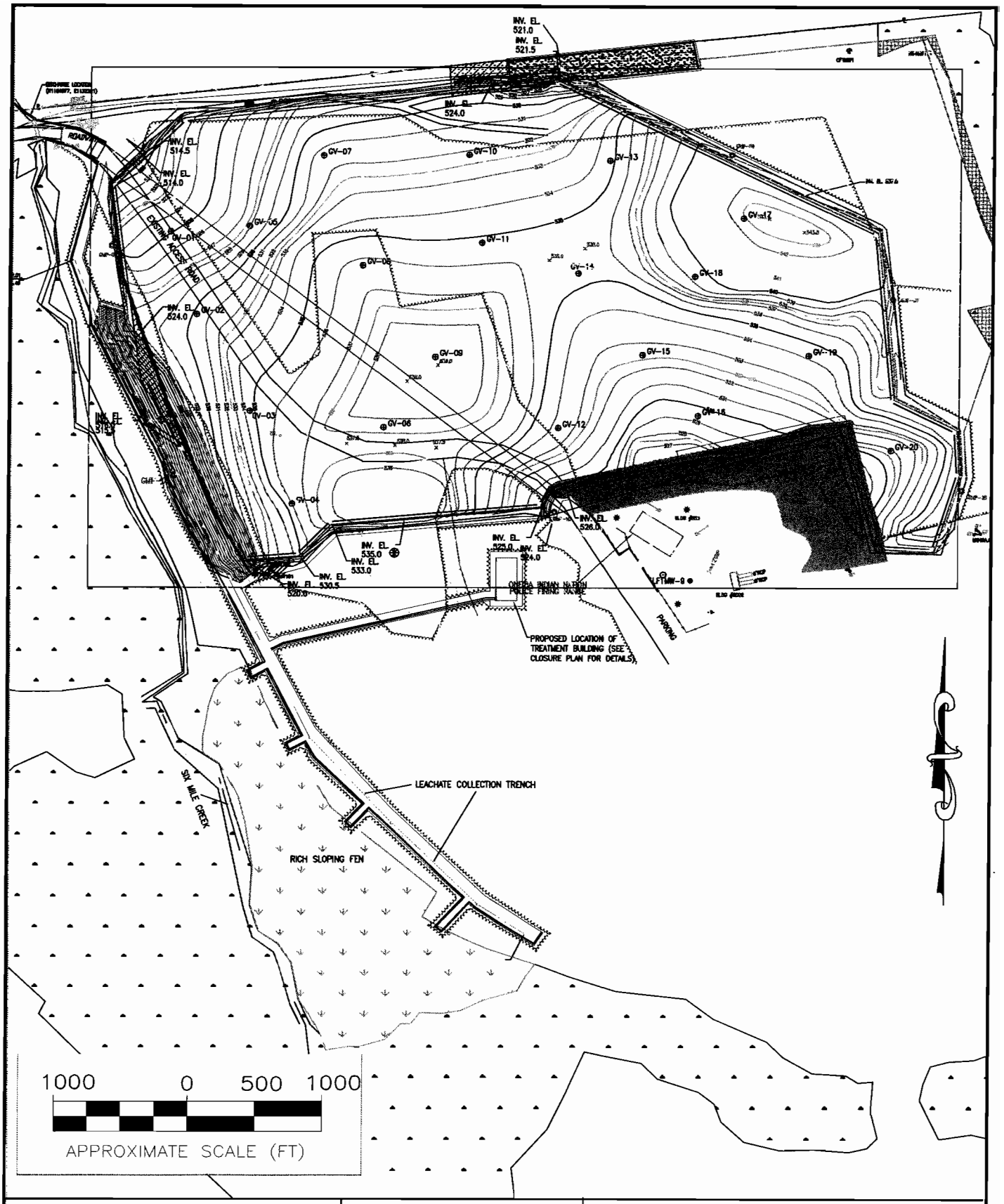
Consistent with the high concentrations of iron in surface water samples collected at the seeps in conjunction with the leachate collection trench pump test, extensive staining of the soil surface from precipitated iron was observed in the vicinity of sampling plots TAP01, TAP02, TBP01, and TCP02. The coverage of *Sphagnum* was also significantly reduced in portions of these plots.

4.3 WATER QUALITY AND HYDROLOGY

The analytes measured in surface water samples collected in the vicinity of the four groundwater seeps will continue to be monitored on a quarterly basis until the leachate collection trench and treatment plant become operational. At that time, water chemistry will be monitored at the discharge from the treatment plant prior to the engineered seeps. It is recommended that orthophosphate be added to the list of analytes, as some authors (Wassen et al. 1990) have reported a correlation between groundwater phosphate concentration and fen characteristics. The quarterly data will be used to document baseline water quality conditions supporting the fen. Pre-operational data can be compared to post-operational data in the event that changes in the fen condition are observed subsequent to initiation of the leachate treatment and engineered seep system to assess the role of potential changes in water quality. Particular attention will be given to concentrations of nutrients, minerals, and other conventional water quality parameters, such as hardness, alkalinity, dissolved solids, and sulfates.

The single piezometer installed within the fen indicates that the groundwater surface during the Fall of 2003 is near ground surface in that area. To better characterize the hydrology within the fen, it is recommended that five additional piezometers be installed within the fen as early as conditions allow during Spring of 2004 (Figure 3). The new piezometers can be installed to a maximum depth of 3-4 ft, and should be installed by hand to minimize impacts to the fen vegetation and soil. Hand installation of relatively shallow piezometers should be feasible considering the sandy nature of the soil in this area. Three of the proposed piezometers will be installed at vegetation sampling plots TAP01, TBP02, and TCP01 in the vicinity of the surveyed stake marking the center of these plots. One piezometer will be installed in the vicinity of seeps LF1-LL1 and LF1-LL2 northwest of plot TAP01. The final piezometer will be installed southeast of plot TDP01 along the transect between photo-documentation points PDP11 and PDP12. Horizontal and vertical datum will be recorded for each piezometer. Groundwater levels will be monitored at each piezometer on a routine basis during 2004.

The baseline monitoring survey was conducted at the end of a relatively wet growing season. Groundwater was observed discharging at the ground surface in several locations within the fen and flowing downslope toward Six Mile Creek in concentrated rivulets. Soil conditions throughout the fen were saturated, although somewhat drier in the vicinity of plot TCP02 where the die-back of vegetation was observed. A critical factor in the preservation of the fen will be the level of soil saturation maintained in the fen by the engineered seeps following startup of the leachate collection trench and treatment system. Routine monitoring of the piezometers within the fen will provide the necessary data to determine if an appropriate level of saturation is being maintained.



EA	FORMER GRIFFISS AFB ROME, NEW YORK	FIGURE 1 SITE MAP SHOWING LOCATION OF RICH SLOPING FEN IN RELATION TO LANDFILL 1

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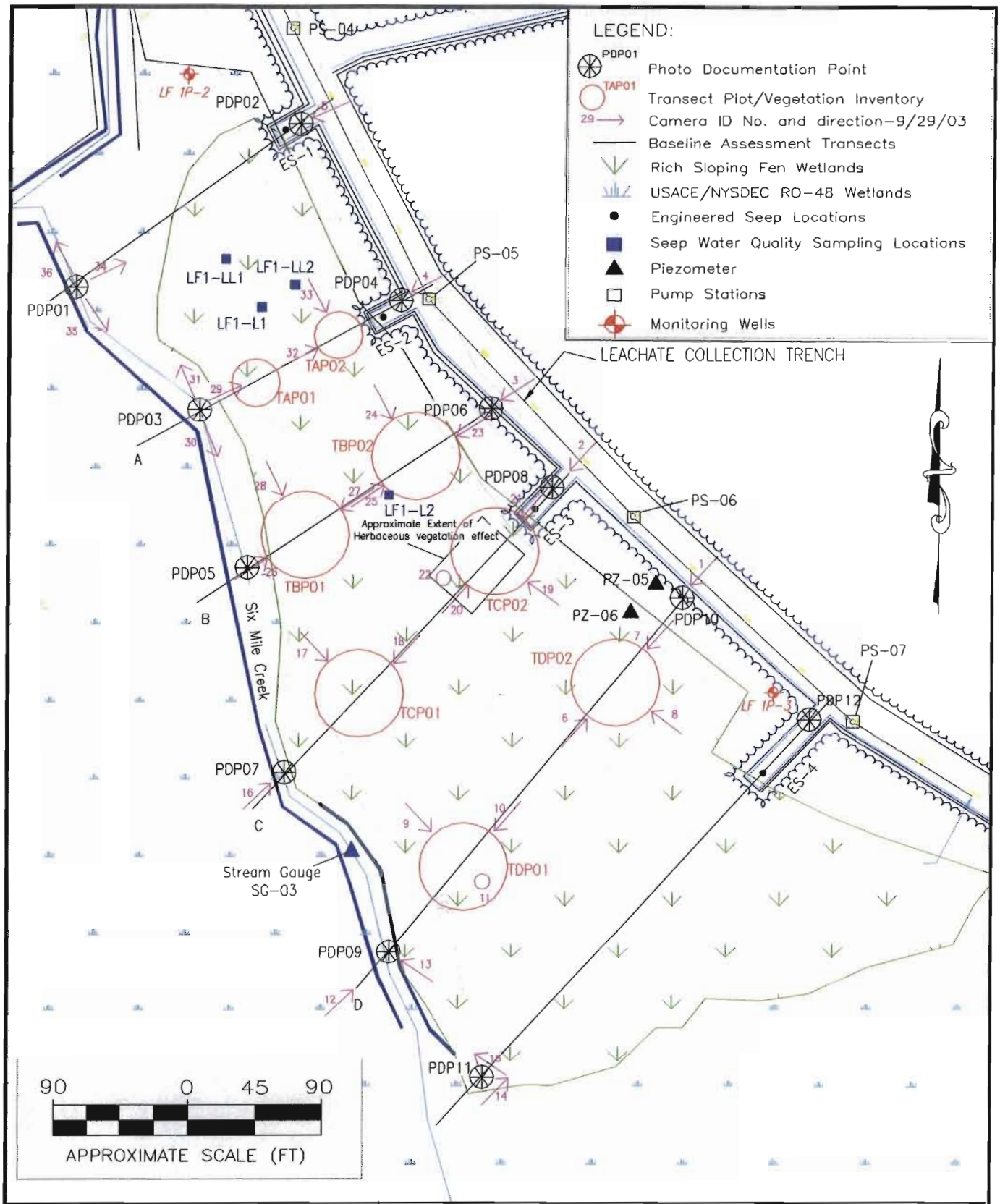

EA	FORMER GRIFFISS AFB ROME, NEW YORK	FIGURE 2 LOCATION OF PHOTO AND VEGETATION SAMPLING PLOTS FOR RICH SLOPING FEN BASELINE ASSESSMENT AT LANDFILL 1

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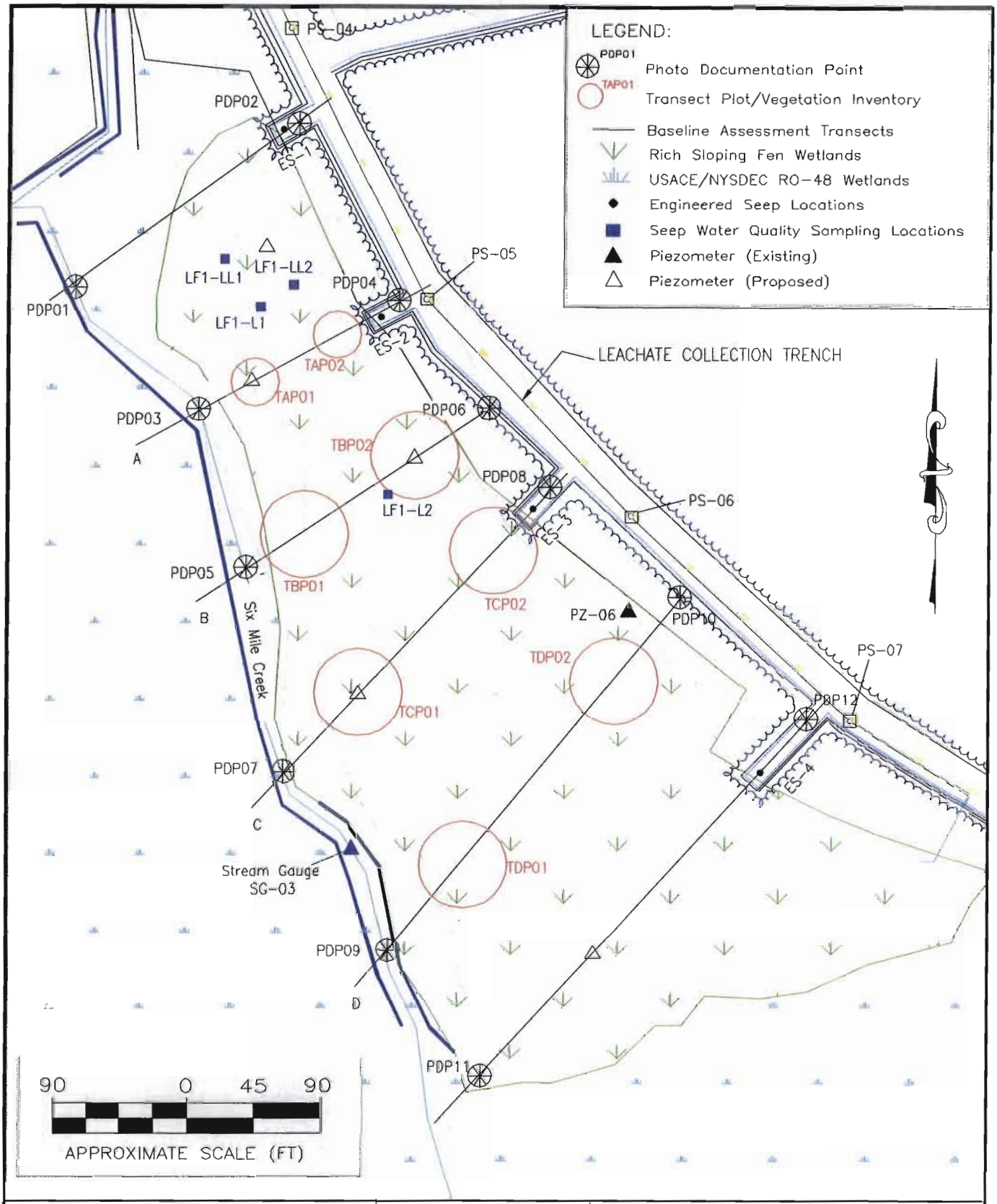

EA	FORMER GRIFFISS AFB ROME, NEW YORK	FIGURE 3 PROPOSED PIEZOMETER LOCATIONS IN RICH SLOPING FEN FOR ASSESSMENT OF GROUNDWATER HYDROLOGY

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TABLE 1 GEOGRAPHIC SURVEY COORDINATES FOR FIXED PHOTO-DOCUMENTATION POINTS ADJACENT TO LEACHATE COLLECTION TRENCH AND SIX MILE CREEK

Fixed Photo-Documentation Points	New York State Plane Coordinates (NAD 1983)	
	X	Y
PDPO1	1132450.48	1183566.51
PDPO2	1132609.11	1183651.45
PDPO3	1132542.75	1183461.35
PDPO4	1132674.67	1183536.58
PDPO5	1132574.31	1183356.19
PDPO6	1132732.14	1183463.77
PDPO7	1132600.21	1183221.09
PDPO8	1132772.60	1183410.38
PDPO9	1132667.41	1183100.29
PDPO10	1132861.66	1183337.31
PDPO11	1132730.54	1183015.35
PDPO12	1132944.21	1183256.41

TABLE 2 GEOGRAPHIC SURVEY COORDINATES FOR TRANSECT SAMPLING PLOTS EVALUATED

Transect Sampling Plots	New York State Plane Coordinates (NAD 1983)	
	X	Y
TAP01	1132578.38	1183481.30
TAP02	1132632.61	1183512.04
TBP01	1132612.38	1183382.61
TBP02	1132685.22	1183432.76
TCP01	1132647.99	1183272.59
TCP02	1132735.40	1183367.24
TDP01	1132715.97	1183158.53
TDP02	1132815.52	1183279.87

TABLE 3 SUMMARY OF SURFACE WATER ANALYTICAL RESULTS FOR SAMPLES COLLECTED AT GROUNDWATER SEEPS WITHIN THE FEN

Parameter	Units	Mean Concentration				
		OCT 2003	DATE	DATE	DATE	DATE
LEACHATE INDICATOR						
Alkalinity (as CaCO3)	µg/L	388,750				
Ammonia-Nitrogen	µg/L	2,200				
BOD 5	µg/L	11,100				
Bromide	µg/L	270				
Chemical Oxygen Demand	µg/L	161,500				
Chloride, Total	µg/L	7,850				
Color	PCU	3,087.5				
Nitrate-nitrogen	µg/L	380				
Nitrite nitrogen	µg/L	27.5				
Nitrite-nitrate nitrogen	µg/L	407.5				
Sulfate, Total	µg/L	166,250				
Total Dissolved Solids	µg/L	645,500				
Total Hardness (as CaCO3)	µg/L	712,500				
Total Kjeldahl Nitrogen	µg/L	4,100				
Total Organic Carbon	µg/L	6,225				
Turbidity (NTU)	NTU	6.1				
METALS						
Aluminum	µg/L	3,622.5				
Arsenic	µg/L	39.7				
Barium	µg/L	210				
Beryllium	µg/L	0.77				
Calcium	µg/L	214,000				
Chromium	µg/L	10.5				
Cobalt	µg/L	19.5				
Copper	µg/L	16.6				
Iron	µg/L	56,302.5				
Lead	µg/L	96				
Magnesium	µg/L	10,280				
Manganese	µg/L	1,841				
Mercury	µg/L	0.29				
Nickel	µg/L	36.03				
Potassium	µg/L	9,202.5				
Selenium	µg/L	6.6				
Silver	µg/L	2.1				
Sodium	µg/L	10,577.5				
Tin	µg/L	7.7				
Vanadium	µg/L	34.2				
Zinc	µg/L	88.3				
HERBICIDES						
2,4,5-TP (Silvex)	µg/L	0.17				
DCAA	µg/L	9.7				

Parameter	Units	Mean Concentration				
		OCT 2003	DATE	DATE	DATE	DATE
PESTICIDES/POLYCHLORINATED BIPHENYLS						
Decachlorobiphenyl	µg/L	0.255				
Tetrachloro-m-xylene	µg/L	0.325				
SEMIVOLATILE ORGANIC COMPOUNDS						
2,4,6-Tribromophenol	µg/L	58				
2-Fluorobiphenyl	µg/L	52.5				
2-Fluorophenol	µg/L	47.5				
Diethylphthalate	µg/L	0.5				
VOLATILE ORGANIC COMPOUNDS						
1,2,4-Trichlorobenzene	µg/L	1.8				
1,2,4-Trimethylbenzene	µg/L	1				
1,4-Dichlorobenzene	µg/L	3.1				
Acetone	µg/L	2.6				
Bromofluorobenzene	µg/L	51.3				
Chlorobenzene	µg/L	2.8				
Isobutyl Alcohol	µg/L	42				

TABLE 4 SUMMARY OF GROUNDWATER ELEVATION DATA COLLECTED TO DOCUMENT HYDROLOGIC CONDITIONS IN THE FEN

Station	NOV 2003		DATE		DATE		DATE		DATE	
	Water Elevation (ft)	Below Ground Surface (ft)	Water Elevation (ft)	Below Ground Surface (ft)	Water Elevation (ft)	Below Ground Surface (ft)	Water Elevation (ft)	Below Ground Surface (ft)	Water Elevation (ft)	Below Ground Surface (ft)
SG-03	493.57	NA								
PS-04	503.7	6.8								
PS-05	504	6.8								
PS-06	504.2	8.3								
PS-07	504.3	3.7								
LF 1P-2	500.1	2.99								
LF 1P-3	504.23	1.95								
PZ-05	504.17	>1								
PZ-06	503.46	<1								

NOTE: NA = Not applicable.

TABLE 5 COMMON AND SCIENTIFIC NAMES AND WETLAND INDICATOR STATUS OBSERVED IN RICH SLOPING FEN, 29 SEPTEMBER 2003

Common Name	Scientific Name	Indicator Status
HERBS		
Moss	*Sphagnum* spp.	
Marsh horsetail	*Equisetum palustre*	FACW
Royal fern	*Osmunda regalis*	OBL
Cinnamon fern	*Osmunda cinnamomea*	FACW
Sensitive fern	*Onoclea sensibilis*	FACW
Marsh fern	*Thelypteris thelypteroides*	FACW+
Rice cutgrass	*Leersia oryzoides*	OBL
Unid. Grass (short, fine-leaf)		---
Common reed	*Phragmites australis*	FACW
Grass leaf rush	*Juncus marginatus*	FACW
Soft rush	*Juncus effusus*	FACW+
Sallow sedge	*Carex lurida*	OBL
Wooly sedge	*Carex lanuginosa*	OBL
Unid. Sedge (short, thick-stem)	*Carex* spp.	---
Narrow leaf cattail	*Typha angustifolia*	OBL
Nodding lady's tresses	*Spiranthes cernua*	FACW
Joe-Pye weed	*Eupatorium maculatum*	FACW
Boneset	*Eupatorium perfoliatum*	OBL
Beggar ticks	*Bidens frondosa*	FACW
False nettle	*Boehmeria cylindrica*	FACW+
Tall nettle	*Urtica procera*	FAC
Selfheal	*Prunella vulgaris*	FACU-
Rough-leaved goldenrod	*Solidago patula*	OBL
Rough-stemmed goldenrod	*Solidago rugosa*	FAC
Swamp goldenrod	*Solidago uliginosa*	OBL
Flat topped goldenrod	*Euthamia graminifolia*	FAC
New England aster	*Aster novae-angliae*	FACW+
New York aster	*Aster novi-belgii*	FACW+
Panicled aster	*Aster simplex*	FACW
Flat topped aster	*Aster umbellatus*	FACW
Arrow-leaved tearthumb	*Polygonum sagittatum*	OBL
Touch-me-not	*Impatiens pallida*	FACW
Bittersweet nightshade	*Solanum dulcamara*	FAC-
Thimbleberry	*Rubus occidentalis*	---
Wood strawberry	*Fragaria vesca*	---
Riverbank grape	*Vitis riparia*	FACW
Virginia creeper	*Parthenocissus quinquefolia*	FACU
Poison ivy	*Rhus radicans*	---

NOTE: A positive (+) or negative (-) sign is used with the indicator categories to more specifically define the regional frequency of occurrence in wetlands. The positive sign indicates a frequency toward the higher end of the category (more frequently found in wetlands). A negative sign indicates a frequency toward the lower end of the category (less frequently found in wetlands).
Dashes (---) indicate that taxa are not listed on the National List (USFW 1996).

Common Name	Scientific Name	Indicator Status
HERBS *(Continued)*		
Common plantain	*Plantago major*	FACU
Red stem plantain	*Plantago rugelii*	FACU
Round-leaf sundew	*Drosera rotundifolia*	OBL
Moneywort	*Lysimachia nummularia*	OBL
Marsh marigold	*Caltha palustris*	OBL
Northern white cedar	*Thuja occidentalis*	FACW
Red maple	*Acer rubrum*	FACW+
Highbush blueberry	*Vaccinium corymbosum*	FACW-
SHRUBS		
Gray dogwood	*Cornus foemina*	FACW
Highbush blueberry	*Vaccinium corymbosum*	FACW-
Speckled alder	*Alnus rugosa*	FACW+
Black willow	*Salix nigra*	FACW+
Pussy willow	*Salix discolor*	FACW
Cottonwood	*Populus deltoides*	FAC
WOODY VINES		
None observed		
SAPLINGS		
Northern white cedar	*Thuja occidentalis*	FACW
Gray birch	*Betula populifolia*	FAC
Black willow	*Salix nigra*	FACW+
Cottonwood	*Populus deltoides*	FAC
American elm	*Ulmus americana*	FACW-
Red maple	*Acer rubrum*	FACW+
Green ash	*Fraxinus pennsylvanica*	FACW
TREES		
Northern white cedar	*Thuja occidentalis*	FACW
Red maple	*Acer rubrum*	FACW+

TABLE 6 SUMMARY OF VEGETATIVE COVER BY SPECIES AND STRATA OBSERVED AT 8 TRANSECT SAMPLING PLOTS

Common Name	Mean Percent Cover											
	TAP01			TAP02			TBP01			TBP02		
	SEP03	SEP04	SEP05	SEP03	SE04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05
HERBS												
Moss				55[(a)]			58.75[(a)]			90[(a)]		
Marsh horsetail	15[(a)]			23.75[(a)]			47.5[(a)]			41.25[(a)]		
Royal fern												
Cinnamon fern				11.25								
Sensitive fern	11.25[(a)]			20			1.3					
Marsh fern	1.3			1.3			<1			2.5		
Rice cutgrass	1.3			5								
Unid. Grass (short, fine-leaf)												
Common reed	23.75[(a)]											
Grass leaf rush										1.3		
Soft rush							2.5					
Sallow sedge												
Wooly sedge												
Unid. Sedge (short, thick-stem)	3.7						18.75			56.25[(a)]		
Narrow leaf cattail	5											
Nodding lady's tresses												
Joe-Pye weed	2.5											
Boneset							2.5			3.75		
Beggar ticks	2.5											
False nettle										<1		
Tall nettle							10					
Selfheal												
Rough-leaved goldenrod				3.7			2.5			1.3		
Rough-stemmed goldenrod												
Swamp goldenrod							3.75			2.5		

(a) Dominant herbaceous taxa for sampling plot based on Federal Interagency Committee (1989).

Common Name	Mean Percent Cover											
	TAP01			TAP02			TBP01			TBP02		
	SEP03	SEP04	SEP05	SEP03	SE04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05
HERBS *(Continued)*												
Flat topped goldenrod							3.75			1.3		
New England aster				3.7			3.75			2.5		
New York aster							3.75					
Panicled aster				6.25								
Flat topped aster												
Arrow-leaved tearthumb							6.25					
Touch-me-not										1.3		
Bittersweet nightshade							8.75					
Thimbleberry	7.5			10								
Wood strawberry	5			2.5								
Riverbank grape												
Virginia creeper	2.5			1.3								
Poison ivy	3.7											
Common plantain				2.5						2.5		
Red stem plantain										<1		
Round-leaf sundew												
Moneywort	8.75			6.25						1.3		
Marsh marigold	3.7			3.7			3.75			2.5		
Northern white cedar							<1			<1		
Red maple	1.3											
Highbush blueberry	1.3											
SHRUBS												
Gray dogwood	10											
Highbush blueberry	5											
Speckled alder												
Black willow				10.5						<1		
Pussy willow												
Cottonwood												
WOODY VINES												
None observed												

Common Name	Mean Percent Cover											
	TAP01			TAP02			TBP01			TBP02		
	SEP03	SEP04	SEP05	SEP03	SE04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05
SAPLINGS												
Northern white cedar	15			25			15			55		
Gray birch										<1		
Black willow												
Cottonwood										2		
American elm	5			<1								
Red maple	<1			10			5					
Green ash				<1								
	Basal Area (BA) (ft^2)											
TREES												
Northern white cedar	0.602			0.616						0.164		
Red maple	5.08			7.736								
TOTAL SPECIES	20			20			18			20		

Common Name	Mean Percent Cover											
	TCP01			TCP02			TDP01			TDP02		
	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05
HERBS												
Moss	68.75[a]			51.75[a]			100[a]			100[a]		
Marsh horsetail	71.25[a]			30[a]			26.2[a]			16.25		
Royal fern	16.25						17.5					
Cinnamon fern												
Sensitive fern	3.75						30.2[a]					
Marsh fern	1.3			2.5			3.8			13.75		
Rice cutgrass												
Unid. Grass (short, fine-leaf)				<1								
Common reed												
Grass leaf rush												
Soft rush				<1								
Sallow sedge	1.3											
Wooly sedge										1.3		
Unid. Sedge (short, thick-stem)	5			26.25[a]						2.5		
Narrow leaf cattail	<1			6.25			<1			<1		
Nodding lady's tresses										1.3		
Joe-Pye weed	3.75			10						5		
Boneset				2.5						1.3		
Beggar ticks												
False nettle										5		
Tall nettle				12.5								
Selfheal	0.5									<1		
Rough-leaved goldenrod				3.75			5			2.5		
Rough-stemmed goldenrod	2.5						2.5			2.5		
Swamp goldenrod	2.5						1.3					
Flat topped goldenrod				<1			1.3					
New England aster							2.5			<1		
New York aster				2.5								
Panicled aster	6.25									1.3		
Flat topped aster	2.5											

Common Name	Mean Percent Cover											
	TCP01			TCP02			TDP01			TDP02		
	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05
HERBS *(Continued)*												
Arrow-leaved tearthumb												
Touch-me-not	1.3											
Bittersweet nightshade												
Thimbleberry												
Wood strawberry										1.3		
Riverbank grape	1.3											
Virginia creeper												
Poison ivy												
Common plantain	1.3											
Red stem plantain										5		
Round-leaf sundew										<1		
Moneywort	1.75			5								
Marsh marigold	3.75			15						5		
Northern white cedar				<1						3.75		
Red maple												
Highbush blueberry												
SHRUBS												
Gray dogwood												
Highbush blueberry							<1					
Speckled alder	5									5		
Black willow										5		
Pussy willow							<1					
Cottonwood	<1											
WOODY VINES												
None observed												
SAPLINGS												
Northern white cedar	35			15			15			20		
Gray birch												
Black willow							<1					
Cottonwood												
American elm	<1											
Red maple	<1						<1					

Common Name	Mean Percent Cover											
	TCP01			TCP02			TDP01			TDP02		
	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05	SEP03	SEP04	SEP05
Green ash												
	Basal Area (BA) (ft^2)											
TREES												
Northern white cedar	1.563			0.142			1.455					
Red maple												
TOTAL SPECIES	24			16			16			23		

TABLE 7 WETLAND INDICATOR CATEGORIES AS DEFINED IN U.S. FISH AND WILDLIFE SERVICE (1996)

Indicator Category	Code	Descriptor	Estimated Probability
Obligate Wetland	OBL	Occur almost always under natural conditions in wetlands	>99%
Facultative Wetland	FACW	Usually occur in wetlands, but occasionally found in non-wetlands	67-99%
Facultative	FAC	Equally likely to occur in wetlands or non-wetlands	34-66%
Facultative Upland	FACU	Usually occur in non-wetlands, but occasionally found in wetlands	1-33%
Obligate Upland	UPL	Occur in wetlands in another region, but occur almost always under natural conditions in non-wetlands in the region specified	>99%

NOTE: A positive (+) or negative (-) sign is used with the indicator categories to more specifically define the regional frequency of occurrence in wetlands. The positive sign indicates a frequency toward the higher end of the category (more frequently found in wetlands). A negative sign indicates a frequency toward the lower end of the category (less frequently found in wetlands).

Appendix A

Photographs

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP02

Photo No.: 1
(Camera ID No.: 5)

Direction: SW

Comments: Photo across fen from collection trench, engineered seep ES-1.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect A, PDP04

Photo No.: 2
(Camera ID No.: 4)

Direction: SW

Comments: Photo across fen from collection trench, engineered seep ES-2.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect B, PDP06

Photo No.: 3
(Camera ID No.: 3)

Direction: SW

Comments: Photo across fen from collection trench at Transect B between engineered seeps ES-2 and ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, PDP08

Photo No.: 4
(Camera ID No.: 2)

Direction: SW

Comments: Photo across fen from collection trench at Transect C, engineered seep ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP10

Photo No.: 5
(Camera ID No.: 1)

Direction: SW

Comments: Photo across fen from collection trench at Transect D between engineered seeps ES-3 and ES-4.

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP12

Photo No.: 6
(Camera ID No.: 897)

Direction: SW

Comments: Photo across fen from collection trench, at engineered seep ES-4.

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP11

Photo No.: 7
(Camera ID No.: 14)

Direction: NE

Comments: Photo across fen from Six Mile Creek below engineered seep ES-4.

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP11

Photo No.: 8
(Camera ID No.: 15)

Direction: NW

Comments: Photo upstream along Six Mile Creek below engineered seep ES-4.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, PDP09

Photo No.: 9
(Camera ID No.: 12)

Direction: NW

Comments: Photo across fen from Six Mile Creek along Transect D.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, PDP09

Photo No.: 10
(Camera ID No.: 13)

Direction: NW

Comments: Photo upstream along Six Mile Creek adjacent to Transect D.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, PDP07

Photo No.: 11
(Camera ID No.: 16)

Direction: NE

Comments: Photo across fen from Six Mile Creek along Transect C below engineered seep ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect B, PDP05

Photo No.: 12
(Camera ID No.: 26)

Direction: NE

Comments: Photo across fen from Six Mile Creek along Transect B.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect A, PDP03

Photo No.: 13
(Camera ID No.: 29)

Direction: NE

Comments: Photo across fen from Six Mile Creek along Transect A at vegetation plot TAP1 below engineered seep ES-2.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect A, PDP03

Photo No.: 14
(Camera ID No.: 30)

Direction: SE

Comments: Photo downstream along Six Mile Creek at Transect A below engineered seep ES-2.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect A, PDP03

Photo No.: 15
(Camera ID No.: 31)

Direction: SE

Comments: Photo upstream along Six Mile Creek at Transect A vegetation plot TAP1, below engineered seep ES-2.

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP01

Photo No.: 16
(Camera ID No.: 34)

Direction: NE

Comments: Photo across fen from Six Mile Creek at PDP01 below engineered seep ES-1.

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP01

Photo No.: 17
(Camera ID No.: 35)

Direction: SE

Comments: Photo downstream along Six Mile Creek at PDP01 below engineered seep ES-1.

Photographer: P. Muessig

Date: 29 September 2003

Site: PDP01

Photo No.: 18
(Camera ID No.: 36)

Direction: NW

Comments: Photo upstream along Six Mile Creek at PDP01 below engineered seep ES-1.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect A, TAP2

Photo No.: 19
(Camera ID No.: 32)

Direction: NE

Comments: Photo across vegetation plot TAP2 on Transect A toward collection trench below engineered seep ES-2.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect A, TAP2

Photo No.: 20
(Camera ID No.: 33)

Direction: SE

Comments: Photo across vegetation plot TAP2 on Transect A below engineered seep ES-2.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect B, TBP1

Photo No.: 21
(Camera ID No.: 27)

Direction: SW

Comments: Photo downslope across vegetation plot TBP1 on Transect B.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect B, TBP1

Photo No.: 22
(Camera ID No.: 28)

Direction: SE

Comments: Photo across slope at vegetation plot TBP1 on Transect B.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect B, TBP2

Photo No.: 23
(Camera ID No.: 23)

Direction: SW

Comments: Photo across vegetation plot TBP2 on Transect B toward Six Mile Creek.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect B, TBP2

Photo No.: 24
(Camera ID No.: 25)

Direction: NE

Comments: Photo across vegetation plot TBP2 on Transect B toward collection trench.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect B, TBP2

Photo No.: 25
(Camera ID No.: 24)

Direction: SE

Comments: Photo across slope at vegetation plot TBP2 on Transect B.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, TCP1

Photo No.: 26
(Camera ID No.: 18)

Direction: SW

Comments: Photo across vegetation plot TCP1 on Transect C toward Six Mile Creek below engineered seep ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, TCP1

Photo No.: 27
(Camera ID No.: 17)

Direction: SE

Comments: Photo across slope at vegetation plot TCP1 on Transect C below engineered seep ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, TCP2

Photo No.: 28
(Camera ID No.: 20)

Direction: NE

Comments: Photo across vegetation plot TCP2 on Transect C toward collection trench below engineered seep ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, TCP2

Photo No.: 29
(Camera ID No.: 21)

Direction: SW

Comments: Photo across vegetation plot TCP2 on Transect C toward Six Mile Creek below engineered seep ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, TCP2

Photo No.: 30
(Camera ID No.: 19)

Direction: NW

Comments: Photo across slope at vegetation plot TCP2 on Transect C below engineered seep ES-3.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect C, TCP2

Photo No.: 31
(Camera ID No.: 22)

Direction:

Comments: Photo at vegetation plot TBP2 on Transect B showing dead dried vegetation dominated by marsh horsetail, *Equisetum palustre*.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, TDP1

Photo No.: 32
(Camera ID No.: 10)

Direction: SW

Comments: Photo across vegetation plot TDP1 on Transect D down-slope toward Six Mile Creek.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, TDP1

Photo No.: 33
(Camera ID No.: 9)

Direction: SE

Comments: Photo across slope at vegetation plot TDP1 on Transect D.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, TDP1

Photo No.: 34
(Camera ID No.: 11)

Direction:

Comments: Nodding Ladies' Tresses orchid, *Spiranthes cernua* growing at vegetation plot TDP1 at Transect D.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, TDP2

Photo No.: 35
(Camera ID No.: 6)

Direction: NE

Comments: Photo across vegetation plot TDP2 on Transect D toward collection trench.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, TDP2

Photo No.: 36
(Camera ID No.: 7)

Direction: SW

Comments: Photo across vegetation plot TDP2 on Transect D toward Six Mile Creek.

Photographer: P. Muessig

Date: 29 September 2003

Site: Transect D, TDP2

Photo No.: 37
(Camera ID No.: 8)

Direction: NW

Comments: Photo across slope at vegetation plot TDP2 on Transect D.

Appendix B

Vegetation Inventory Field Data Forms

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE[1]
(Herbs and Bryophytes)

Field Investigator(s): P. MUESSIG Date: 9/25/03
Project/Site: GRIFFISS, LRI, FEN State: NY County: ONEIDA
Applicant/Owner:
Transect # TA Plot # 01 Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

page 1 of 2

Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]	
1. Carex spp.		15								3.7	~~8.5~~	9.5
*2. marsh horsetail	OBL	40	5		15					15	2	
3. beggar ticks	FACW	10								2.5	13	
4. marsh fern	FACW	5								1.3	16.5	
5. rice cutgrass	OBL	5								1.3	16.5	
6. narrow cattail	OBL	10		10						~~5~~ 5	~~5.5~~	6.5
7. Soft rush weed	FACW	5								2.5	13	
*8. Phragmites	FACW		95							23.75	1	
9. motherwort	OBL			35						8.75	4	
10. marsh marigold	OBL			10	5					3.7	~~8.5~~	9.5
*11. sensitive fern	FACW			45						11.25	3	
12. highbush blueberry	FACW-			5						1.3	16.5	
13. green ash	—			15						3.7	~~8.5~~	9.5
14. rough stem goldenrod	FAC				15					3.7	~~8.5~~	9.5
15. wood strawberry	—				20					5	~~5.5~~	6.5
16. Virginia creeper	FACU				10					2.5	~~12~~	13

Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]

Total of Averages ($\bar{X}$'s) ___[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) ___[3]

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

reduced plots on TA to 20' radius
because 30' radius plots overlapped
plot 01 also cutoff at bank of 6-mile Cr.
quadrat 1 significant iron staining - flowing water
quadrat 4 edge of upland

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE [1]
(Herbs and Bryophytes)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

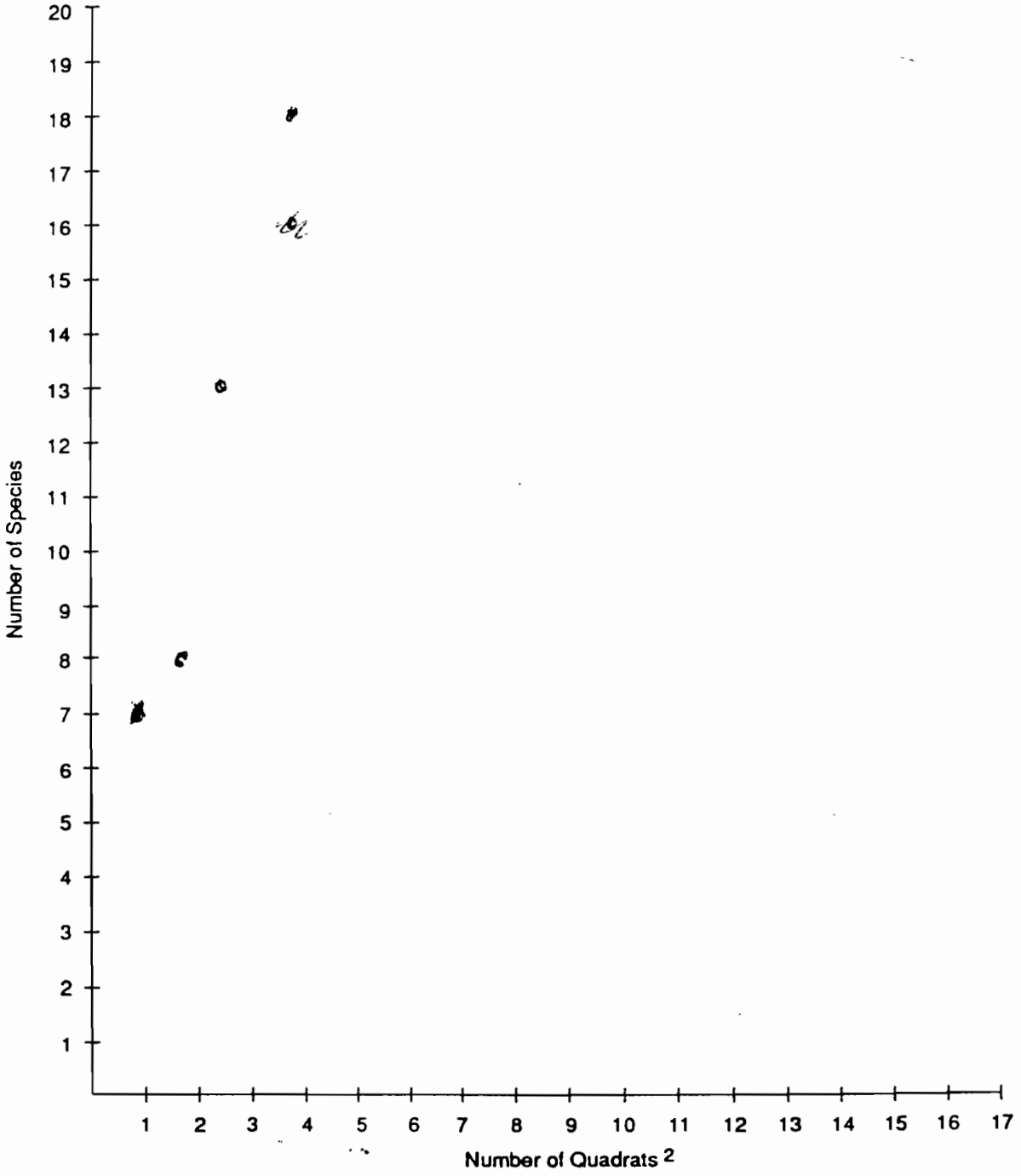
Page 2 of 2

Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
17 1. red maple	FAC	—	—	—	5	—	—	—	—	1.3	16.5
18 2. thimbleberry	—	—	—	—	30	—	—	—	—	7.5	45
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											
16.											

Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]
Total of Averages ($\bar{X}$'s) 103.75[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) 51.88

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: _____

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. Spin dogwood	FAC	10	2	10.5	1
2. Highbush blueberry	FACW-	5	1	3	2
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3. N/A					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. N. white cedar	FACW	15	2	10.5	1
2. American elm	FACW-	5	1	3	2
3. Red maple	FAC	<1	1	—	3
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1. Red maple	FAC	20	~~52.2~~ 2.18		
2.		21.5	2.52		
3.		3.4	0.384	5.08	1
4. N. white cedar	FACW	7.2	0.283		
5.		5.8	0.183		
6.		5.0	0.136	0.602	2
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Total Basal Area of All Species Combined 5.68
Dominance Threshold Number Equals 50% x Total Basal Area 2.84

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
		Frequency of Occurrence of Identified Plants with Known Indicator Status				
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE[1]
(Herbs and Bryophytes)

Field Investigator(s): P. Mufessig Date: 9/29/03
Project/Site: GCRFISS, LF1, FBN State: NY County: ONEIDA
Applicant/Owner:
Transect # TA Plot # 02 Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

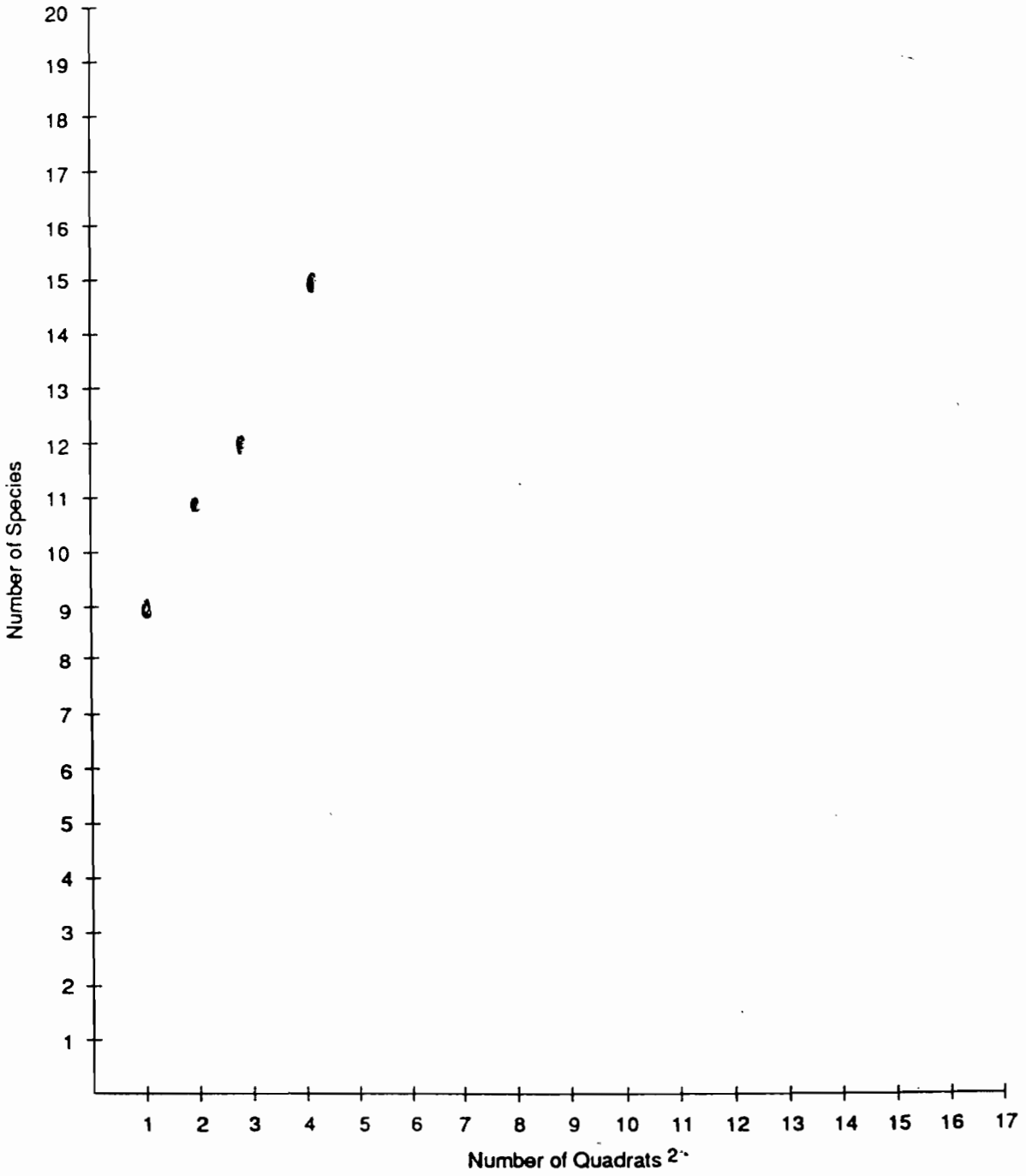
Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
1. Dulichium	OBL	20								5	8
2. New England aster	FACW+	15								3.7	10
* 3. sensitive fern	FACW	55		25						20	3
4. wood, strawberry	—	5	5							2.5	12.5
* 5. marsh hypericum	FACW	15	20	5	5					23.75	2
6. marsh fern	FACW	5								1.3	14.5
7. thimbleberry	—	15		15	10					10	5
8. manycut	OBL	20	5							6.25	6.5
* 9. sphagnum	OBL	100	100	10	10					55	1
10. common plantain	FACU		10		<1					2.5	12.5
11. marsh marigold	OBL		10	5						3.7	10
12. cinnamon fern	FACW			45						11.25	4
13. spotted touch	FACW				25					6.25	6.5
14. roughleaf goldenrod	OBL				15					3.7	10
15. Virginia creeper	FACU				5					1.3	14.5
16.											

Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]
Total of Averages ($\bar{X}$'s) 156.2[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) 78.1[3]

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

20 ft ~~diameter~~ radius plots reduced due to overlap at 30' iron staining in parts of area

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: _____

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. black willow sprout from fallen tree	FACW+	10	2	10.5	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3.					
4. N/A					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. green ash	FACW	<1	T	—	3
2. American elm	FACW-	<1	T	—	3
3. red maple	FAC	10	2	10.5	2
4. N. white cedar	FACW	25	3	20.5	1
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1. Red maple	FAC	7.8 7.2	0.332/0.283		
2.		10.9 6.5	0.648/0.230		
3.		5.9	0.190		
4.		5.1	0.142		
5.		8.9	0.432		
6.		27	2.64		
7.		13.2	0.95		
8.		5.8	0.183		
9.		8.3	0.376		
10.		6.6	0.238		
11.		5.1	0.142		
12.		8.5	0.394		
13.		10.1	0.556	7.736	1
14. N white cedar	FACW	5.0	0.136		
15.		5.5	0.165		
16.		7.6	0.315	0.616	2
				8.352	

Total Basal Area of All Species Combined
Dominance Threshold Number Equals 50% x Total Basal Area 4.176

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	Frequency of Occurrence of Identified Plants with Known Indicator Status: F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE[1]
(Herbs and Bryophytes)

Field Investigator(s): P. MUESSIG Date: 9/29/03
Project/Site: GRIFFISS, IFT, FERN State: NY County: ONEIDA
Applicant/Owner:
Transect # TB Plot # 01 Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
1. marsh bur goldenrod	OBL	10	—	—	—	—	—	—	—	2.5	13
2. Japanese	OBL	10	—	—	—	—	—	—	—	2.5	13
3. Grass spp		55	20	—	—	—	—	—	—	18.75	3
4. New York aster	FACW+	15	—	—	—	—	—	—	—	3.75	9
5. flat top goldenrod	FAC	15	—	—	—	—	—	—	—	3.75	9
*6. marsh horsetail	FACW	25	25	95	45	—	—	—	—	47.5	2
*7. sphagnum	OBL	80	—	65	90	—	—	—	—	58.75	1
8. arrowleaf tearthumb	OBL	—	10	—	15	—	—	—	—	6.25	6
9. tall nettle	FAC	—	35	5	—	—	—	—	—	10	4
10. sensitive fern	FACW	—	5	—	—	—	—	—	—	1.3	15
11. New England aster	FACW+	—	15	—	—	—	—	—	—	3.75	9
12. swamp goldenrod	OBL	—	15	—	—	—	—	—	—	3.75	9
13. ~~Grass spp~~ marsh marigold	OBL	—	10	—	5	—	—	—	—	3.75	9
14. little gweel night shade	FAC-	—	10	—	25	—	—	—	—	8.75	5
15. N. white cedar	FACW	—	—	<1	—	—	—	—	—	<1	16.5
16. marsh fern	FACW	—	—	<1	—	—	—	—	—	<1	16.5
17. soft rush	FACW+				10					2.5	13
	Total Cover	[2]									

Dominance Threshold Number Equals 50% x Total Cover [2]

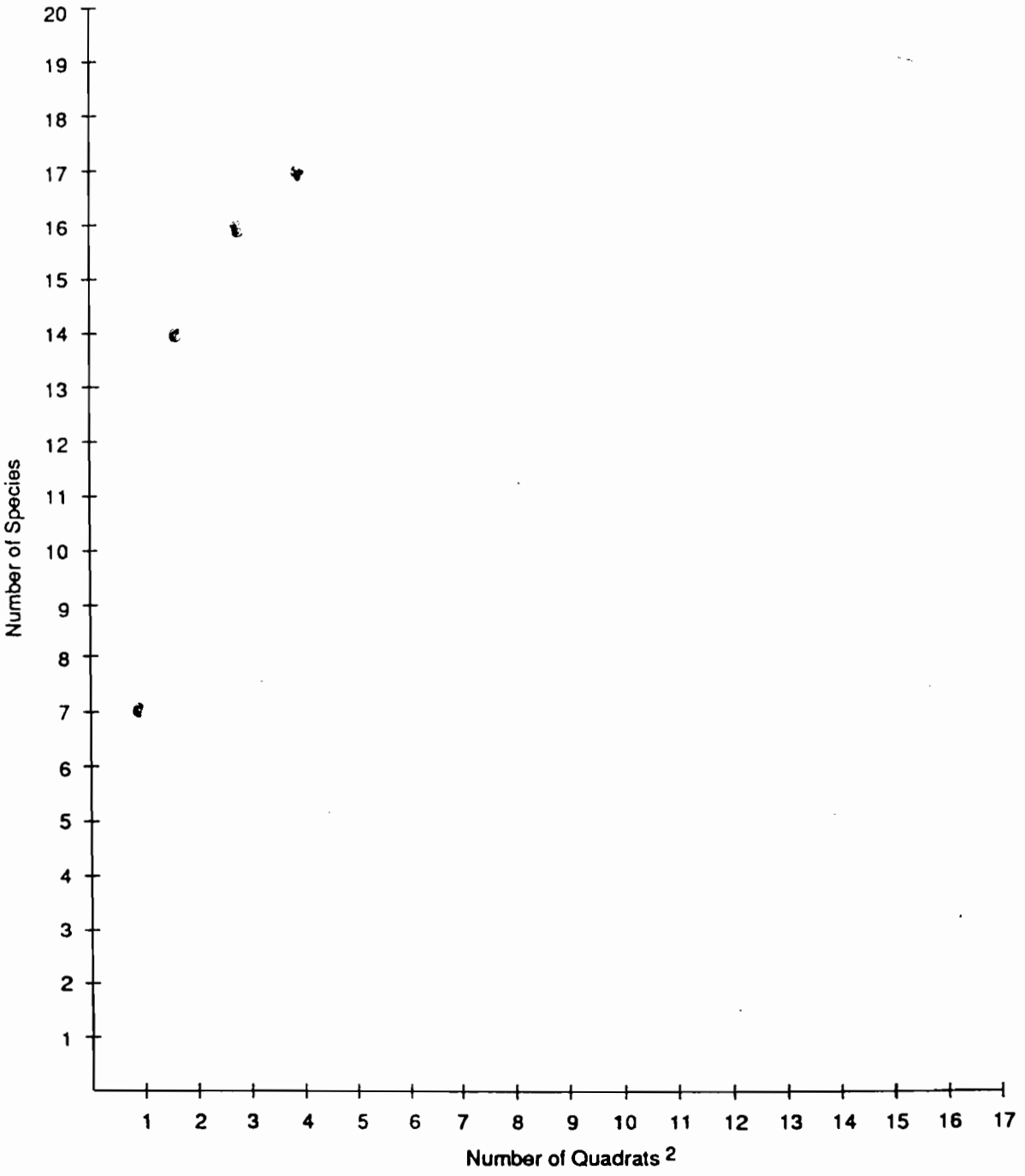
Total of Averages ($\bar{X}$'s) 99.8[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) 49.9[3]

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

Heavy iron staining in quadrat 3

30 ft radius plot w/ 1 quadrat in each quarter

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: _____

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3.					
4.					
5.					
6. N/A					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3.					
4.					
5. N/A					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. Red maple	FAC	5	1	3	2
2. N. white cedar	FACW	15	2	10.5	1
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1.					
2.					
3. NA					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Total Basal Area of All Species Combined _____
Dominance Threshold Number Equals 50% x Total Basal Area _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	Frequency of Occurrence of Identified Plants with Known Indicator Status: F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE[1]
(Herbs and Bryophytes)

Field Investigator(s): P. Muessig Date: 9/29/03
Project/Site: GRIFFISS, LF1, FEN State: NY County: ONEIDA
Applicant/Owner:
Transect # TB Plot # 02 Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
1. boneset	OBL	15	—	—	—	—	—	—	—	3.75	4
2. common cattail	FACW	10								2.5	7
3. swamp goldenrod	OBL	5	5	—	—	—	—	—	—	2.5	7
*4. Carex, spp.		90	55		80					56.25	2
*5. marsh horsetail	OBL	15	40	90	80					41.25	3
6. touch-me-not	FACW	5	—	—	—	—	—	—	—	1.3	12
7. marsh fern	FACW	5		5						2.5	7
*8. sphagnum	OBL	100	90	80	90					90	1
9. Plant type goldenrod	FAC	5	—	—	—	—	—	—	—	1.3	12
10. tough leaf goldenrod	OBL	—	5	—	—	—	—	—	—	1.3	12
11. grass leaf Aster	FACW	—	5	—	—	—	—	—	—	1.3	12
12. red stem ciaistym	FACW	—	—	<1	—	—	—	—	—	<1	16
13. marsh marigold	OBL	—	—	5	5	—	—	—	—	2.5	7
14. N. white cedar	FACW	—	—	<1	—	—	—	—	—	<1	16
15. moneywort	OBL	—	—	—	5	—	—	—	—	1.3	12
16. New England aster	FACW+	—	—	—	10	—	—	—	—	2.5	7
17 false nettle	FACW+				<1					<1	16

Total Cover ___[2]

Dominance Threshold Number Equals 50% x Total Cover ___[2]

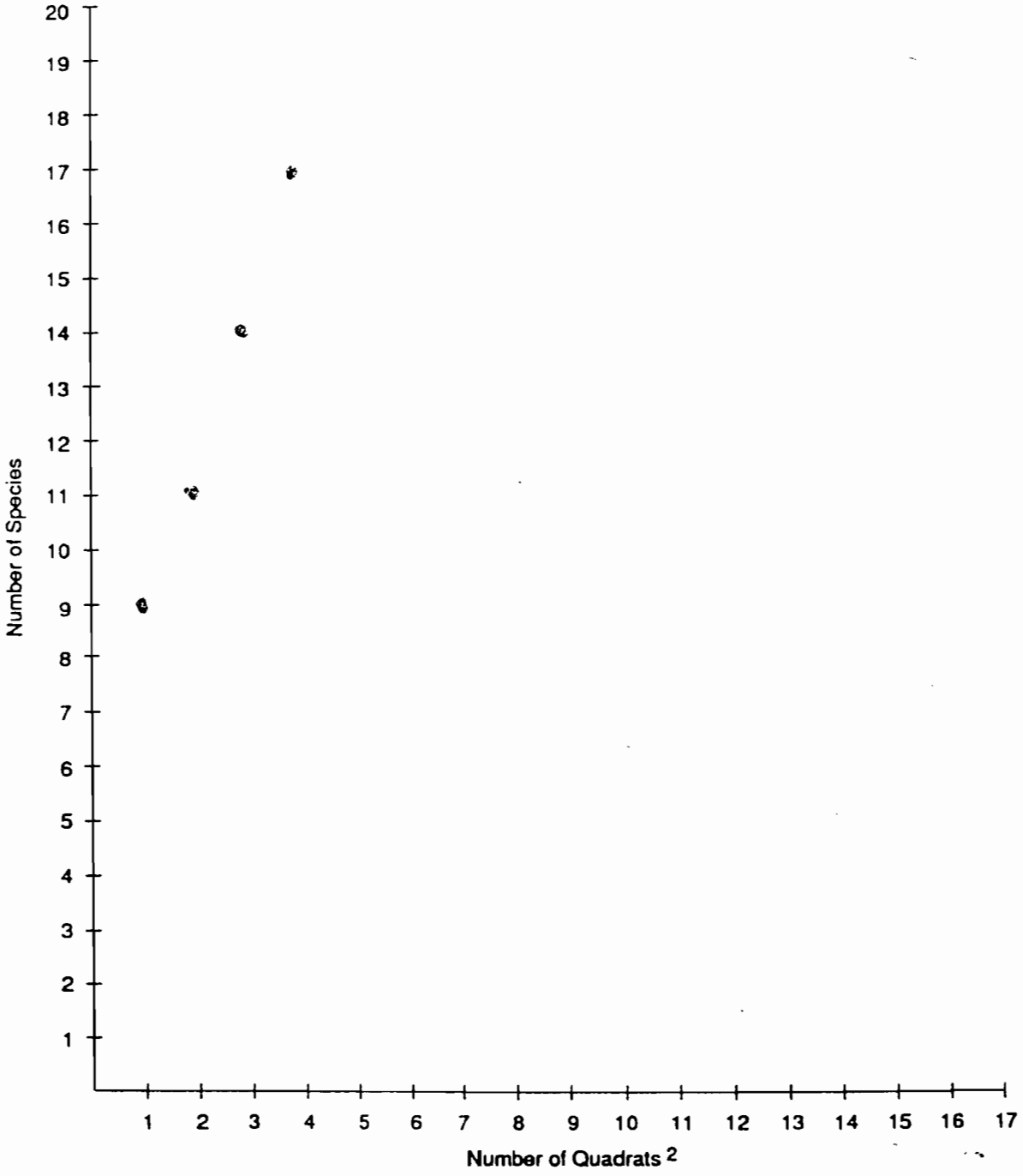
Total of Averages ($\bar{X}$'s) ~~146.75~~ ___[3] 211.75

Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) ___[3] 105.88

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

30 ft radius plots w/ 1 quadrat/quarter

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: _____

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. Black willow	FACW+	<1	T	—	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3.					
4. NA					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. N. white cedar	FACW	<55	5	63.0	1
2. gray birch	FAC	<1	T	-	3
3. Leatherwood	FAC	2	1	3	2
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1. N. white cedar	FACW	5.5	0.164	0.164	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Total Basal Area of All Species Combined 0.164
Dominance Threshold Number Equals 50% x Total Basal Area 0.082

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	Frequency of Occurrence of Identified Plants with Known Indicator Status: F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE[1]
(Herbs and Bryophytes)

Field Investigator(s): P. Mulcahy Date: 9/29/03
Project/Site: Griffiss, LF1, F2R State: NY County: Oneida
Applicant/Owner:
Transect # TC Plot # 01 Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

page 1 of 2

Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
1. Joe Pye weed	FACW	15								3.75	6.7
*2. marsh horsetail	FACW	65	75	65	80					71.25	1
3. touch-me-not	FACW	5								1.3	15
*4. sphagnum	OBL	100	100		75					68.75	2
5. River bank grape	FACW	5								1.3	15
6. panicled aster	FACW	15	5	5						6.25	4
7. swamp goldenrod	OBL	10								2.5	10
8. narrow-leaf cattail	OBL	<1								<1	14
9. marsh fern	FACW		5							1.3	15
10. common plantain	FACW		5							1.3	15
11. marsh marigold	OBL		5		10					3.75	6.7
12. fallow-sedge	OBL		5							1.3	15
13. Carex spp			20							5	5
14. flat topped aster	FACW			10						2.5	10
15. sensitive fern	FACW		15	15						3.75	6.7
16. rough stemmed goldenrod	FAC			10						2.5	10

Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]

Total of Averages ($\bar{X}$'s) 195.77[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) 97.89[3]

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

30 ft ~~diameter~~ Radius plot
1 quadrat / quarter

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE[1]
(Herbs and Bryophytes)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # TC Plot # 01 Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

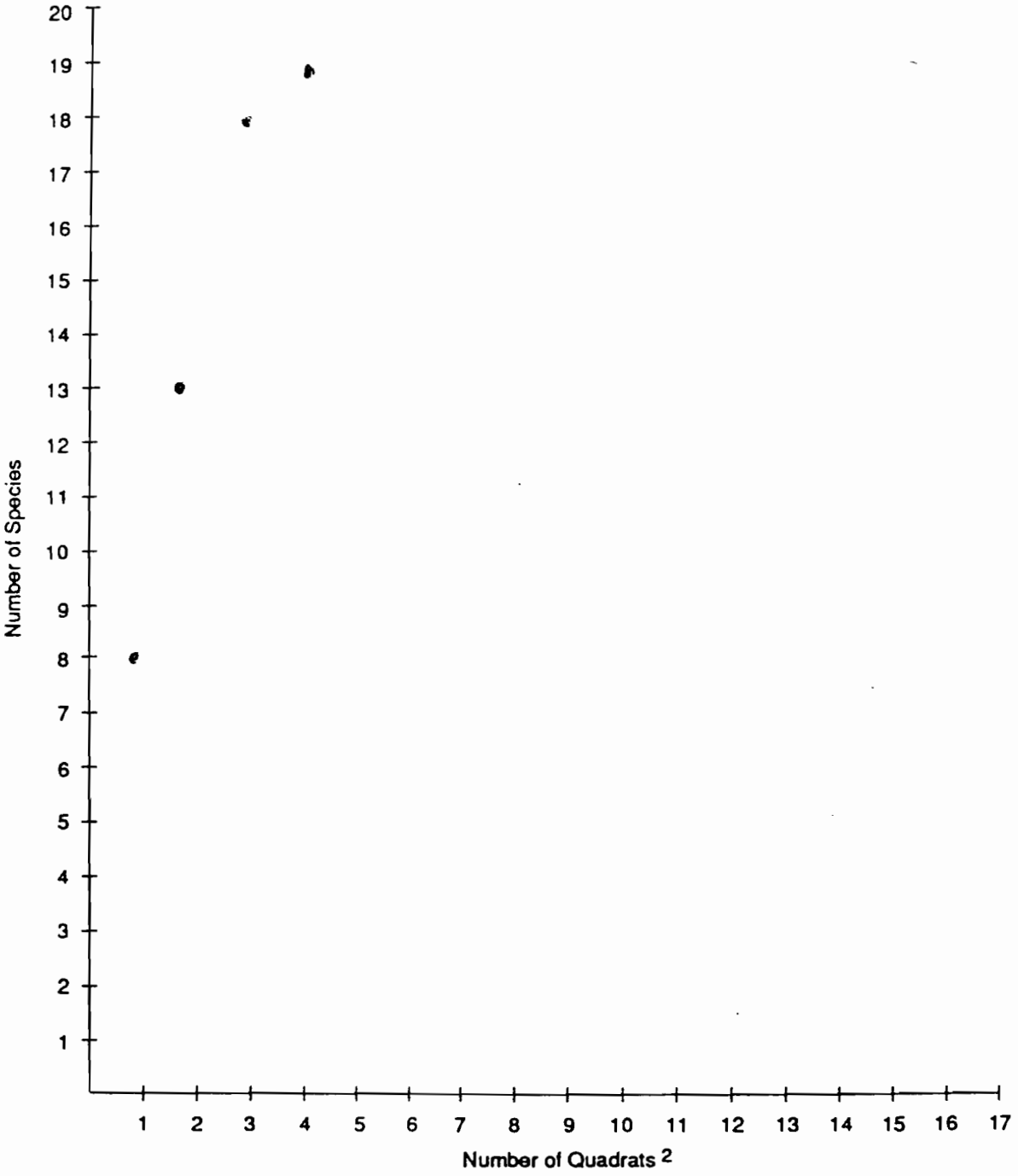
Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
17. self heal	FACU-			2						0.5	18
18. moneywort	OBL			2	5					1.75	12
19. royal fern	OBL				65					16.25	3
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											
16.											

Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]

Total of Averages ($\bar{X}$'s) ___[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) ___[3]

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: _____

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. Cottonwood	FAC	<1	T	—	2
2. speckled alder	FACW+	5	1	3.0	1
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3.					
4. NA					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. N. white cedar	FACW	35	4	38.0	1
2. American elm	FACW-	<1	T	—	2
3. red maple	FAC	<1	T	—	2
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1. N. white cedar	FACW	5.5	0.165		
2.		5.7	0.177		
3.		5.8	0.183		
4.		7.2	0.283		
5.		5.4	0.159		
6.		5.5	0.165		
7.		5.3	0.153		
8.		5.0	0.136		
9.		5.1	0.142	1.563	
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Total Basal Area of All Species Combined 1.563
Dominance Threshold Number Equals 50% x Total Basal Area 0.781

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	Frequency of Occurrence of Identified Plants with Known Indicator Status: F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE [1]
(Herbs and Bryophytes)

Field Investigator(s): P. MUESSIG Date: 9/29/05
Project/Site: GRIFFISS, LS-1, FEN State: NY County: ONEIDA
Applicant/Owner:
Transect # TC Plot # 02 Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

	Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
1.	Cattail	FACW	10	15	20	5	—	—	—	—	12.5	
2.	marsh fern	FACW	5	5	—	—	—	—	—	—	2.5	
3.	Soft rush	FACW	40	—	—	—	—	—	—	—	10	
* 4.	marsh horsetail	FACW	30	35	15	40	—	—	—	—	30	
5.	monkeyflower	OBL	20	—	—	—	—	—	—	—	5	
* 6.	sphagnum	OBL	100	5	100	—	—	—	—	—	51.25	
7.	tall-leaf goldenrod	OBL	15	—	—	—	—	—	—	—	3.75	
8.	marsh marigold	OBL	10	15	35	—	—	—	—	—	15	
9.	fl. goldenrod	FAC	—	<1	—	—	—	—	—	—	<1	
10.	white cedar	FACW	—	<1	<1	—	—	—	—	—	<1	
* 11.	Carex spp	—	—	70	10	25	—	—	—	—	26.25	
12.	soft rush	FACW+	—	<1	<1	—	—	—	—	—	<1	
13.	fescue ??	—	—	<1	—	—	—	—	—	—	<1	
14.	narrow cattail	OBL	—	—	—	25	—	—	—	—	6.25	
15.	bur-reed	OBL	—	—	—	10	—	—	—	—	2.5	
16.	New York aster	FACW+	—	—	—	10	—	—	—	—	2.5	

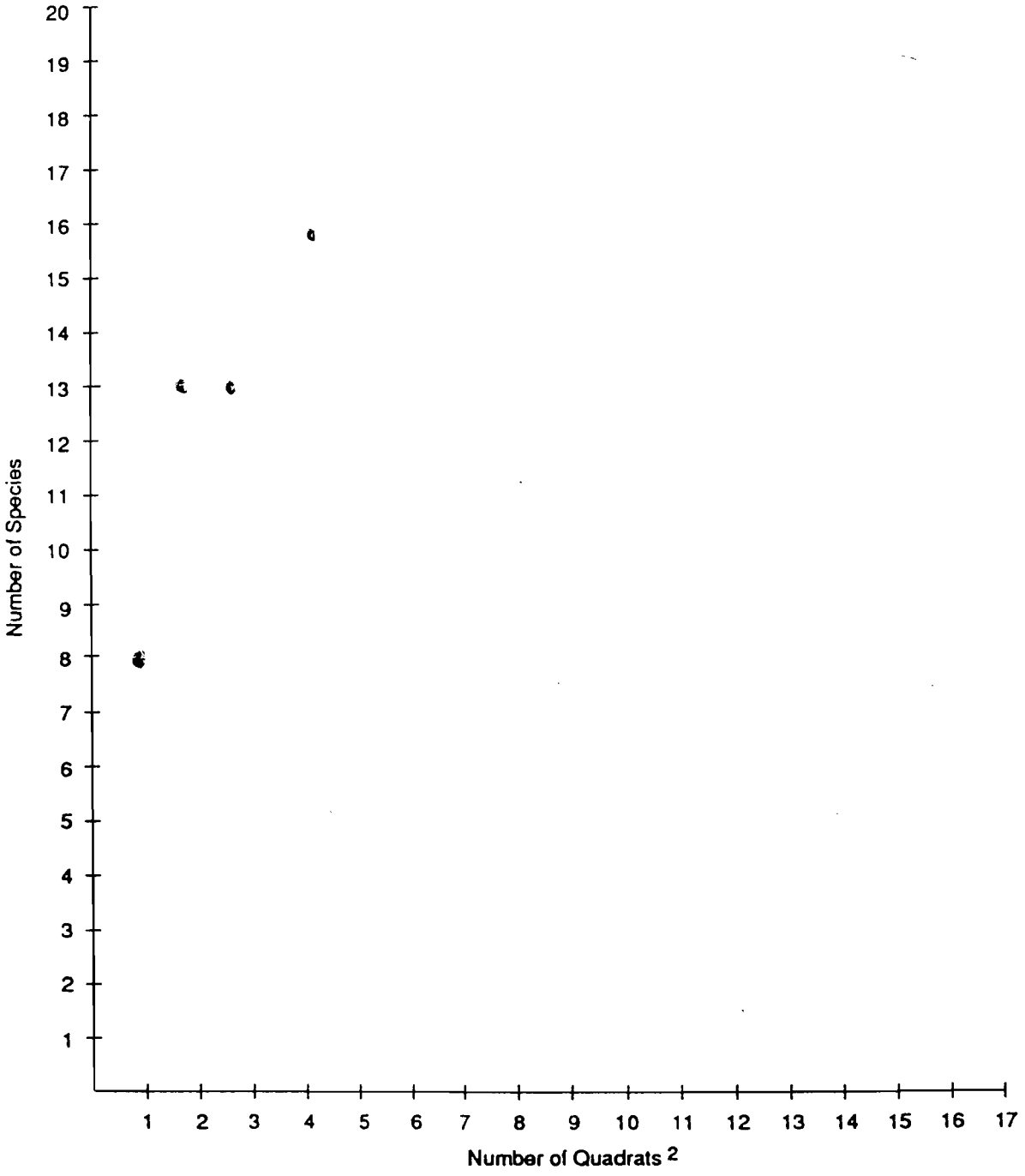
Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]

Total of Averages ($\bar{X}$'s) 142.5
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) 71.25

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

- significant red staining of substrate
- significant drying of area relative to downhill and adjacent transects B + D. Most horsetail dead and very dried. Some Phragmites just outside of plot; between TCP02 and TCP01
30-ft radius plot w/ 1 quadrat/quarter.
- iron stain particularly bad at plot TCP02 quadrat #2

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: _____

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3.					
4. NA					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3. NA					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. N. white cedar	FACW	15	2	10.5	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1. N. white cedar	FACW	5.1	0.142	0.142	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Total Basal Area of All Species Combined 0.142
Dominance Threshold Number Equals 50% x Total Basal Area 0.071

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	Frequency of Occurrence of Identified Plants with Known Indicator Status: F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE [1]
(Herbs and Bryophytes)

Field Investigator(s): PARKER/G — Date: 9/29/03
Project/Site: GRIFFISS, AFI, FEN — State: NY — County: ONEIDA
Applicant/Owner:
Transect # 15 — Plot # 02 — Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
*1. sensitive fern	FACW	20	20	<1	80					30.2	2
*2. marsh horsetail	FACW	40	20	30	15					26.2	3
3. narrow-leaf cattail	~~OBL FAC~~	<1	<1		<1					<1	11
4. marsh fern	FACW+	5	5	5						3.8	5
*5. Sphagnum moss	OBL	100	100	100	100					100	1
6. ~~bent leaf~~ goldenrod	FAC	5								1.3	9.5
7. rough stem goldenrod	FAC	5			5					2.5	7.5
8. rough leaf goldenrod	OBL	5		15						5	6
9. royal fern	OBL		70							17.5	4
10. New England aster	FACW+			10						2.5	7.5
11. swamp goldenrod	OBL	5								1.3	9.5
12.											
13.											
14.											
15.											
16.											

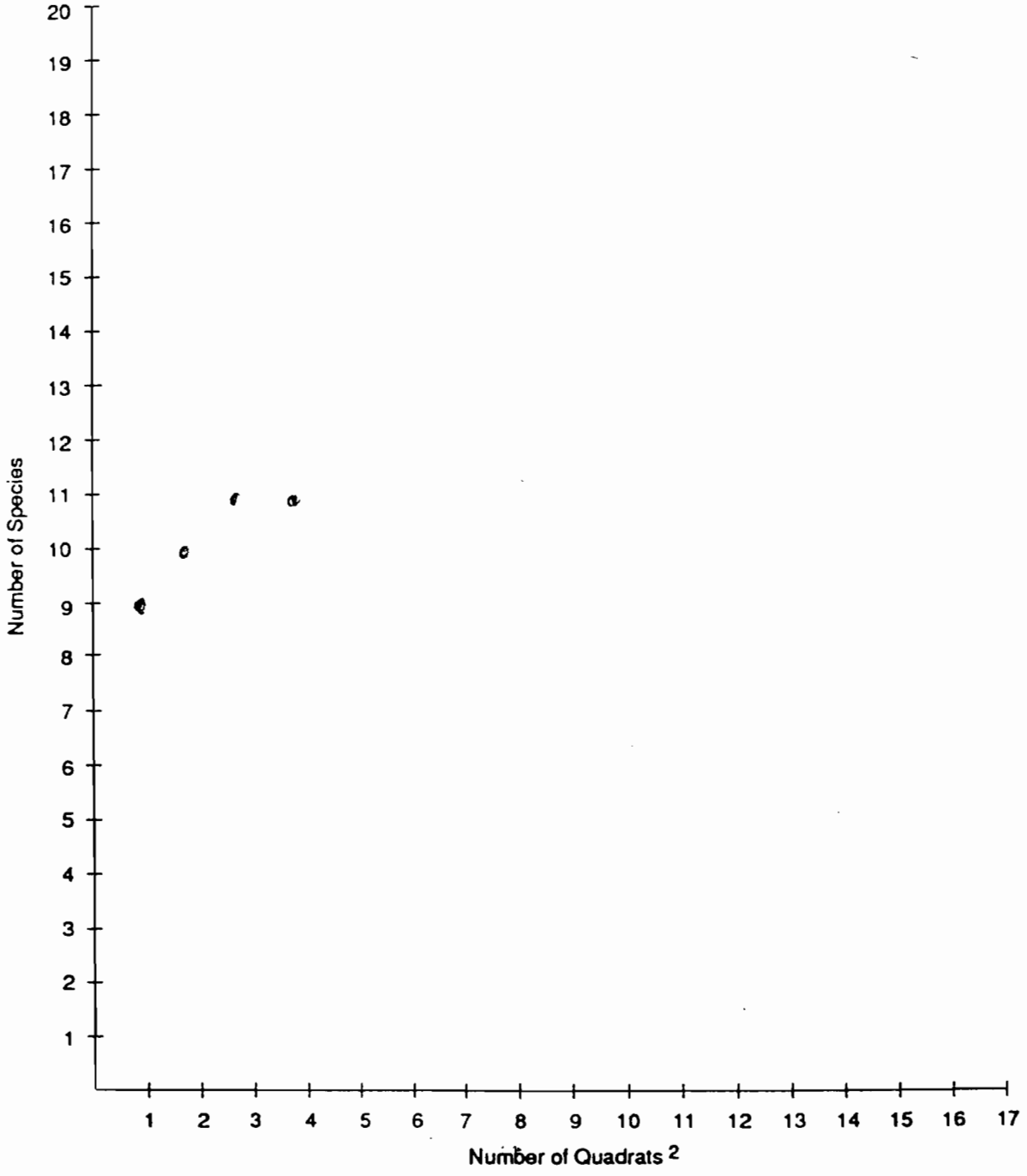
Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]

Total of Averages ($\bar{X}$'s) 408[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) 204[3]

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

30 ft radius plot w/ 1 quadrat/quarter

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: 1m X 1m

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. pussy willow	FACW	<1	T	—	1
2. spotted alder	FACW+	<1	T	—	1
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2. NA					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. Red maple	FAC	<1	T		2.5
2. white cedar (Northern)	FACW	15	2	10.5	1
3. black willow	FACW+	<1	T		2.5
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1. Northern white cedar	FACW	8.2	0.368		
2.		6.3	0.216		
3.		~~4.1~~	0		
4.		5.6	0.171		
5.		6.0	0.196		
6.		6.1	0.203		
7.		5.4	0.159		
8.		5.1	0.142		
9.		~~4.4~~		1.455	
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Total Basal Area of All Species Combined 1.455
Dominance Threshold Number Equals 50% x Total Basal Area 0.728

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	Frequency of Occurrence of Identified Plants with Known Indicator Status: F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE[1]
(Herbs and Bryophytes)

Field Investigator(s): P. Mugsig Date: 9/29/03
Project/Site: GRIFFIS, LFT, FEN State: NY County: CAYUGA
Applicant/Owner:
Transect # T1 Plot # 02 Vegetation Unit #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Page 1 of 2

Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
1. N. white cedar	FACW	15								3.75	8
2. nodding beggar's tick	FACW	5								1.3	14
3. marsh fern	FACW	15	20		20					13.75	3
4. marsh horsetail	FACW	5	35		25					16.25	2
5. fall nettle	FACW+	10	10							5	5.5
*6. sphagnum	OBL	100	100	100	100					100	1
7. red maple	FAC	<1	<1							<1	
8. self-heal	FACW+		<1							<1	
9. New England aster	FACW+		<1	<1						<1	
10. sundial sundew	OBL		<1							<1	
11. marsh marigold	OBL		5	5	10					5	5.5
12. red-stem aster	FACU		10	5	5					5	5.5
13. wood strawberry	-		5							1.3	14
14. Carex sp.	-		10							2.5	10
15. woolly sedge	OBL			5						1.3	14
16. narrow cattail	OBL			<1						<1	

Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]

Total of Averages ($\bar{X}$'s) ___[3]
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) ___[3]

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

30 ft ~~diameter~~ radius plot w/ 1 quadrat / quarter

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE [1]
(Herbs and Bryophytes)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Page 2 of 2

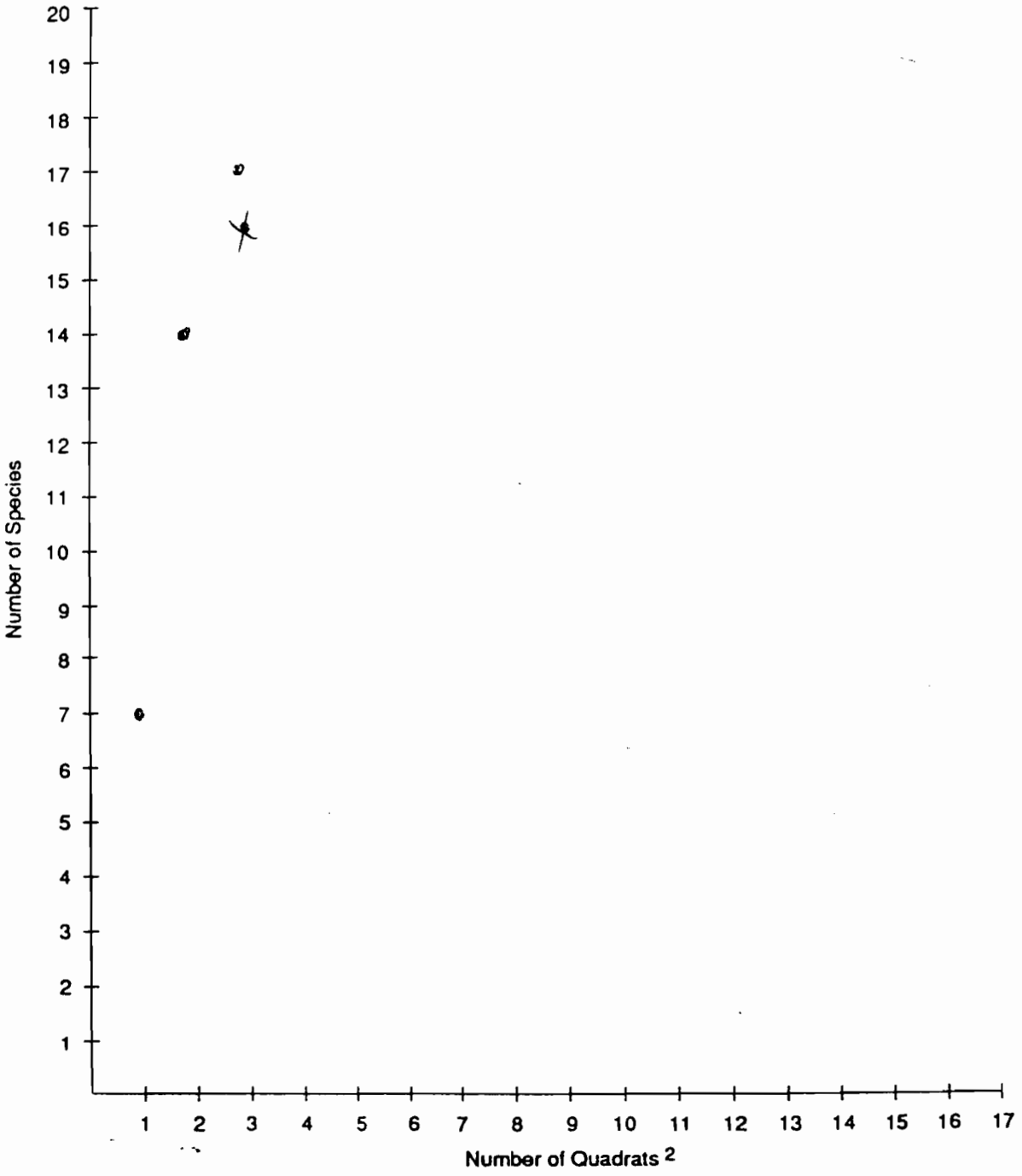
Species	Indicator Status	Quadrat Percent Areal Cover Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	$\bar{X}$	Rank[4]
17 *. Rough-stem goldenrod	FAC	—	—	~~25~~10	—	—	—	—		2.5	10
18 *. Joe Pye weed	FACW	—	—	—	20	—	—	—	—	5	5.5
19 *. Fireset	OBL	—	—	—	5	—	—	—	—	1.3	14
20 *. Rough-leaf goldenrod	OBL	—	—	—	10	—	—	—	—	2.5	10
21 *. Panicled aster	FACW	—	—	—	5	—	—	—	—	1.3	14
6.		—	—	—	—	—	—	—	—	—	
7.		—	—	—	—	—	—	—	—	—	
8.		—	—	—	—	—	—	—	—	—	
9.		—	—	—	—	—	—	—	—	—	
10.		—	—	—	—	—	—	—	—	—	
11.		—	—	—	—	—	—	—	—	—	
12.		—	—	—	—	—	—	—	—	—	
13.		—	—	—	—	—	—	—	—	—	
14.		—	—	—	—	—	—	—	—	—	
15.		—	—	—	—	—	—	—	—	—	
16.		—	—	—	—	—	—	—	—	—	

Total Cover ___[2]
Dominance Threshold Number Equals 50% x Total Cover ___[2]

Total of Averages ($\bar{X}$'s) 168.95
Dominance Threshold Number Equals 50% x Total of Averages ($\bar{X}$'s) 84.48

[1] This data form can be used for both the Plant Community Transect Sampling Approach and the Fixed Interval Transect Sampling Approach.
[2] These entries are only applicable to the Fixed Interval Transect Sampling Approach which uses only one quadrat per sampling point along a transect.
[3] These entries are only applicable to the Plant Community Transect Sampling Approach which uses multiple quadrats per sampling point along a transect.
[4] To determine the dominants, first rank the species by their cover (or mean cover). Then cumulatively sum the cover (mean cover) of the ranked species until 50% of the total for all species cover (mean cover) is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* additional species having 20% of the total cover (mean cover) value should be considered dominants and marked with an asterisk.

SPECIES-AREA CURVE [1]



[1] Plot the cumulative number of species against the quadrats (e.g., if quadrat #1 has 3 species and quadrat #2 has any, all, or none of those species but has 2 new species, then 5 cumulative species should be plotted against quadrat #2). The number of quadrats sufficient to adequately survey the understory will corresdpond to the point on the curve where it first levels off and remains essentially level.

[2] Specify size of sample quadrat: _____

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Shrubs and Woody Vines)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Shrub Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. speckled alder	FACW+	5	1	3	1
2. black willow	FACW+	5	1	3	1
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Woody Vine Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1.					
2.					
3. N/A					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

DATA FORM
COMPREHENSIVE ONSITE DETERMINATION METHOD
QUADRAT SAMPLING PROCEDURE
(Saplings & Trees)

Field Investigator(s): _____ Date: _____
Project/Site: _____ State: _____ County: _____
Applicant/Owner: _____
Transect # _____ Plot # _____ Vegetation Unit #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Sapling Species	Indicator Status	Percent Areal Cover	Cover[1] Class	Midpoint[1] of Cover Class	Rank[2]
1. N. white cedar	FACW	20	3	20.5	1
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Sum of Midpoints _____
Dominance Threshold Number Equals 50% x Sum of Midpoints _____

Individual Tree Species	Indicator Status	DBH (inches)	Basal Area (BA) Per Tree (sq ft)	BA Per Species (sq ft)	Rank[2]
1. N. white cedar	FACW				
2.					
3. NA					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					

Total Basal Area of All Species Combined _____
Dominance Threshold Number Equals 50% x Total Basal Area _____

[1] Cover classes (midpoints): T<1% (none); 1 = 1-5% (3.0); 2 = 6-15% (10.5); 3 = 16-25% (20.5); 4 = 26-50% (38.0); 5 = 51-75% (63.0); 6 = 76-95% (85.5); 7 = 96-100% (98.0).

[2] To determine the dominants, first rank the species by their midpoints. Then cumulatively sum the midpoints of the ranked species until 50% of the total for all species midpoints is immediately exceeded. All species contributing to that cumulative total (the dominance threshold number) *plus* any additional species having 20% of the total midpoint value should be considered dominants and marked with an asterisk.

PREVALENCE INDEX WORKSHEET

LOCATION _____ DATE _____ EVALUATOR _____

HYDRIC UNIT NAME _____ TRANSECT NO. _____

Plant Species	Frequency of Occurrence Total for Each Species	Frequency of Occurrence of Identified Plants with Known Indicator Status: F_o Obligate	F_{fw} Facult. Wet.	F_f Facult.	F_{fu} Facult. Upland	F_u Upland
Total occurrence for all plant species						
Total occurrences ID'd with known indicator status						
E.I. value		1	2	3	4	5

$$\frac{\text{Total occurrences identified with known indicator status}}{\text{Total occurrence for all plant species}} = \%\ \text{valid occurrences}$$

$$PI_i = \frac{(1F_o) + (2F_{fw}) + (3F_f) + (4F_{fu}) + (5F_u)}{(F_o + F_{fw} + F_f + F_{fu} + F_u)}$$

Appendix C

Analytical Results

TABLE C-1 SUMMARY OF SURFACE WATER ANALYTICAL RESULTS FOR SAMPLES COLLECTED AT GROUNDWATER SEEPS WITHIN THE FEN, NOVEMBER 2003

Parameter	Units	Minimum	Maximum	Mean	N
LEACHATE INDICATOR					
Alkalinity (as CaCO3)	µg/L	240,000	447,000	388,750	4
Ammonia-Nitrogen	µg/L	1,300	2,900	2,200	4
BOD 5	µg/L	6,300	17,000	11,100	3
Bromide	µg/L	240	300	270	2
Chemical Oxygen Demand	µg/L	32,200	518,000	161,500	4
Chloride, Total	µg/L	4,300	12,900	7,850	4
Color	PCU	50	10,000	3,087.5	4
Nitrate-nitrogen	µg/L	210	790	380	4
Nitrite nitrogen	µg/L	16	41	27.5	4
Nitrite-nitrate nitrogen	µg/L	230	820	407.5	4
Sulfate, Total	µg/L	114,000	278,000	166,250	4
Total Dissolved Solids	µg/L	586,000	686,000	645,500	4
Total Hardness (as CaCO3)	µg/L	600,000	1,000,000	712,500	4
Total Kjeldahl Nitrogen	µg/L	3,200	6,700	4,100	4
Total Organic Carbon	µg/L	5,700	6,900	6,225	4
Turbidity	NTU	1	11.8	6.1	4
METALS					
Aluminum	µg/L	84.2	14,100	3,622.5	4
Arsenic	µg/L	4.6	96.8	39.7	4
Barium	µg/L	140	269	210	4
Beryllium	µg/L	0.77	0.77	0.77	1
Calcium	µg/L	178,000	235,000	214,000	4
Chromium	µg/L	2.4	18.6	10.5	2
Cobalt	µg/L	3.6	43.4	19.5	4
Copper	µg/L	2.4	58.1	16.6	4
Iron	µg/L	1,910	120,000	56,302.5	4
Lead	µg/L	96	96	96	1
Magnesium	µg/L	9,620	10,900	10,280	4
Manganese	µg/L	500	5,700	1,841	4
Mercury	µg/L	0.29	0.29	0.29	1
Nickel	µg/L	20.7	57.1	36.03	3
Potassium	µg/L	6,400	10,500	9,202.5	4
Selenium	µg/L	3.6	10.5	6.6	3
Silver	µg/L	2.1	2.1	2.1	1
Sodium	µg/L	3,920	19,700	10,577.5	4
Tin	µg/L	4.7	10.7	7.7	2
Vanadium	µg/L	34.2	34.2	34.2	1
Zinc	µg/L	14.5	281	88.3	4
HERBICIDES					
2,4,5-TP (Silvex)	µg/L	0.17	0.17	0.17	1
DCAA	µg/L	9.4	10	9.7	4

Parameter	Units	Minimum	Maximum	Mean	N
PESTICIDES/POLYCHLORINATED BIPHENYLS					
Decachlorobiphenyl	µg/L	0.19	0.31	0.255	4
Tetrachloro-m-xylene	µg/L	0.31	0.34	0.325	4
SEMIVOLATILE ORGANIC COMPOUNDS					
2,4,6-Tribromophenol	µg/L	55	61	58	4
2-Fluorobiphenyl	µg/L	49	56	52.5	4
2-Fluorophenol	µg/L	42	51	47.5	4
Diethylphthalate	µg/L	0.5	0.5	0.5	1
VOLATILE ORGANIC COMPOUNDS					
1,2,4-Trichlorobenzene	µg/L	1.8	1.8	1.8	1
1,2,4-Trimethylbenzene	µg/L	1	1	1	1
1,4-Dichlorobenzene	µg/L	1.9	5.6	3.1	4
Acetone	µg/L	2.3	2.9	2.6	4
Bromofluorobenzene	µg/L	48	53	51.3	4
Chlorobenzene	µg/L	2.8	2.8	2.8	1
Isobutyl Alcohol	µg/L	42	42	42	1

FORMER GRIFFISS AIR FORCE BASE
FEN SAMPLING ANALYTICAL RESULTS
OCTOBER 2003

Sample ID **LF1-DUP-1003**

CAS Number	Analyte	Value	Qualifier	Units
HERBICIDES				
19719-28-9	DCAA	9.2		ug/L
LEACHATE INDICATOR				
N/A	Alkalinity (as CaCO3)	416000		ug/L
N/A	Ammonia-Nitrogen	2600		ug/L
N/A	Chemical Oxygen Demand	44800		ug/L
N/A	Chloride, Total	4500		ug/L
N/A	Sulfate, Total	131000		ug/L
N/A	Total Dissolved Solids	636000		ug/L
N/A	Total Hardness as CaCO3	700000		ug/L
N/A	Total Kjeldahl Nitrogen	3200		ug/L
N/A	Total Organic Carbon	6100		ug/L
N/A	Turbidity (NTU)	10.6		NTU
N/A	Nitrite-nitrate nitrogen	190		ug/L
N/A	Nitrate-nitrogen	180		ug/L
N/A	Nitrite nitrogen	13	J	ug/L
N/A	Color	1000		PCU
METALS				
7429-90-5	Aluminum	89.4	B	ug/L
7440-38-2	Arsenic	80		ug/L
7440-39-3	Barium	248		ug/L
7440-70-2	Calcium	206000		ug/L
7440-48-4	Cobalt	10.7	B	ug/L
7440-50-8	Copper	4	B	ug/L
7439-89-6	Iron	72900		ug/L
7439-95-4	Magnesium	9910		ug/L
7439-96-5	Manganese	547		ug/L
7440-02-0	Nickel	16.3	B	ug/L
7440-09-7	Potassium	10200		ug/L
7782-49-2	Selenium	5.6		ug/L
7440-23-5	Sodium	10100		ug/L
7440-31-5	Tin	5.2	B	ug/L
7440-66-6	Zinc	14.4	B	ug/L
PESTICIDES				
2051-24-3	Decachlorobiphenyl	0.31		ug/L
877-09-8	Tetrachloro-m-xylene	0.37		ug/L
SVOCS				
118-79-6	2,4,6-Tribromophenol	52		ug/L
321-60-8	2-Fluorobiphenyl	47		ug/L
367-12-4	2-Fluorophenol	42		ug/L
84-66-2	Diethylphthalate	0.55	J	ug/L
VOCS				
106-46-7	1,4-Dichlorobenzene	4.9	J	ug/L
67-64-1	Acetone	2.1	J	ug/L
460-00-4	Bromofluorobenzene	52		ug/L

Sample ID **LF1-L1-1003**

CAS Number	Analyte	Value	Qualifier	Units
HERBICIDES				
19719-28-9	DCAA	9.4		ug/L
LEACHATE INDICATOR				
N/A	Alkalinity (as CaCO3)	432000		ug/L
N/A	Ammonia-Nitrogen	2900		ug/L
N/A	Chemical Oxygen Demand	53100		ug/L
N/A	Chloride, Total	5100		ug/L
N/A	Sulfate, Total	146000		ug/L
N/A	Total Dissolved Solids	686000		ug/L
N/A	Total Hardness as CaCO3	620000		ug/L
N/A	Total Kjeldahl Nitrogen	3300		ug/L
N/A	Total Organic Carbon	5700		ug/L
N/A	Turbidity (NTU)	5.9		NTU
N/A	BOD 5	17000		ug/L
N/A	Nitrite-nitrate nitrogen	230		ug/L
N/A	Nitrate-nitrogen	210		ug/L
N/A	Nitrite nitrogen	16	J	ug/L
N/A	Color	10000		PCU
METALS				
7429-90-5	Aluminum	84.2	B	ug/L
7440-38-2	Arsenic	96.8		ug/L
7440-39-3	Barium	269		ug/L
7440-70-2	Calcium	214000		ug/L
7440-48-4	Cobalt	14.3	B	ug/L
7440-50-8	Copper	2.4	B	ug/L
7439-89-6	Iron	86800		ug/L
7439-95-4	Magnesium	10900		ug/L
7439-96-5	Manganese	576		ug/L
7440-02-0	Nickel	20.7	B	ug/L
7440-09-7	Potassium	10500		ug/L
7782-49-2	Selenium	5.7		ug/L
7440-23-5	Sodium	10300		ug/L
7440-31-5	Tin	4.7	B	ug/L
7440-66-6	Zinc	14.5	B	ug/L
PESTICIDES				
2051-24-3	Decachlorobiphenyl	0.19		ug/L
877-09-8	Tetrachloro-m-xylene	0.33		ug/L
SVOCS				
118-79-6	2,4,6-Tribromophenol	61		ug/L
321-60-8	2-Fluorobiphenyl	56		ug/L
367-12-4	2-Fluorophenol	51		ug/L
84-66-2	Diethylphthalate	0.5	J	ug/L
VOCS				
106-46-7	1,4-Dichlorobenzene	5.6		ug/L
67-64-1	Acetone	2.9	J	ug/L
460-00-4	Bromofluorobenzene	53		ug/L

Sample ID **LF1-L2-1003**

CAS Number	Analyte	Value	Qualifier	Units
HERBICIDES				
19719-28-9	DCAA	9.6		ug/L
LEACHATE INDICATOR				
N/A	Alkalinity (as CaCO3)	240000		ug/L
N/A	Ammonia-Nitrogen	1300		ug/L
N/A	Chemical Oxygen Demand	518000		ug/L
N/A	Chloride, Total	9100		ug/L
N/A	Sulfate, Total	278000		ug/L
N/A	Total Dissolved Solids	640000		ug/L
N/A	Total Hardness as CaCO3	630000		ug/L
N/A	Total Kjeldahl Nitrogen	6700		ug/L
N/A	Total Organic Carbon	6900		ug/L
N/A	Turbidity (NTU)	11.8		NTU
N/A	BOD 5	6300		ug/L
N/A	Nitrite-nitrate nitrogen	260		ug/L
N/A	Nitrate-nitrogen	240		ug/L
N/A	Nitrite nitrogen	20	J	ug/L
N/A	Color	1300		PCU
METALS				
7429-90-5	Aluminum	14100		ug/L
7440-38-2	Arsenic	43.1		ug/L
7440-39-3	Barium	223		ug/L
7440-41-7	Beryllium	0.77	B	ug/L
7440-70-2	Calcium	229000		ug/L
7440-47-3	Chromium	18.6		ug/L
7440-48-4	Cobalt	43.4	B	ug/L
7440-50-8	Copper	58.1		ug/L
7439-89-6	Iron	120000		ug/L
7439-92-1	Lead	96		ug/L
7439-95-4	Magnesium	10300		ug/L
7439-96-5	Manganese	5700		ug/L
7439-97-6	Mercury	0.29		ug/L
7440-02-0	Nickel	30.3	B	ug/L
7440-09-7	Potassium	6400		ug/L
7782-49-2	Selenium	10.5		ug/L
7440-22-4	Silver	2.1	B	ug/L
7440-23-5	Sodium	3920	B	ug/L
7440-31-5	Tin	10.7	B	ug/L
7440-62-2	Vanadium	34.2	B	ug/L
7440-66-6	Zinc	281		ug/L
PESTICIDES				
2051-24-3	Decachlorobiphenyl	0.24		ug/L
877-09-8	Tetrachloro-m-xylene	0.31		ug/L
SVOCS				
118-79-6	2,4,6-Tribromophenol	55		ug/L
321-60-8	2-Fluorobiphenyl	55		ug/L
367-12-4	2-Fluorophenol	50		ug/L
VOCS				
106-46-7	1,4-Dichlorobenzene	1.9	J	ug/L
67-64-1	Acetone	2.9	J	ug/L
460-00-4	Bromofluorobenzene	52		ug/L

Sample ID **LF1-LL1-1003**

CAS Number	Analyte	Value	Qualifier	Units
HERBICIDES				
19719-28-9	DCAA	10		ug/L
LEACHATE INDICATOR				
N/A	Alkalinity (as CaCO3)	436000		ug/L
N/A	Ammonia-Nitrogen	2700		ug/L
N/A	Bromide	300		ug/L
N/A	Chemical Oxygen Demand	42700		ug/L
N/A	Chloride, Total	12900		ug/L
N/A	Sulfate, Total	114000		ug/L
N/A	Total Dissolved Solids	586000		ug/L
N/A	Total Hardness as CaCO3	600000		ug/L
N/A	Total Kjeldahl Nitrogen	3200		ug/L
N/A	Total Organic Carbon	6100		ug/L
N/A	Turbidity (NTU)	5.5		NTU
N/A	BOD 5	10000		ug/L
N/A	Nitrite-nitrate nitrogen	320		ug/L
N/A	Nitrate-nitrogen	280		ug/L
N/A	Nitrite nitrogen	41	J	ug/L
N/A	Color	1000		PCU
METALS				
7429-90-5	Aluminum	145	B	ug/L
7440-38-2	Arsenic	14.2		ug/L
7440-39-3	Barium	208		ug/L
7440-70-2	Calcium	178000		ug/L
7440-48-4	Cobalt	3.6	B	ug/L
7440-50-8	Copper	3.2	B	ug/L
7439-89-6	Iron	16500		ug/L
7439-95-4	Magnesium	10300		ug/L
7439-96-5	Manganese	500		ug/L
7440-09-7	Potassium	9610		ug/L
7782-49-2	Selenium	3.6	B	ug/L
7440-23-5	Sodium	19700		ug/L
7440-66-6	Zinc	43.1		ug/L
PESTICIDES				
2051-24-3	Decachlorobiphenyl	0.28		ug/L
877-09-8	Tetrachloro-m-xylene	0.34		ug/L
SVOCS				
118-79-6	2,4,6-Tribromophenol	60		ug/L
321-60-8	2-Fluorobiphenyl	50		ug/L
367-12-4	2-Fluorophenol	47		ug/L
VOCS				
120-82-1	1,2,4-Trichlorobenzene	1.8	JB	ug/L
95-63-6	1,2,4-Trimethylbenzene	1	J	ug/L
106-46-7	1,4-Dichlorobenzene	3	J	ug/L
67-64-1	Acetone	2.5	J	ug/L
460-00-4	Bromofluorobenzene	52		ug/L
108-90-7	Chlorobenzene	2.8	J	ug/L
78-83-1	Isobutyl Alcohol	42	J	ug/L

Sample ID **LF1-LL2-1003**

CAS Number	Analyte	Value	Qualifier	Units
HERBICIDES				
93-72-1	2,4,5-TP (Silvex)	0.17	P	ug/L
19719-28-9	DCAA	9.7		ug/L
LEACHATE INDICATOR				
N/A	Alkalinity (as CaCO3)	447000		ug/L
N/A	Ammonia-Nitrogen	1900		ug/L
N/A	Bromide	240		ug/L
N/A	Chemical Oxygen Demand	32200		ug/L
N/A	Chloride, Total	4300		ug/L
N/A	Sulfate, Total	127000		ug/L
N/A	Total Dissolved Solids	670000		ug/L
N/A	Total Hardness as CaCO3	1000000		ug/L
N/A	Total Kjeldahl Nitrogen	3200		ug/L
N/A	Total Organic Carbon	6200		ug/L
N/A	Turbidity (NTU)	1		NTU
N/A	Nitrite-nitrate nitrogen	820		ug/L
N/A	Nitrate-nitrogen	790		ug/L
N/A	Nitrite nitrogen	33	J	ug/L
N/A	Color	50		PCU
METALS				
7429-90-5	Aluminum	161	B	ug/L
7440-38-2	Arsenic	4.6	B	ug/L
7440-39-3	Barium	140	B	ug/L
7440-70-2	Calcium	235000		ug/L
7440-47-3	Chromium	2.4	B	ug/L
7440-48-4	Cobalt	16.8	B	ug/L
7440-50-8	Copper	2.8	B	ug/L
7439-89-6	Iron	1910		ug/L
7439-95-4	Magnesium	9620		ug/L
7439-96-5	Manganese	588		ug/L
7440-02-0	Nickel	57.1		ug/L
7440-09-7	Potassium	10300		ug/L
7440-23-5	Sodium	8390		ug/L
7440-66-6	Zinc	14.5	B	ug/L
PESTICIDES				
2051-24-3	Decachlorobiphenyl	0.31		ug/L
877-09-8	Tetrachloro-m-xylene	0.32		ug/L
SVOCS				
118-79-6	2,4,6-Tribromophenol	56		ug/L
321-60-8	2-Fluorobiphenyl	49		ug/L
367-12-4	2-Fluorophenol	42		ug/L
VOCS				
106-46-7	1,4-Dichlorobenzene	2	J	ug/L
67-64-1	Acetone	2.3	J	ug/L
460-00-4	Bromofluorobenzene	48		ug/L

Note:

Bold italic = Analyte was detected above the NYS AWQS or guidance value.
N/A = Not applicable
U = Analyte was not detected
B;J = Analyte was detected, but concentration was below the laboratory reporting limit
E = Indicates an estimated value because of the presence of interference
P = This flag is used for a pesticide/Arcolor target analyte when there is greater than 25% difference for detected concentration between the two GC columns. The lower of the two values is reported on Form I and flagged with an "P"