



EEP Project Closeout Summary

Project ID & Status

Project Name/Number: **Grimesland Phase I I**
EEP ID: 155
County: Pitt
Project Type: Wetland Creation

Current Status: 5 Years of Monitoring complete

Project Setting

Basin: Tar Pam
 Physiographic Region: Inner Coastal Plain
 Ecoregion: Carolina Flatwoods
 USGS Hydro Unit: 03020103

Project Performers

DOT Project Transfer in 2005

Project Timeline

Milestone	Date
Construction completed	2003
Monitoring Year-1	2003-Feb
Monitoring Year-2	2004
Monitoring Year-3	2005
Monitoring Year-4	2006
Monitoring Year-5	2007

Project Restoration Components and Mitigation Assets

Wetland	Restoration Component	Asset Data				Wetland Type
		Level	Ratio	Acres	WMU	
	Bottomland Hardwood	C	0.33	48.8	16.3	BLH

Asset Summary

Level	Multip	Acres	WMU
C	0.33	48.8	16.3
		48.8	16.3

Standard Ratios

	Level	Ratio	Multiplier
Wetland	R	1	1.000
Wetland	E	2	0.500
Wetland	C	3	0.333
Wetland	P	5	0.200

The 550-acre **Grimesland Sand Pit Mitigation Site** is located in Pitt County near the community of Grimesland. The site is currently owned and mined by NCDOT. It is bounded on the north and the east by Grindle Creek, on the west by croplands and pine plantation, and on the south by the floodplain of the Tar River and the Tar River itself. The site includes two phases: Phase I was closed-out in 2007. The assets in Phase II are the creation of 48.8 acres of forested riverine wetlands (cypress-gum swamp and coastal plain bottomland hardwoods).

P1 = Priority I Restoration
 P2 = Priority II Restoration
 P3 = Priority III Restoration

R = Restoration
 E = Wetland Enhancement
 EI = Stream Enhancement I
 EII = Stream Enhancement II
 C = Wetland Creation
 P = Preservation

SMU = Stream Mitigation Units
 WMU = Wetland Mitigation Units
 P/I/E = Perennial, Intermittent, Ephemeral

Grimesland Site and Gauge Location

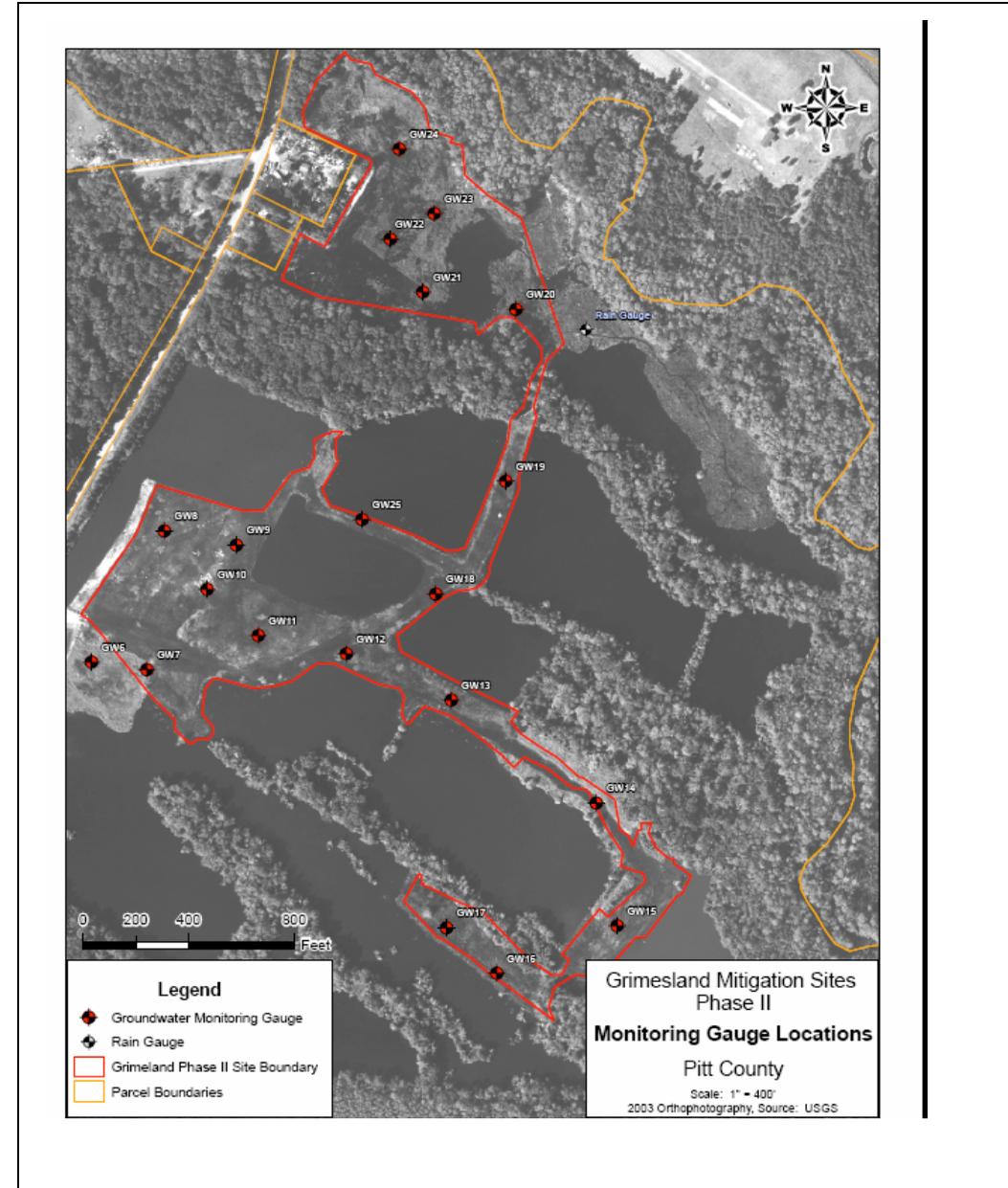
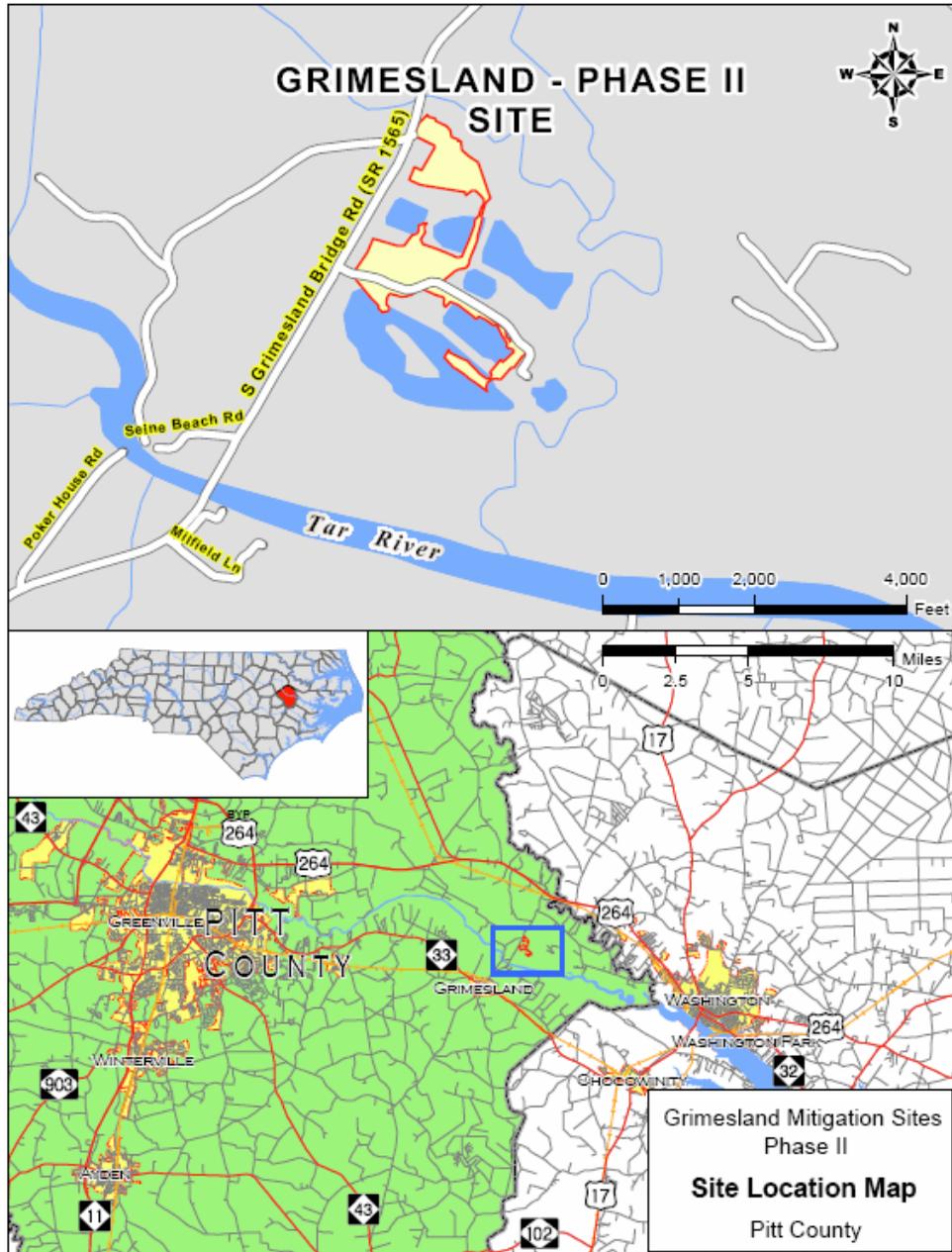


Figure 1

Table 1. 2003 Phase II Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 8%	8 – 12%	> 12.5%	Actual %	Success Dates
GSP-GW6+				✗	20.6	July 11-August 30
GSP-GW7+				✗	81.4	April 30-Nov 16
GSP-GW8+				✗	81.4	April 30-Nov 16
GSP-GW9+				✗	81.4	April 30-Nov 16
GSP-GW10+				✗	81.4	April 30-Nov 16
GSP-GW11+				✗	20.6	July 22-Sept 10
GSP-GW12+				✗	81.4	April 30-Nov 16
GSP-GW13+				✗	81.4	April 30-Nov 16
GSP-GW14+				✗	81.4	April 30-Nov 16
GSP-GW15+				✗	81.4	April 30-Nov 16
GSP-GW16+				✗	81.4	April 30-Nov 16
GSP-GW17+				✗	57.1	April 30-Sept 17
GSP-GW18+				✗	81.4	April 30-Nov 16
GSP-GW19+				✗	45.7	April 30-Aug 20
GSP-GW20+				✗	70	April 30-Oct 19
GSP-GW21+				✗	81.4	April 30-Nov 16
GSP-GW22+				✗	68.4	April 30-Oct 15
GSP-GW23+				✗	81.4	April 30-Nov 16
GSP-GW24+				✗	81.4	April 30-Nov 16
GSP-GW25+				✗	81.4	April 30-Nov 16

+ Gauge met the success criterion during an average rainfall month (March, June, and August).

Vegetative Sampling data from 2003

TABLE

Plot #	Baldcypress	Green Ash	Swamp Blackgum	Water Oak	Willow Oak	Overcup Oak	Sycamore	Total (Year 1)	Total (at planting)	Density (Trees/Acre)
1	6	10		6	3	19	1	45	50	612
2	4	5		1		5		15	31	329
3	2	1	5	2		1	4	15	31	329
4	12		9					21	22	649
5	23	4	5			3		35	45	529
6	3	10	1	1				15	26	392
7	1	6	7					14	40	238
AVERAGE TREE DENSITY										440

Table 1. 2004 Phase II Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 8%	8 – 12%	> 12.5%	Actual %	Success Dates
GSP-GW6+				X	32.4	March 15-June 2 June 5-July 15 Aug 13-Sept 24
GSP-GW7+				X	100	April 30-Nov 16
GSP-GW8+				X	100	April 30-Nov 16
GSP-GW9+				X	100	April 30-Nov 16
GSP-GW10+				X	100	April 30-Nov 16
GSP-GW11+				X	35.6	Aug 13-Nov 8
GSP-GW12+				X	100	April 30-Nov 16
GSP-GW13+				X	100	April 30-Nov 16
GSP-GW14+				X	100	April 30-Nov 16
GSP-GW15+				X	100	April 30-Nov 16
GSP-GW16+				X	100	April 30-Nov 16
GSP-GW17+				X	98	April 30-Nov 11
GSP-GW18+				X	100	April 30-Nov 16
GSP-GW19+				X	100	April 30-Nov 16
GSP-GW20+				X	100	April 30-Nov 16
GSP-GW21+				X	100	April 30-Nov 16
GSP-GW22+				X	33.6	April 30-May 20 Aug 26-Nov 16
GSP-GW23+				X	100	April 30-Nov 16
GSP-GW24+				X	54.7	April 30-July 27 Aug 26-Nov 16
GSP-GW25+				X	100	April 30-Nov 16

+ Gauge met the success criterion during an average rainfall month (February, April, May, August, September, October, and November).

Vegetative Sampling data from 2004

Table 2. Vegetation Monitoring Statistics

Plot #	Baldcypress	Green Ash	Swamp Blackgum	Water Oak	Willow Oak	Overcup Oak	Sycamore	Total (Year 2)	Total (at planting)	Density (Trees/Acre)
1	7	9		7	3	14	1	41	50	558
2	4	5		3		3		15	31	329
3	3		5	1	1	4		14	31	307
4	11		11					22	22	680
5	24	4	2			3		33	45	499
6	3	10						13	26	340
7	1	5	4					10	40	170
AVERAGE TREE DENSITY										412

Site Notes: Other species noted: black willow, *Juncus* sp., woolgrass, cattail, *Cyperus* sp., *Scirpus* sp., smartweed, volunteer sycamore, volunteer swamp blackgum, and various grasses. Standing water 6" – 12" deep in plot 7.

Table 1. 2005 Phase II Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 8%	8 – 12%	> 12.5%	Actual %	Success Dates
GSP-GW6+				X	19.8	March 15-May 2
GSP-GW7+				X	100	March 15-November 16
GSP-GW8+				X	95.6	March 15-July 26 July 29-September 3 September 13-November 16
GSP-GW9+				X	77.7	March 15-September 22
GSP-GW10+				X	94.3	March 15-July 24 July 29-September 3 September 12-November 16
GSP-GW11+				X	17.4	March 15-April 26
GSP-GW12+				X	100	March 15-November 16
GSP-GW13+				X	82.6	March 15-August 24 October 6-November 16
GSP-GW14+				X	100	March 15-November 16
GSP-GW15+				X	100	March 15-November 16
GSP-GW16+				X	100	March 15-November 16
GSP-GW17+				X	77.7	March 15-September 22
GSP-GW18+				X	100	March 15-November 16
GSP-GW19+				X	100	March 15-November 16
GSP-GW20+				X	95.5	March 15-May 29 June 10-November 16
GSP-GW21+				X	76.5	March 15-July 26 September 23-November 16
GSP-GW22+				X	99.2	March 15-July 21 July 23-November 16
GSP-GW23+				X	100	March 15-November 16
GSP-GW24+				X	100	March 15-November 16
GSP-GW25+				X	100	March 15-November 16

+ Gauge met the success criterion during an average rainfall month (March, April, May, July and September).

Vegetative Sampling data from 2005

Table 2. Vegetation Monitoring Statistics

Plot #	Baldcypress	Green Ash	Swamp Blackgum	Water Oak	Willow Oak	Overcup Oak	Sycamore	Total (Year 3)	Total (at planting)	Density (Trees/Acre)
1	7	8		11	3	14	1	44	50	598
2	4	5				2		11	31	241
3	3		3	3		3		12	31	263
4	11		7					18	22	556
5	24	7	4			3		38	45	544
6	3	10						13	26	340
7	1	5	4					10	40	170
AVERAGE TREE DENSITY										387

Site Notes: Other species noted: black willow, *Juncus* sp., woolgrass, cattail, *Cyperus* sp., *Scirpus* sp., smartweed, volunteer sycamore, volunteer swamp blackgum, and various grasses.

Table 1. 2006 Phase II Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 8%	8 – 12%	> 12.5%	Actual %	Success Dates
GSP-GW6				x	27.9	May 8-July 15
GSP-GW7				x	100	March 15-November 16
GSP-GW8				x	100	March 15-November 16
GSP-GW9				x	100	March 15-November 16
GSP-GW10				x	100	March 15-November 16
GSP-GW11		x			6.5	July 16-July 31
GSP-GW12				x	100	March 15-November 16
GSP-GW13				x	100	March 15-November 16
GSP-GW14				x	86.2	March 15-September 13
GSP-GW15				x	100	March 15-November 16
GSP-GW16				x	100	March 15-November 16
GSP-GW17				x	100	March 15-November 16
GSP-GW18				x	100	March 15-November 16
GSP-GW19				x	100	March 15-November 16
GSP-GW20				x	100	March 15-November 16
GSP-GW21				x	100	March 15-November 16
GSP-GW22				x	97.2	March 15-September 13
GSP-GW23				x	58.7	March 15-June 8 September 19-November 16
GSP-GW24				x	100	March 15-November 16
GSP-GW25				x	100	March 15-November 16

Vegetative Sampling data from 2006

Table 2. Vegetation Monitoring Statistics

Plot #	Baldcypress	Green Ash	Swamp Blackgum	Water Oak	Willow Oak	Overcup Oak	Sycamore	Total (Year 3)	Total (at planting)	Density (Trees/Acre)
1	7	5		10	2	14	1	39	50	530
2	3	5				2		10	31	219
3	3		2	3		2		10	31	219
4	11		6					17	22	525
5	24	5	3			3		35	45	529
6	3	9						12	26	314
7	1	6	4					11	40	187
AVERAGE TREE DENSITY										361

Site Notes: Other species noted: black willow, *Juncus* sp., woolgrass, cattail, *Cyperus* sp., *Scirpus* sp., smartweed, volunteer sycamore, volunteer swamp blackgum, and various grasses.

Vegetative Sampling data from 2007

Table 1. 2007 Phase II Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 8%	8 – 12%	> 12.5%	Actual %	Success Dates
GSP-GW6			x		8.9	March 15-April 5
GSP-GW7				x	28.3	March 15-May 23
GSP-GW8				x	42.5	March 15-June 27
GSP-GW9				x	67.6	March 15-August 28
GSP-GW10				x	54.3	March 15-July 26
GSP-GW11				x	31.6	March 15-May 31
GSP-GW12				x	100	March 15-November 16
GSP-GW13				x	99.6	March 15-November 15
GSP-GW14				x	76.9	March 24-July 15 September 1-November 15
GSP-GW15				x	100	March 15-November 16
GSP-GW16				x	96.4	March 24-November 16
GSP-GW17				x	99.6	March 15-November 15
GSP-GW18				x	71.7	March 15-September 7
GSP-GW19				x	64.0	March 15-August 19
GSP-GW20				x	100	March 15-November 16
GSP-GW21				x	80.2	March 15-August 29 September 14-October 23
GSP-GW22				x	78.1	March 24-August 30 September 15-October 17
GSP-GW23				x	83.8	March 15-August 29 September 14-October 23
GSP-GW24				x	65.6	March 24-September 1
GSP-GW25				x	69.6	March 15-September 2

Table 2. Vegetation Monitoring Statistics

Plot #	Baldcypress	Green Ash	Swamp Blackgum	Water Oak	Willow Oak	Overcup Oak	Sycamore	Total (Year 5)	Total (at planting)	Density (Trees/Acre)
1	2	6		10	2	10	1	31	50	421
2	4	4				1		9	31	197
3	3	1	2	4		1		11	31	241
4	11		6					17	22	525
5	22	5	3			3		33	45	498
6	3	9						12	26	313
7	1	6	3					10	40	170
AVERAGE TREE DENSITY										338

Site Notes: Other species noted: black willow, *Juncus* sp., woolgrass, cattail, *Cyperus* sp., *Scirpus* sp., smartweed, volunteer sycamore, volunteer swamp blackgum, and various grasses.

Grimesland Photo and Veg

Plot Locations

Photos taken Fall 2007



Picture 1



Picture 4



Picture 2



Picture 3



Picture 5



Summary of Gauge Data Monitoring Years 1-5

Monitoring Gauge	4-8%	8-12%	>12.5%	Monitoring Years
GW 6		Yr 5 only	X	1,2,3,4
GW7			X	1,2,3,4,5
GW8			X	1,2,3,4,5
GW9			X	1,2,3,4,5
GW10			X	1,2,3,4,5
GW11	Yr 4 only		X	1,2,3,5
GW12			X	1,2,3,4,5
GW13			X	1,2,3,4,5
GW14			X	1,2,3,4,5
GW15			X	1,2,3,4,5
GW16			X	1,2,3,4,5
GW17			X	1,2,3,4,5
GW18			X	1,2,3,4,5
GW19			X	1,2,3,4,5
GW20			X	1,2,3,4,5
GW21			X	1,2,3,4,5
GW22			X	1,2,3,4,5
GW23			X	1,2,3,4,5
GW24			X	1,2,3,4,5
GW25			X	1,2,3,4,5

Grimesland Phase II Vegetation Summary

Table 1.

Stem Counts Per Acre By Plot									
			Plots						
MY	CY	Ave	1	2	3	4	5	6	7
Y1	2003	440	45	15	15	21	35	15	14
Y2	2004	412	41	15	14	22	33	13	10
Y3	2005	387	44	11	12	18	38	13	10
Y4	2006	361	39	10	10	17	35	12	11
Y5	2007	338	31	9	11	17	33	12	10

Table 1 contains summary data that indicates the project has met the minimum vegetation success criteria for each of the five monitoring years with a final average of 338 stems per acre. The majority of the sampled species are: *Nyssa sylvatica* var. *biflora*, *Fraxinus pennsylvanica*, *Quercus phellos*, *Q. nigra*, *Q. lyrata*, *Taxodium distichum*, and *Plantanus occidentalis*. Other noted species include: *Juncus* sp. *Cyperus* sp. and *Salix nigra*.



2003 Photo 1



2007 Photo 2