"Simpson Tract"
Non-Riverine Wetland Restoration Project

Beaufort County, NC
Tar-Pamlico River Basin
(Cataloging Unit #03020104)

Annual Monitoring Report – Year 4
(Task 10)

NC EEP Contract #D05027-1

Prepared For:

North Carolina Department of Environment and Natural Resources
Ecosystem Enhancement Program
1652 Mail Service Center
Raleigh, NC 27699-1652

December 2011

Submitted By:

Wetlands Resource Center
3970 Bowen Road
Canal Winchester, Ohio 43110

Project Manager:
Cal Miller
Office: 614-864-7511
Cell: 614-327-7034
Email: wetlandresource@aol.com

Prepared By:

Land Management Group, Inc.
P.O. Box 2522
Wilmington, NC 28402

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Prior to project implementation, the Simpson Tract Property was managed for silvicultural production. The site consisted entirely of mono-culture pine stands with sparse hardwood colonization. Under contract with the EEP, Wetland Resource Center (WRC) restored 30.0 acres of non-riverine wetland which drain into the Pungo Creek (a tributary of the Pungo River) in Beaufort County, NC.

The entire 30.0 acre area has been planted with an appropriate mixture of tree and shrub species at an average density of 616 stems/acre. Planting was completed in February 2007. A total of fifteen (15) 0.10-acre permanent plots corresponding to a total of 1.5 acres (equivalent to 5% of the restoration area) were established throughout the project area. Annual monitoring is being conducted near the end of the growing season (September-October) for a period of five years. Vegetative planting will be deemed successful if survivorship of plantings and volunteers of desirable species meets or exceeds a target stem density of 320 stems/acre.

Annual vegetative monitoring was conducted on September 28-29, 2011. During this monitoring event a total of 1,497 woody stems were counted across the fifteen plots. The observed stems represented either planted species or acceptable volunteers. The woody stem count correlates to an average of 998 stems per acre, which provides a sufficient density to meet the stated success criteria. Hydrologic monitoring has been on-going since the initiation of restoration work. Restoration of appropriate wetland hydrologic conditions has been achieved in most areas as indicated by 5 out of 6 wells registering water table depths within 12" of the surface for durations exceeding 32 consecutive days (12.5% of the growing season). [It should be noted that the one well (well #5) that failed to exhibit wetland hydrology missed meeting success criteria by only one day (longest consecutive hydroperiod during growing season = 31 days).] This was due to a well malfunction. Note also that well # 5 exhibited wetland hydrology during Year 2 (during drought conditions).

The following monitoring report summarizes the project and includes more specific information related to the vegetative and hydrologic conditions throughout the site.

1.0 NARRATIVE

Introduction

As approved by the EEP, WRC implemented the restoration of 30.0 acres of non-riverine wetland habitat located at the headwaters of Pungo Creek, a fourth-order tributary of the Pungo River within the Tar-Pamlico River Basin (USGS 8-digit Hydrologic Unit 03020104; DWQ Subbasin 03-03-07). The project area is part of the "Simpson Tract" located approximately 10 miles south of Plymouth in Beaufort County, NC (refer to Figures 1-5). This tract was intensively managed for silvicultural production prior to implementation of restoration activities.

Mitigation Goals and Objectives

The proposed restoration project is intended to provide non-riverine wetland restoration as compensatory mitigation for wetland impacts authorized through the EEP. The objective of the project is to restore characteristic vegetation and wetland hydrology. Doing so will help to restore degraded and/or lost functions resulting from prior silvicultural practices. The primary functions of the restoration project are to provide surface water storage, nutrient uptake, and sediment retention. In addition, the project will provide ancillary benefits to wildlife by providing refuge for resident and migratory species via enhanced niche habitat and increased food-web support.

Pre-Construction Conditions

The 30-acre restoration area is part of a larger tract of land (1,391 acres). Approximately 950 acres have been determined to be non-jurisdictional ("non-wetlands") by the NRCS (USACE concurrence of this determination has also been provided in previous submittals to the EEP). The remaining acreage has been confirmed to be jurisdictional wetlands. The predominant land use of the tract (both jurisdictional and non-jurisdictional areas) is silvicultural production. Prior land use practices (including herbicide, pesticide, and fertilizer application) serve as potential contributors to decreased water quality of adjacent surface waters (i.e. ditches and 'blue-line' streams). The natural vegetative assemblage of the tract has been modified over the years via prescribed drainage improvements (i.e. ditching), bedding, and planting of loblolly pine (*Pinus taeda*). These silvicultural practices have resulted in a community dominated by pine in more mature stands outside of the proposed restoration area. Hardwood species characteristic of headwater swamp communities of the Coastal Plain are either absent entirely or occur only in sparse locations. Typical canopy species of an undisturbed area would include swamp tupelo (*Nyssa biflora*), bald cypress (*Taxodium distichum*), pond pine (*Pinus serotina*), and Atlantic white cedar (*Chamaecyparis thyoides*). Understory species typical of non-

riverine swamp forest communities include American titi (*Cyrilla racemiflora*), sweet bay (*Magnolia virginiana*), red bay (*Persea borbonia*), fetterbush (*Lyonia lucida*), red maple (*Acer rubrum*), and catbrier (*Smilax* species).

Project Implementation

Site preparation commenced in the fall of 2006. During this period, areas of invasive or non-target species were drum-chopped and bush-hogged. Following these activities, an herbicide was applied to reduce competition within the project area. A water soluble herbicide was used and applied by a licensed applicator to reduce impacts to the surrounding open water areas.

In order to re-establish the appropriate hydrologic conditions throughout the restoration area, a total of four (4) 50' long ditch plugs were installed in ditches draining from the project area. Prior to project construction, appropriate 401/404 authorization was received for placement of clay plugs within those ditches.

Earth work was conducted from February 20-21, 2007. Approximately 100 cubic yards of material was used to form the ditch plugs. Ditch plugs were installed at specified locations in accordance with the mitigation plan. Final grading was conducted in the plugged areas to allow for subsidence and compaction of the fill material. All areas that were disturbed by grading activities were seeded with an appropriate erosion control mix. Refer to the previously submitted mitigation plan for photographs of the initial post-construction conditions.

Site planting was completed on February 23, 2007. The planting of approximately 18,000 seedlings was supervised by LMG to ensure proper spacing and planting depths. LMG obtained a mix of hardwood and shrub seedlings which accurately represent the targeted headwater swamp community discussed in the approved restoration plan. Seedlings were planted on approximately 8' centers at a depth sufficient to cover the root collar throughout the project area. Following the planting activities, LMG inspected the project area to ensure that seedlings had been installed correctly. Table 1 provides additional information on the quantity and size of the planted species.

Supplemental planting was initiated in February 2009. This planting included approximately 15,000 bare root seedlings and 800 larger potted plants to offset mortality observed during Year 2 monitoring. Species such as bald cypress, black gum, and green ash were included within the supplemental planting. Table 2 provides additional information on the quantity and size of the planted species.

2.0 AS-BUILTS

As defined by the approved restoration plan, a total of fifteen (15) permanent monitoring plots were established, which corresponds to a total of 1.5 acres (equivalent to 5% of the restoration area). A total of six (6) automated wells (RDS, Inc. WM-40s) were also installed to monitor shallow groundwater hydrology and surface inundation within the restoration area. All six wells were paired with vegetation plots.

Two (2) additional wells were installed in reference areas located near the Van Swamp Gameland to the northeast of the project site. These reference sites were selected based on similarities in landscape position, hardwood species assemblages and soil types. Wells were installed in accordance with installation methods outlined in the Wetlands Regulatory Assistance Program (WRAP) Technical Note 00-02. Water levels are being recorded once daily. Data is downloaded from the wells every three months (i.e. once quarterly). Data from well downloads is compiled and graphically displayed to demonstrate the hydroperiods of monitored areas. Refer to the attached survey (Appendix D) of the wetland restoration area for the location and corresponding number of the permanent vegetative monitoring plots and paired hydrologic monitoring equipment on the site.

3.0 MONITORING PLAN

Annual monitoring is being conducted near the end of each growing season for a period of five years. Vegetative monitoring has been conducted at each of the fifteen (15) 0.10-acre permanent plots. Vegetative planting will be deemed successful if survivorship of plantings and volunteers of desirable species[1] meets or exceeds a target stem density of 320 stems/acre. Hydrologic monitoring will deemed successful if static water table at, or within, 12" of the soil surface for 12.5% of the growing season (equivalent to 32 days based upon SCS-established growing season dates) during periods of normal rainfall. Data from the three reference wells will also be included. Monitoring reports will be submitted annually to the EEP (by January 1 of each year). These reports will include results of vegetative monitoring and photographic documentation of site conditions. Monitoring reports will also identify any contingency measures that may need to be employed to remedy any site deficiencies. For instance, deer browse tubes and fencing may need to be used if evidence of significant herbivory or deer browse is observed. In addition, supplemental planting may be necessary in areas of reduced survivorship.

4.0 MONITORING RESULTS (YEAR 4)

Vegetation Monitoring

Monitoring of the on-site vegetation was conducted on September 28-29, 2011. A total of 1,533 stems were counted throughout the fifteen plots, which correlates to an average of 1,022 stems/acre within the project area (Table 3). Wax myrtle (*Morella cerifera*) was the most abundant planted woody species, with a total of 98 individuals. Other planted species such as fetterbush (*Lyonia lucida*), red bay (*Persea borbonia*), and bald cypress (*Taxodium distichum*) were also prevalent within the monitored plots. Overall, each of the fifteen plots surpassed the minimum success criteria of 320 stems/acre during the Year 4 monitoring event. However, stem density decreased slightly from Year 3. The decrease in observed stem density is likely due to typical mortality associated with recent planting (supplemental planting conducted in February 2009) and drought conditions associated with the early part of the 2011 growing season.

In addition to the supplemental plantings, observed stem densities within the plots were supported by the success of acceptable volunteer species such as loblolly bay (*Gordonia lasianthus*), gallberry (*Ilex glabra*), and sweet pepperbush (*Clethra alnifolia*). Several of these individuals now exceed 3' in height and will likely continue develop as co-dominants within the shrub layer. The growth of these individuals may also provide valuable shelter for the planted species susceptible to deer herbivory.

Refer to Appendix A for photographs of current site conditions and Appendix B for information regarding individual plot totals.

Hydrologic Monitoring

Monitoring of water table depths has been conducted throughout 2011 (Appendix C). Five of the six monitoring wells documented water tables within 12" of the surface for at least 62 consecutive days between March 14th and November 17th, 2011 (Table 4). This period represents 25% of the growing season in Beaufort County. Several of the wells exhibited water table depths within 12" of the surface for an even longer duration, with a maximum of 89 consecutive days. The remaining well #5 would have readily met the hydrologic success criterion as it tracked very similar to well #6. However, during the early growing season, well maintenance was performed that required a pump-out. Prior to this, the well exhibited groundwater levels within 12" of the soil surface for 24 consecutive days. After the maintenance was performed, the well exhibited wetland hydrology for an additional 31 consecutive days. Thus the two periods represent 22% of the growing season.

[1] Desirable species are considered as noninvasive species characteristic of non-riparian wetland.

As in Year 3, groundwater levels exhibited a discernable increase following individual precipitation events greater than 0.25". Discharge rates following these events were found to be gradual, which is consistent with very poorly drained soil series. Note that precipitation totals during a large portion of the growing season were below the 30% normal rainfall distribution provided in the WETS data tables. Totals peaked above the normal levels during late August before returning normal in late September.

Reference monitoring well #11 exhibited a water table within 12" of the soil surface for 82 consecutive days during the late portion of the growing season of 2011, thus meeting jurisdictional hydrology criteria. Data collected from monitoring well #10 (reference) during the early portion of the growing season of 2011 did not meet jurisdictional criteria for hydrology. Unfortunately, this well was destroyed by machinery sometime between September 29, 2011 and December 6, 2011. Data from the late part of the growing season after September 29 was not able to be downloaded.

5.0 CONCLUSION

WRC has completed the implementation of 30.0 acres of non-riverine restoration located in TAR-7 of the lower Tar-Pamlico Basin. At the end of Year 4 monitoring, the vegetative success criteria has been met and the site appears to be progressing towards the target headwater swamp forest community. Increased precipitation during much of 2009 and the later part of the 2011 growing season appear to have beneficially affected hydrologic conditions and reduced the negative effects of the persistent and severe drought of 2007 and 2008. Hydrologic conditions since project construction are characteristic of these systems as water table depths in most areas occur at or near the surface for significant durations during the growing season. It is anticipated that similar durations will be observed during the remaining monitoring period, ensuring the restoration of the target wetland functions throughout the site. The reversion of land previously managed for silvicultural purposes to wetlands will decrease source nutrient loading and concurrently increase nutrient removal capacity. In addition, the project will provide ancillary benefits to aquatic and wildlife habitat via enhanced niche habitat and increased food-web support. By doing so, the proposed project will help to effectively mitigate for authorized loss of wetlands within the Tar-Pamlico Basin.

TABLES

Table 1. Listed of Planted Species (February 2007)

Species	# planted	(% of total)
Bald cypress (*Taxodium distichum*)	4,000	21.6%
White Cedar (*Chamaemycyparis thyoides*)	2,500	13.5%
Black Gum (*Nyssa sylvatica*)	5,000	27.0%
Red Bay (*Persea borbonia*)	3,000	16.2%
Fetterbush (*Lyonia lucida*)	1,000	5.4%
Sweet Bay (*Magnolia virginiana*)	2,000	10.8%
Wax Myrtle (*Myrica cerifera*)	1,000	5.4%
Total Plants	**18,500**	

Table 2. Listed of Planted Species - Supplemental Planting (February 2009)

Non-Riverine Wetland	**Bare Root Seedlings**	
Species	**# planted**	**Size**
Bald cypress *(Taxodium distichum)*	4,500	1'-2'
Black Gum *(Nyssa sylvatica)*	4,500	1'-2'
Pond Pine *(Pinus serotina)*	3,000	1'-2'
Green Ash *(Fraxinus pennsylvanica)*	3,600	1'-2'
Total	**15,600**	
	Potted Trees	
Species	**# planted**	**Size**
Bald cypress *(Taxodium distichum)*	246	4'-6'
Sweet Bay *(Magnolia virginiana)*	130	2'-4'
White Cedar *(Chamaemycyparis thyoides)*	113	2'-5'
Green Ash *(Fraxinus pennsylvanica)*	329	2'-5'
Total	**818**	

TABLE 3. Monitoring Plot Comparison (Year 4)
Simpson Wetland Restoration

SPECIES	PLOT 1	PLOT 2	PLOT 3	PLOT 4	PLOT 5	PLOT 6	PLOT 7	PLOT 8	PLOT 9	PLOT 10	PLOT 11	PLOT 12	PLOT 13	PLOT 14	PLOT 15	TOTAL
Atlantic White Cedar	2				1		2			1						6
Bald Cypress	12		1	5	16	5	8		4	3	1	1			3	59
Black Gum	1		1													2
Fetterbush	10	8		5				13	15		10	10		20		91
Green Ash								1			1					2
Pond Pine	11	4		7	4	2	5					6			1	40
Red Bay	2	10	33	1	4	1	2	13	2	3	9	5			2	87
Wax Myrtle	20	8	6	23		13	3	2	9	3		2			9	98
American Holly				3		2										5
Galberry		25			10		20			20		4	110	65	5	259
Highbush Blueberry		8	15								7	11				41
Inkberry										20						20
Loblolly Bay	15	75	60	20	30	80	47	49	60	48	20	33	24	10	45	616
Sweet Pepperbush					10			20		14		17	40	30	5	136
Zenobia						10			10		10	5				35
Red Maple	2	1			4					4	2	1	15			29
Sweet Gum	2			2				1							1	6
Water Oak									1							1
TOTAL	77	139	116	66	79	113	87	99	101	116	60	95	189	125	71	1533
Total Counted toward Success	73	138	116	64	75	113	87	98	100	112	58	94	174	125	70	1497
Stem Density (per ac)	730	1380	1160	640	750	1130	870	980	1000	1120	580	940	1740	1250	700	998

Planted Species

Volunteer Species (Desirable)

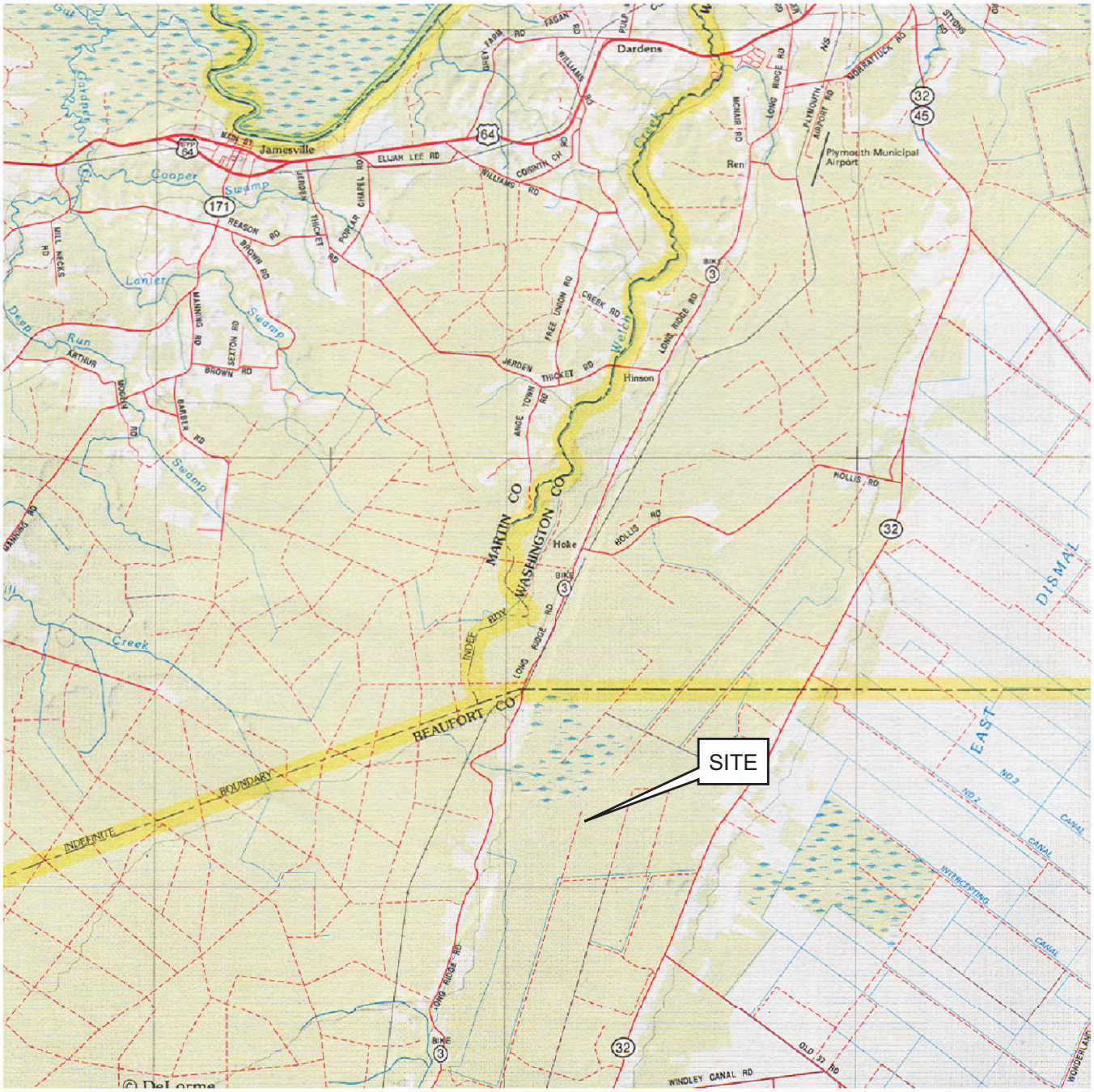
Volunteer Species Not Counted toward Success Criteria

Table 4. Year 4 - Well Data Comparison - All Monitoring Years

Well Number	Monitoring Year	Number Of Consecutive Days Meeting Wetland Hydrology Criteria	Dates Meeting Wetland Hydrology Criteria	Percentage of Growing Season	12.5% Success Criteria (32 Days)
1	Year 1 2007	214	3/14/07-10/13/07	86	Yes
	Year 2 2008	99	3/14/08-6/20/08	40	Yes
	Year 3 2009	126	3/14/09-7/17/09	51	Yes
	2010	96	3/14/10-6/17/10	39	Yes
	Year 4 2011	62	3/14/11-5/14/11	25	Yes
2	Year 1 2007	70	4/15/07-6/23/07	28	Yes
	Year 2 2008	86	3/14/08-6/7/08	35	Yes
	Year 3 2009	126	3/14/09-7/17/09	51	Yes
	2010	56	3/14/10-5/8/10	22	Yes
	Year 4 2011	68	3/14/11-5/20/11	27	Yes
3	Year 1 2007	105	3/14/07-6/26/07	42	Yes
	Year 2 2008	86	3/14/08-6/7/08	35	Yes
	Year 3 2009	108	3/14/09-6/29/09	43	Yes
	2010	51	9/28/10-11/17/10	20	Yes
	Year 4 2011	66	3/14/11-5/18/11	27	Yes
4	Year 1 2007	249	3/14/07-11/17/07	100	Yes
	Year 2 2008	100	3/14/08-6/21/08	40	Yes
	Year 3 2009	126	3/14/09-7/17/09	51	Yes
	2010	104	3/14/10-6/25/10	42	Yes
	Year 4 2011	89	3/14/11-6/10/11	36	Yes
5	Year 1 2007	44	4/15/07-5/28/07	18	Yes
	Year 2 2008	63	4/5/08-6/6/08	25	Yes
	Year 3 2009	16	6/6/09-6/21/09	6	No*
	2010	47	9/28/10-11/13/10	19	Yes
	Year 4 2011	31	4/11/11-5/11/11	12	No*
6	Year 1 2007	214	3/14/07-10/13/07	86	Yes
	Year 2 2008	100	3/14/08-6/21/08	40	Yes
	Year 3 2009	111	3/14/09-7/2/09	46	Yes
	2010	92	3/14/10-6/13/10	37	Yes
	Year 4 2011	62	3/14/11-5/14/11	25	Yes

*Well malfunction / repair

FIGURES



N

SCALE: 1" = 2 miles

Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 1.
Vicinity Map

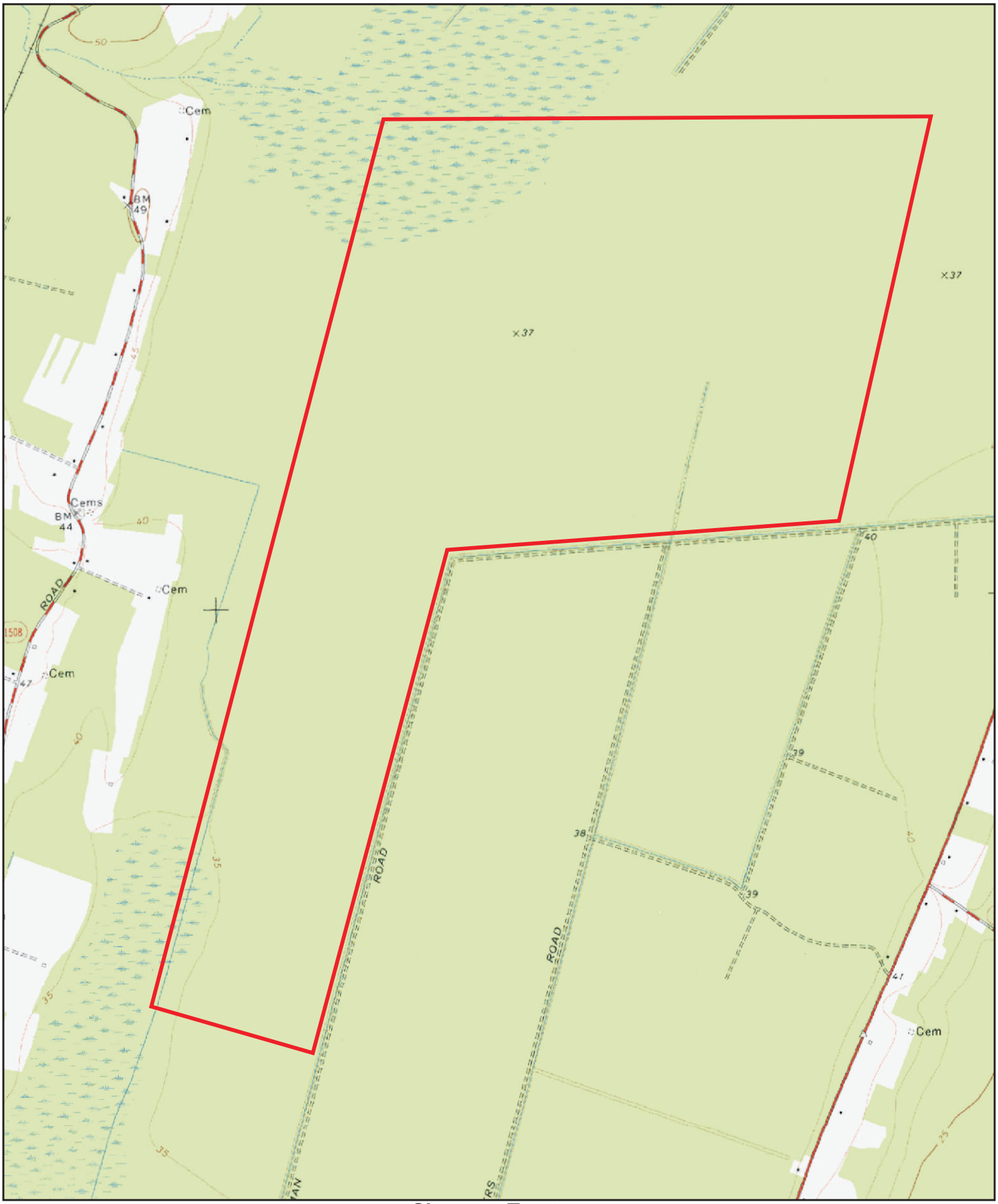
Delorme Gazetteer

Land Management Group, Inc.

Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 2.
USDA Soil Survey

Beaufort County
Land Management Group, Inc.



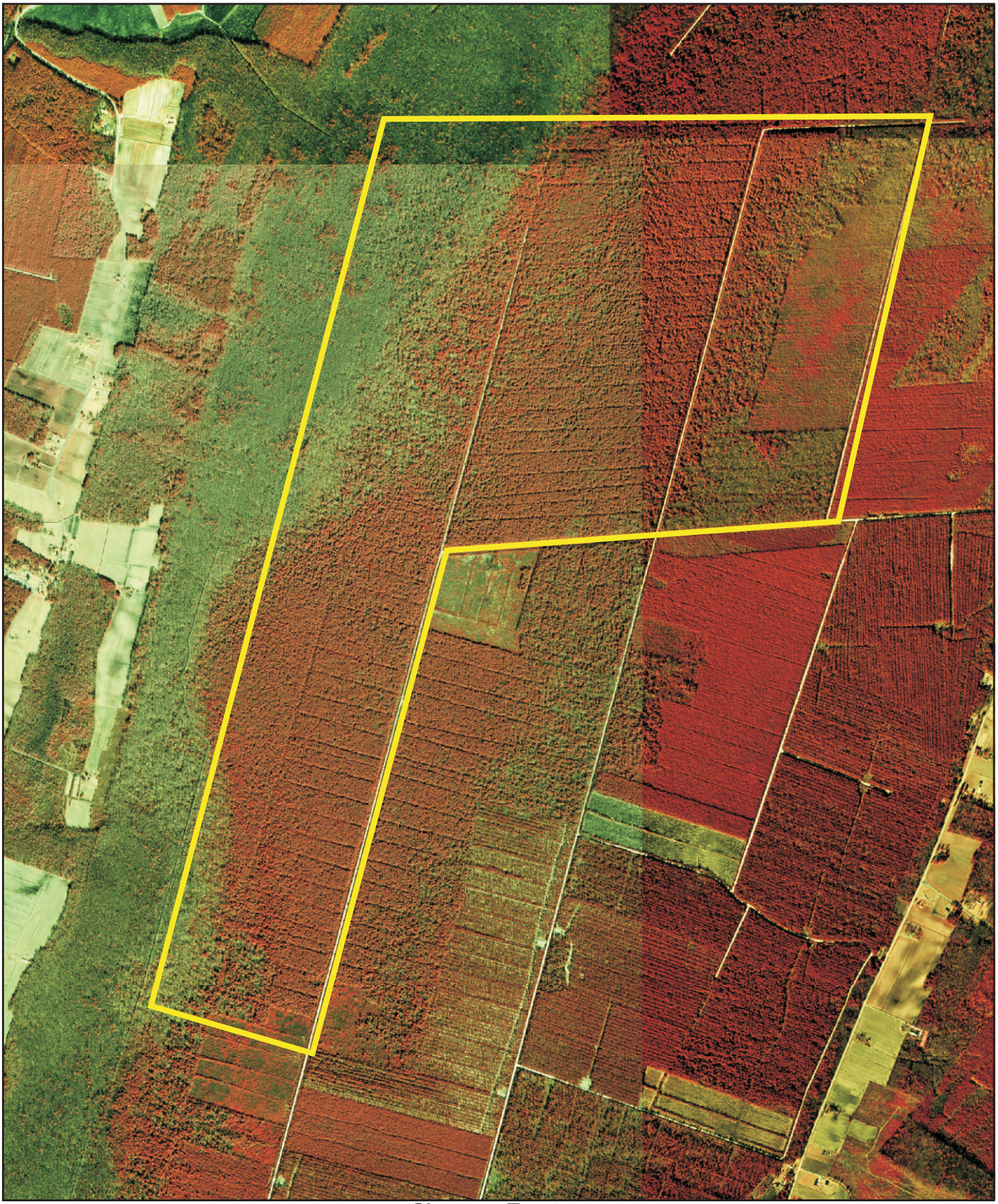
N

0 2,000 4,000 ft

Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 3.
USGS Topographic Map
Hoke, NC

Land Management Group, Inc.



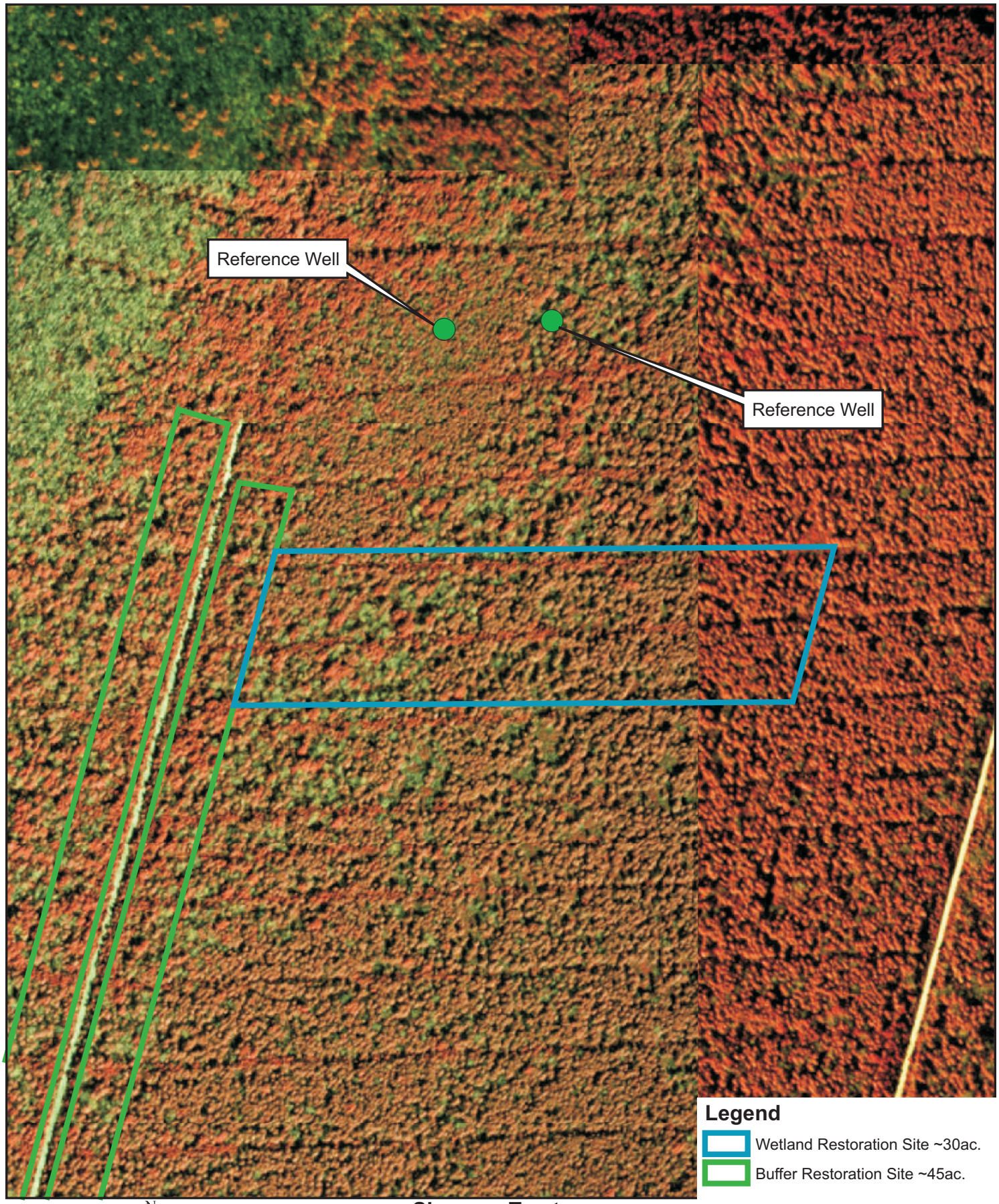
N

0 2,000 4,000 ft

Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 4.
1998 Aerial Photography

Land Management Group, Inc.



Simpson Tract
Tar-Pamlico River Basin
HUC: 03020104
Subbasin:03-03-07

Figure 5.
Wetland and Buffer
Restoration Plan

Land Management Group, Inc.

APPENDIX A. SITE PHOTOGRAPHS (2011)

(1)View of volunteer Loblolly Bay saplings in Plot 14

(2) View of current conditions at Plot 2

Simpson Tract
Wetland Restoration
Beaufort County, NC

LMG
LAND MANAGEMENT GROUP INC.
Environmental Consultants

Site Photographs
September 2011
(Annual Monitoring Year 4 of 5)

(3) View of planted Atlantic white cedar sapling and volunteers at Plot 2

(4) View of current conditions at Plot 1

(5) View of planted wax myrtles and volunteer loblolly bays

(6) View of planted pond pine seedlings in Plot 1

APPENDIX B.
INDIVIDUAL PLOT DATA SHEETS

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 1

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	4	1	Planted	4
Bald Cypress	T/SA	2	2	Planted	2
Bald Cypress	T/SA	1	3	Planted	1
Bald Cypress	T/SA	1	4	Planted	1
Bald Cypress	T/SA	3	6	Planted	3
Bald Cypress	T/SA	1	7	Planted	1
Atlantic White Cedar	T/SA	2	3	Planted	2
Black Gum	T/SA	1	4	Planted	1
Wax Myrtle	SH	2	3	Planted	2
Wax Myrtle	SH	1	5	Planted	1
Wax Myrtle	SH	5	6	Planted	5
Wax Myrtle	SH	1	7	Planted	1
Wax Myrtle	SH	5	8	Planted	5
Wax Myrtle	SH	6	10	Planted	6
Loblolly Bay	SH	5	1	Volunteer	5
Loblolly Bay	SH	5	2	Volunteer	5
Loblolly Bay	SH	3	3	Volunteer	3
Loblolly Bay	SH	1	5	Volunteer	1
Loblolly Bay	SH	1	6	Volunteer	1
Fetterbush	SH	5	1	Planted	5
Fetterbush	SH	5	3	Planted	5
Red Maple	T/SA	1	1	Volunteer	0
Red Maple	T/SA	1	2	Volunteer	0
Pond Pine	T/SA	3	1	Planted	3
Pond Pine	T/SA	1	2	Planted	1
Pond Pine	T/SA	3	3	Planted	3
Pond Pine	T/SA	3	4	Planted	3
Pond Pine	T/SA	1	5	Planted	1
Red Bay	SH	1	3	Planted	1
Red Bay	SH	1	5	Planted	1
Sweet Gum	T/SA	1	1	Volunteer	0
Sweet Gum	T/SA	1	3	Volunteer	0
	TOTAL SHRUBS	47		OBSERVED DENSITY (PER PLOT)	73
	TOTAL TREES OF PLANTED SPECIES	26		OBSERVED DENSITY (PER ACRE)	730
	TOTAL TREES OF VOLUNTEER SPECIES	4			
	TOTAL INDIVIDUALS	77			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 2

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Wax Myrtle	SH	2	3	Planted	2
Wax Myrtle	SH	2	5	Planted	2
Wax Myrtle	SH	3	6	Planted	3
Wax Myrtle	SH	1	10	Planted	1
Loblolly Bay	SH	35	1	Volunteer	35
Loblolly Bay	SH	30	2	Volunteer	30
Loblolly Bay	SH	10	3	Volunteer	10
Gallberry	SH	12	1	Volunteer	12
Gallberry	SH	13	2	Volunteer	13
Fetterbush	SH	8	1	Planted	8
Red Bay	SH	1	1	Planted	1
Red Bay	SH	1	2	Planted	1
Red Bay	SH	1	3	Planted	1
Red Bay	SH	1	4	Planted	1
Red Bay	SH	3	6	Planted	3
Red Bay	SH	1	8	Planted	1
Red Bay	SH	2	10	Planted	2
Blueberry	SH	3	1	Volunteer	3
Blueberry	SH	3	2	Volunteer	3
Blueberry	SH	2	3	Volunteer	2
Red Maple	T/SA	1	5	Volunteer	0
Pond Pine	T/SA	1	2	Planted	1
Pond Pine	T/SA	1	4	Planted	1
Pond Pine	T/SA	2	6	Planted	2
	TOTAL SHRUBS	134		OBSERVED DENSITY (PER ACRE)	138
	TOTAL TREES OF PLANTED SPECIES	4		OBSERVED DENSITY (PER ACRE)	1380
	TOTAL TREES OF VOLUNTEER SPECIES	1			
	TOTAL INDIVIDUALS	139			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 3

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	1	1	Planted	1
Black Gum	T/SA	1	1	Planted	1
Wax Myrtle	SH	1	3	Planted	1
Wax Myrtle	SH	3	4	Planted	3
Wax Myrtle	SH	2	5	Planted	2
Loblolly Bay	SH	20	1	Volunteer	20
Loblolly Bay	SH	26	2	Volunteer	26
Loblolly Bay	SH	14	3	Volunteer	14
Red Bay	SH	1	3	Planted	1
Red Bay	SH	5	4	Planted	5
Red Bay	SH	8	5	Planted	8
Red Bay	SH	6	6	Planted	6
Red Bay	SH	6	7	Planted	6
Red Bay	SH	7	10	Planted	7
Blueberry	SH	5	1	Volunteer	5
Blueberry	SH	5	2	Volunteer	5
Blueberry	SH	5	3	Volunteer	5
	TOTAL SHRUBS	114		OBSERVED DENSITY (PER PLOT)	116
	TOTAL TREES OF PLANTED SPECIES	2		OBSERVED DENSITY (PER ACRE)	1160
	TOTAL TREES OF VOLUNTEER SPECIES	0			
	TOTAL INDIVIDUALS	116			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 4

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	3	2	Planted	3
Bald Cypress	T/SA	2	3	Planted	2
Wax Myrtle	SH	1	1	Planted	1
Wax Myrtle	SH	1	3	Planted	1
Wax Myrtle	SH	1	4	Planted	1
Wax Myrtle	SH	6	5	Planted	6
Wax Myrtle	SH	1	6	Planted	1
Wax Myrtle	SH	2	7	Planted	2
Wax Myrtle	SH	11	8	Planted	11
Loblolly Bay	SH	13	2	Volunteer	13
Loblolly Bay	SH	6	3	Volunteer	6
Loblolly Bay	SH	1	4	Volunteer	1
American Holly	T/SA	1	1	Volunteer	1
American Holly	T/SA	2	2	Volunteer	2
Fetterbush	SH	5	2	Planted	5
Red Bay	SH	1	2	Planted	1
Pond Pine	T/SA	4	1	Planted	4
Pond Pine	T/SA	3	2	Planted	3
Sweet Gum	T/SA	1	2	Volunteer	0
Sweet Gum	T/SA	1	3	Volunteer	0
	TOTAL SHRUBS	49		OBSERVED DENSITY (PER PLOT)	64
	TOTAL TREES OF PLANTED SPECIES	12		OBSERVED DENSITY (PER ACRE)	640
	TOTAL TREES OF VOLUNTEER SPECIES	5			
	TOTAL INDIVIDUALS	66			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 5

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	8	1	Planted	8
Bald Cypress	T/SA	5	2	Planted	5
Bald Cypress	T/SA	2	3	Planted	2
Bald Cypress	T/SA	1	7	Planted	1
Atlantic White Cedar	T/SA	1	4	Planted	1
Red Bay	SH	1	1	Planted	1
Red Bay	SH	1	3	Planted	1
Red Bay	SH	1	4	Planted	1
Red Bay	SH	1	6	Planted	1
Loblolly Bay	SH	4	<1	Volunteer	4
Loblolly Bay	SH	10	1	Volunteer	10
Loblolly Bay	SH	8	2	Volunteer	8
Loblolly Bay	SH	7	3	Volunteer	7
Loblolly Bay	SH	1	4	Volunteer	1
Gallberry	SH	3	1	Volunteer	3
Gallberry	SH	4	2	Volunteer	4
Gallberry	SH	3	5	Volunteer	3
Sweet Pepperbush	SH	10	1	Volunteer	10
Pond Pine	T/SA	2	1	Planted	2
Pond Pine	T/SA	1	2	Planted	1
Pond Pine	T/SA	1	7	Planted	1
Red Maple	T/SA	4	1	Volunteer	0
	TOTAL SHRUBS	54		OBSERVED DENSITY (PER PLOT)	75
	TOTAL TREES OF PLANTED SPECIES	21		OBSERVED DENSITY (PER ACRE)	750
	TOTAL TREES OF VOLUNTEER SPECIES	4			
	TOTAL INDIVIDUALS	79			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 6

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	4	1	Planted	4
Bald Cypress	T/SA	1	2	Planted	1
Wax Myrtle	SH	1	1	Planted	1
Wax Myrtle	SH	1	3	Planted	1
Wax Myrtle	SH	2	4	Planted	2
Wax Myrtle	SH	1	5	Planted	1
Wax Myrtle	SH	3	6	Planted	3
Wax Myrtle	SH	2	7	Planted	2
Wax Myrtle	SH	1	8	Planted	1
Wax Myrtle	SH	2	10	Planted	2
Red Bay	SH	1	3	Volunteer	1
Loblolly Bay	SH	8	1	Volunteer	8
Loblolly Bay	SH	30	2	Volunteer	30
Loblolly Bay	SH	26	3	Volunteer	26
Loblolly Bay	SH	7	4	Volunteer	7
Loblolly Bay	SH	2	5	Volunteer	2
Loblolly Bay	SH	3	10	Volunteer	3
Loblolly Bay	SH	2	12	Volunteer	2
Loblolly Bay	SH	2	15	Volunteer	2
American Holly	T/SA	2	1	Volunteer	2
Pond Pine	T/SA	1	1	Planted	1
Pond Pine	T/SA	1	2	Planted	1
Zenobia	SH	10	2	Volunteer	10
	TOTAL SHRUBS	104		OBSERVED DENSITY (PER ACRE)	113
	TOTAL TREES OF PLANTED SPECIES	7		OBSERVED DENSITY (PER ACRE)	1130
	TOTAL TREES OF VOLUNTEER SPECIES	2			
	TOTAL INDIVIDUALS	113			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 7

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	6	1	Planted	6
Bald Cypress	T/SA	2	2	Planted	2
Atlantic White Cedar	T/SA	2	4	Planted	2
Wax Myrtle	SH	1	3	Planted	1
Wax Myrtle	SH	1	5	Planted	1
Wax Myrtle	SH	1	7	Planted	1
Loblolly Bay	SH	12	1	Volunteer	12
Loblolly Bay	SH	10	2	Volunteer	10
Loblolly Bay	SH	19	3	Volunteer	19
Loblolly Bay	SH	6	4	Volunteer	6
Gallberry	SH	7	2	Volunteer	7
Gallberry	SH	6	3	Volunteer	6
Gallberry	SH	7	4	Volunteer	7
Red Bay	SH	1	5	Planted	1
Red Bay	SH	1	8	Planted	1
Pond Pine	T/SA	2	1	Planted	2
Pond Pine	T/SA	1	2	Planted	1
Pond Pine	T/SA	2	3	Planted	2
	TOTAL SHRUBS	72		OBSERVED DENSITY (PER PLOT)	87
	TOTAL TREES OF PLANTED SPECIES	15		OBSERVED DENSITY (PER ACRE)	870
	TOTAL TREES OF VOLUNTEER SPECIES	0			
	TOTAL INDIVIDUALS	87			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 8

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Green Ash	T/SA	1	1	Planted	1
Wax Myrtle	SH	1	2	Planted	1
Wax Myrtle	SH	1	7	Planted	1
Loblolly Bay	SH	14	1	Volunteer	14
Loblolly Bay	SH	21	2	Volunteer	21
Loblolly Bay	SH	9	3	Volunteer	9
Loblolly Bay	SH	1	4	Volunteer	1
Loblolly Bay	SH	2	6	Volunteer	2
Loblolly Bay	SH	1	9	Volunteer	1
Loblolly Bay	SH	1	10	Volunteer	1
Red Bay	SH	1	2	Volunteer	1
Red Bay	SH	4	3	Volunteer	4
Red Bay	SH	2	4	Volunteer	2
Red Bay	SH	1	6	Volunteer	1
Red Bay	SH	2	7	Volunteer	2
Red Bay	SH	2	8	Volunteer	2
Red Bay	SH	1	10	Volunteer	1
Fetterbush	SH	3	1	Volunteer	3
Fetterbush	SH	6	2	Volunteer	6
Fetterbush	SH	2	3	Volunteer	2
Fetterbush	SH	2	4	Volunteer	2
Sweet Pepperbush	SH	4	1	Volunteer	4
Sweet Pepperbush	SH	2	2	Volunteer	2
Sweet Pepperbush	SH	12	3	Volunteer	12
Sweet Pepperbush	SH	2	6	Volunteer	2
Sweet Gum	T/SA	1	3	Volunteer	0
	TOTAL SHRUBS	97		OBSERVED DENSITY (PER PLOT)	98
	TOTAL TREES OF PLANTED SPECIES	1		OBSERVED DENSITY (PER ACRE)	980
	TOTAL TREES OF VOLUNTEER SPECIES	1			
	TOTAL INDIVIDUALS	99			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 9

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	4	1	Planted	4
Wax Myrtle	SH	2	2	Planted	2
Wax Myrtle	SH	1	3	Planted	1
Wax Myrtle	SH	1	5	Planted	1
Wax Myrtle	SH	1	7	Planted	1
Wax Myrtle	SH	2	8	Planted	2
Wax Myrtle	SH	2	10	Planted	2
Loblolly Bay	SH	10	1	Volunteer	10
Loblolly Bay	SH	21	2	Volunteer	21
Loblolly Bay	SH	20	3	Volunteer	20
Loblolly Bay	SH	7	4	Volunteer	7
Loblolly Bay	SH	2	6	Volunteer	2
Red Bay	SH	1	3	Planted	1
Red Bay	SH	1	7	Planted	1
Fetterbush	SH	3	1	Planted	3
Fetterbush	SH	5	2	Planted	5
Fetterbush	SH	5	3	Planted	5
Fetterbush	SH	2	6	Planted	2
Zenobia	SH	10	2	Volunteer	10
Water Oak	T/SA	1	7	Volunteer	0
	TOTAL SHRUBS	96		OBSERVED DENSITY (PER PLOT)	100
	TOTAL TREES OF PLANTED SPECIES	4		OBSERVED DENSITY (PER ACRE)	1000
	TOTAL TREES OF VOLUNTEER SPECIES	1			
	TOTAL INDIVIDUALS	101			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 10

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	3	1	Planted	3
Atlantic White Cedar	T/SA	1	4	Planted	1
Wax Myrtle	SH	1	5	Planted	1
Wax Myrtle	SH	2	6	Planted	2
Gallberry	SH	10	1	Volunteer	10
Gallberry	SH	10	2	Volunteer	10
Inkberry	SH	20	2	Volunteer	20
Sweet Pepperbush	SH	2	1	Volunteer	2
Sweet Pepperbush	SH	7	2	Volunteer	7
Sweet Pepperbush	SH	5	3	Volunteer	5
Loblolly Bay	SH	13	1	Volunteer	13
Loblolly Bay	SH	17	2	Volunteer	17
Loblolly Bay	SH	15	3	Volunteer	15
Loblolly Bay	SH	3	4	Volunteer	3
Red Bay	SH	1	3	Planted	1
Red Bay	SH	1	5	Planted	1
Red Bay	SH	1	6	Planted	1
Red Maple	T/SA	3	1	Volunteer	0
Red Maple	T/SA	1	2	Volunteer	0
	TOTAL SHRUBS	108		OBSERVED DENSITY (PER PLOT)	112
	TOTAL TREES OF PLANTED SPECIES	4		OBSERVED DENSITY (PER ACRE)	1120
	TOTAL TREES OF VOLUNTEER SPECIES	4			
	TOTAL INDIVIDUALS	116			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 11

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	1	1	Planted	1
Green Ash	T/SA	1	1	Planted	1
Loblolly Bay	SH	9	1	Volunteer	9
Loblolly Bay	SH	11	2	Volunteer	11
Red Bay	SH	2	3	Planted	2
Red Bay	SH	4	4	Planted	4
Red Bay	SH	1	5	Planted	1
Red Bay	SH	1	6	Planted	1
Red Bay	SH	1	7	Planted	1
Blueberry	SH	3	1	Volunteer	3
Blueberry	SH	3	2	Volunteer	3
Blueberry	SH	1	3	Volunteer	1
Fetterbush	SH	5	1	Planted	5
Fetterbush	SH	5	2	Planted	5
Zenobia	SH	10	1	Volunteer	10
Red Maple	T/SA	1	1	Volunteer	0
Red Maple	T/SA	1	2	Volunteer	0
	TOTAL SHRUBS	56		OBSERVED DENSITY (PER PLOT)	58
	TOTAL TREES OF PLANTED SPECIES	2		OBSERVED DENSITY (PER ACRE)	580
	TOTAL TREES OF VOLUNTEER SPECIES	2			
	TOTAL INDIVIDUALS	60			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 12

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	1	1	Planted	1
Wax Myrtle	SH	2	6	Planted	2
Loblolly Bay	SH	12	1	Volunteer	12
Loblolly Bay	SH	13	2	Volunteer	13
Loblolly Bay	SH	7	3	Volunteer	7
Loblolly Bay	SH	1	6	Volunteer	1
Sweet Pepperbush	SH	2	1	Volunteer	2
Sweet Pepperbush	SH	7	2	Volunteer	7
Sweet Pepperbush	SH	8	3	Volunteer	8
Blueberry	SH	2	1	Volunteer	2
Blueberry	SH	4	2	Volunteer	4
Blueberry	SH	3	3	Volunteer	3
Blueberry	SH	1	4	Volunteer	1
Blueberry	SH	1	5	Volunteer	1
Gallberry	SH	3	1	Volunteer	3
Gallberry	SH	1	2	Volunteer	1
Red Bay	SH	1	1	Planted	1
Red Bay	SH	1	2	Planted	1
Red Bay	SH	1	3	Planted	1
Red Bay	SH	2	7	Planted	2
Fetterbush	SH	6	1	Planted	6
Fetterbush	SH	3	2	Planted	3
Fetterbush	SH	1	3	Planted	1
Pond Pine	T/SA	3	1	Planted	3
Pond Pine	T/SA	1	2	Planted	1
Pond Pine	T/SA	1	3	Planted	1
Pond Pine	T/SA	1	4	Planted	1
Red Maple	T/SA	1	1	Volunteer	0
Zenobia	SH	5	1	Volunteer	5
	TOTAL SHRUBS	87		OBSERVED DENSITY (PER PLOT)	94
	TOTAL TREES OF PLANTED SPECIES	7		OBSERVED DENSITY (PER ACRE)	940
	TOTAL TREES OF VOLUNTEER SPECIES	1			
	TOTAL INDIVIDUALS	95			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 13

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Sweet Pepperbush	SH	21	3	Volunteer	21
Sweet Pepperbush	SH	19	4	Volunteer	19
Loblolly Bay	SH	4	4	Volunteer	4
Loblolly Bay	SH	7	6	Volunteer	7
Loblolly Bay	SH	4	8	Volunteer	4
Loblolly Bay	SH	9	10	Volunteer	9
Gallberry	SH	20	3	Volunteer	20
Gallberry	SH	10	4	Volunteer	10
Gallberry	SH	80	5	Volunteer	80
Red Maple	T/SA	5	4	Volunteer	0
Red Maple	T/SA	5	5	Volunteer	0
Red Maple	T/SA	5	10	Volunteer	0
	TOTAL SHRUBS	174		OBSERVED DENSITY (PER PLOT)	174
	TOTAL TREES OF PLANTED SPECIES	0		OBSERVED DENSITY (PER ACRE)	1740
	TOTAL TREES OF VOLUNTEER SPECIES	15			
	TOTAL INDIVIDUALS	189			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 14

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Loblolly Bay	SH	3	2	Volunteer	3
Loblolly Bay	SH	2	3	Volunteer	2
Loblolly Bay	SH	2	4	Volunteer	2
Loblolly Bay	SH	1	5	Volunteer	1
Loblolly Bay	SH	1	6	Volunteer	1
Loblolly Bay	SH	1	7	Volunteer	1
Gallberry	SH	26	3	Volunteer	26
Gallberry	SH	32	4	Volunteer	32
Gallberry	SH	2	5	Volunteer	2
Gallberry	SH	5	6	Volunteer	5
Fetterbush	SH	15	1	Planted	15
Fetterbush	SH	5	2	Planted	5
Sweet Pepperbush	SH	17	3	Volunteer	17
Sweet Pepperbush	SH	13	4	Volunteer	13
	TOTAL SHRUBS	125		OBSERVED DENSITY (PER PLOT)	125
	TOTAL TREES OF PLANTED SPECIES	0		OBSERVED DENSITY (PER ACRE)	1250
	TOTAL TREES OF VOLUNTEER SPECIES	0			
	TOTAL INDIVIDUALS	125			

SIMPSON FARM RESTORATION WETLAND SITE
ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS
YEAR 4 - 2011
PLOT NUMBER 15

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT (feet)	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
Bald Cypress	T/SA	2	1	Planted	2
Bald Cypress	T/SA	1	2	Planted	1
Wax Myrtle	SH	1	2	Planted	1
Wax Myrtle	SH	3	3	Planted	3
Wax Myrtle	SH	2	4	Planted	2
Wax Myrtle	SH	1	6	Planted	1
Wax Myrtle	SH	1	8	Planted	1
Wax Myrtle	SH	1	10	Planted	1
Loblolly Bay	SH	37	1	Volunteer	37
Loblolly Bay	SH	4	2	Volunteer	4
Loblolly Bay	SH	1	3	Volunteer	1
Loblolly Bay	SH	1	4	Volunteer	1
Loblolly Bay	SH	1	6	Volunteer	1
Loblolly Bay	SH	1	10	Volunteer	1
Gallberry	SH	5	5	Volunteer	5
Sweet Pepperbush	SH	5	2	Volunteer	5
Red Bay	SH	1	3	Planted	1
Red Bay	SH	1	4	Planted	1
Pond Pine	T/SA	1	1	Planted	1
Sweet Gum	T/SA	1	4	Volunteer	0
	TOTAL SHRUBS	66		OBSERVED DENSITY (PER PLOT)	70
	TOTAL TREES OF PLANTED SPECIES	4		OBSERVED DENSITY (PER ACRE)	700
	TOTAL TREES OF VOLUNTEER SPECIES	1			
	TOTAL INDIVIDUALS	71			

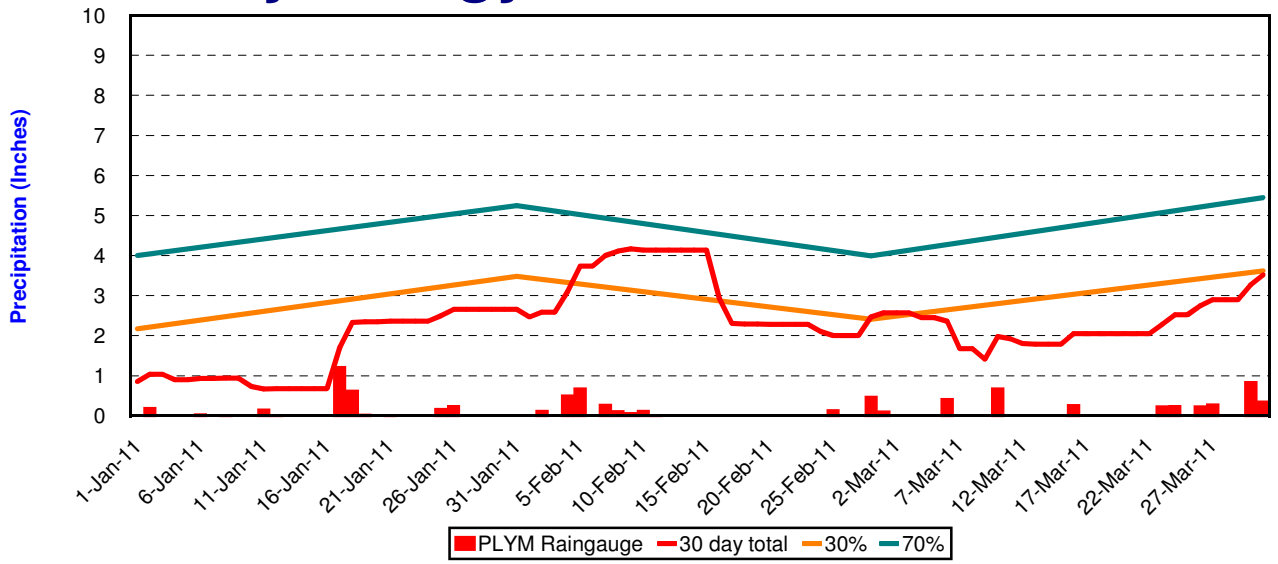
APPENDIX C.
2011 HYDROGRAPHS

Hydrology Assessment

March, 2011

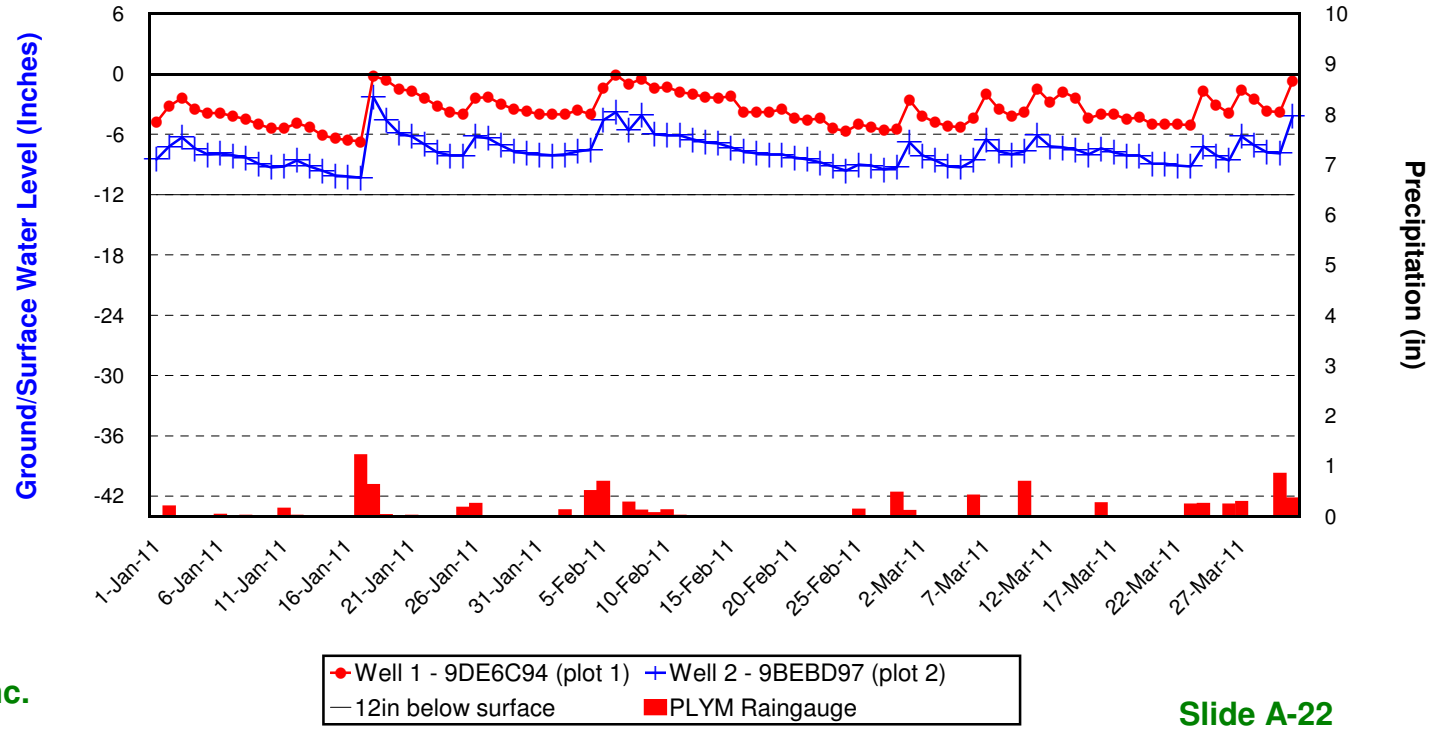
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 1 & 2
- Ecotone - WM 40
- January 1, 2011-
- March 31, 2011
- One reading per day
- at 7:00am

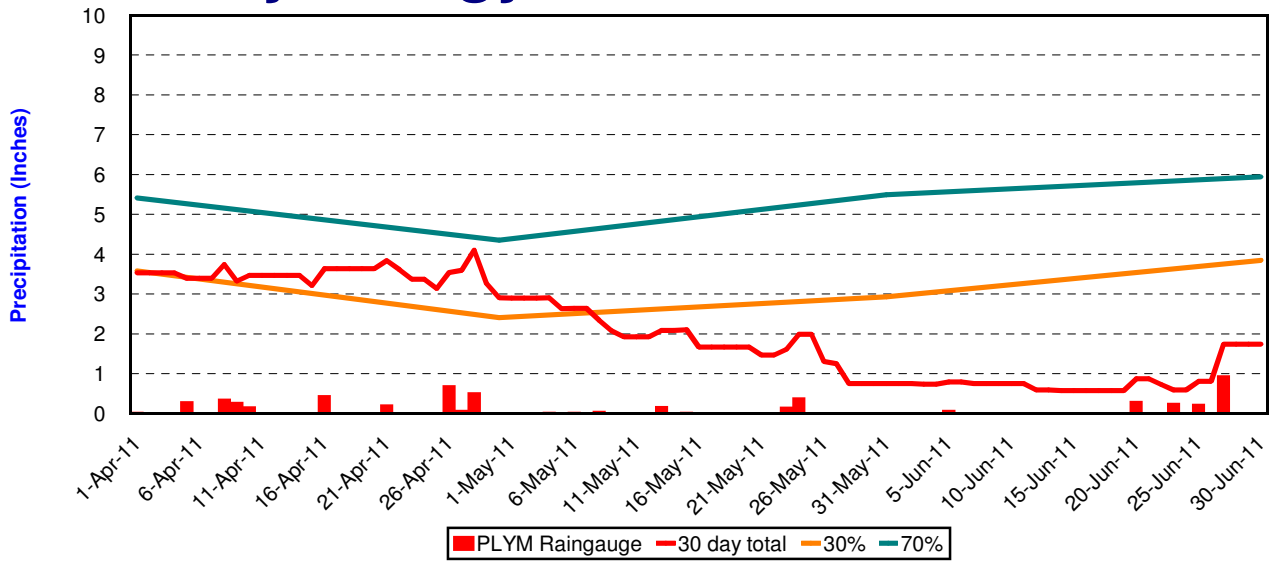


Hydrology Assessment

June, 2011

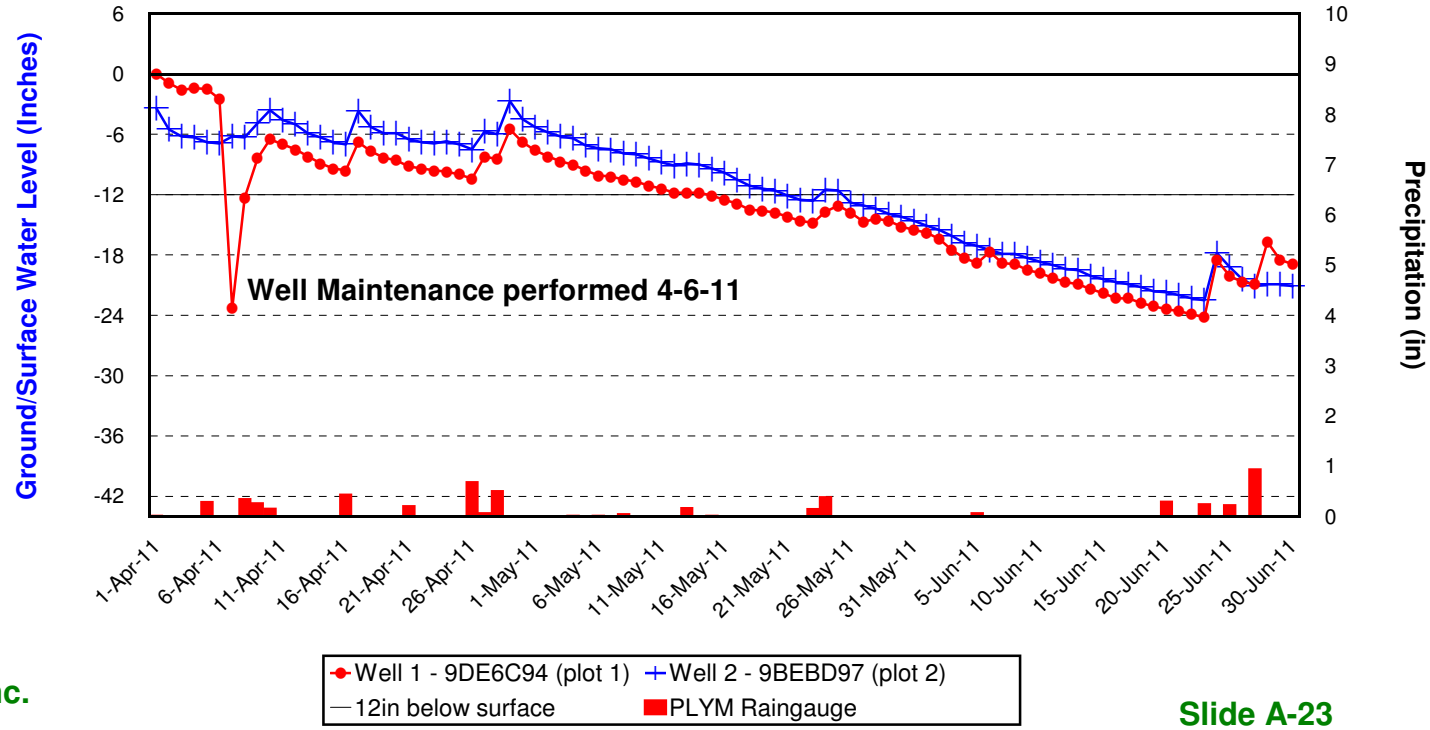
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 1 & 2
- Ecotone - WM 40
- April 1, 2011-
- June 30, 2011
- One reading per day
- at 7:00am



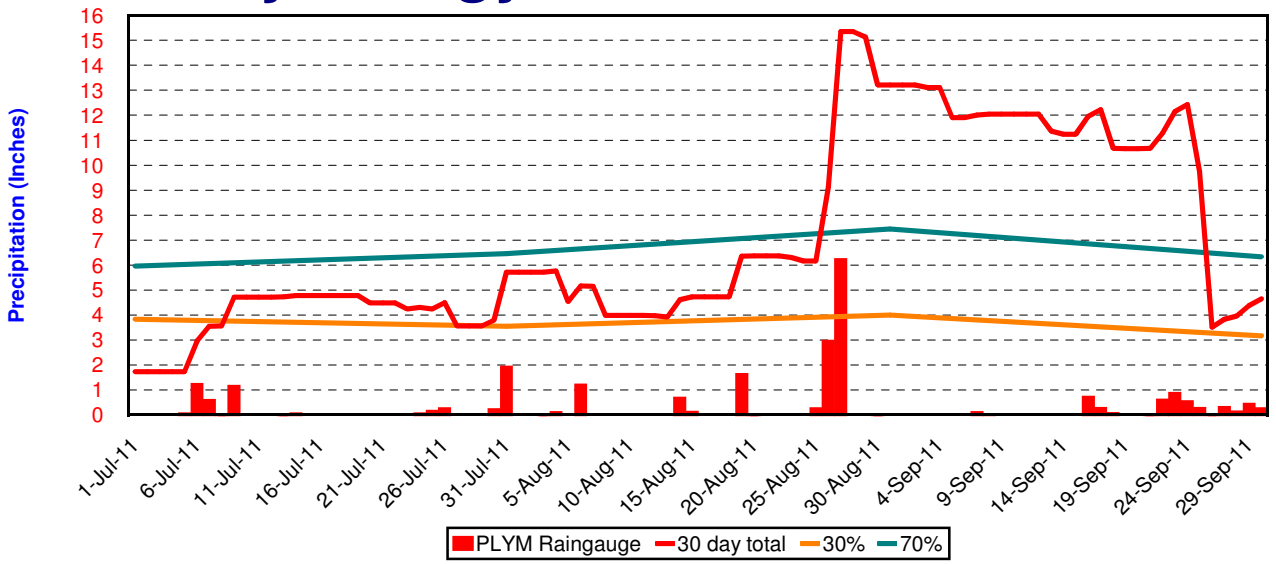
Land Management Group, Inc.
www.lmgroup.net

Hydrology Assessment

September, 2011

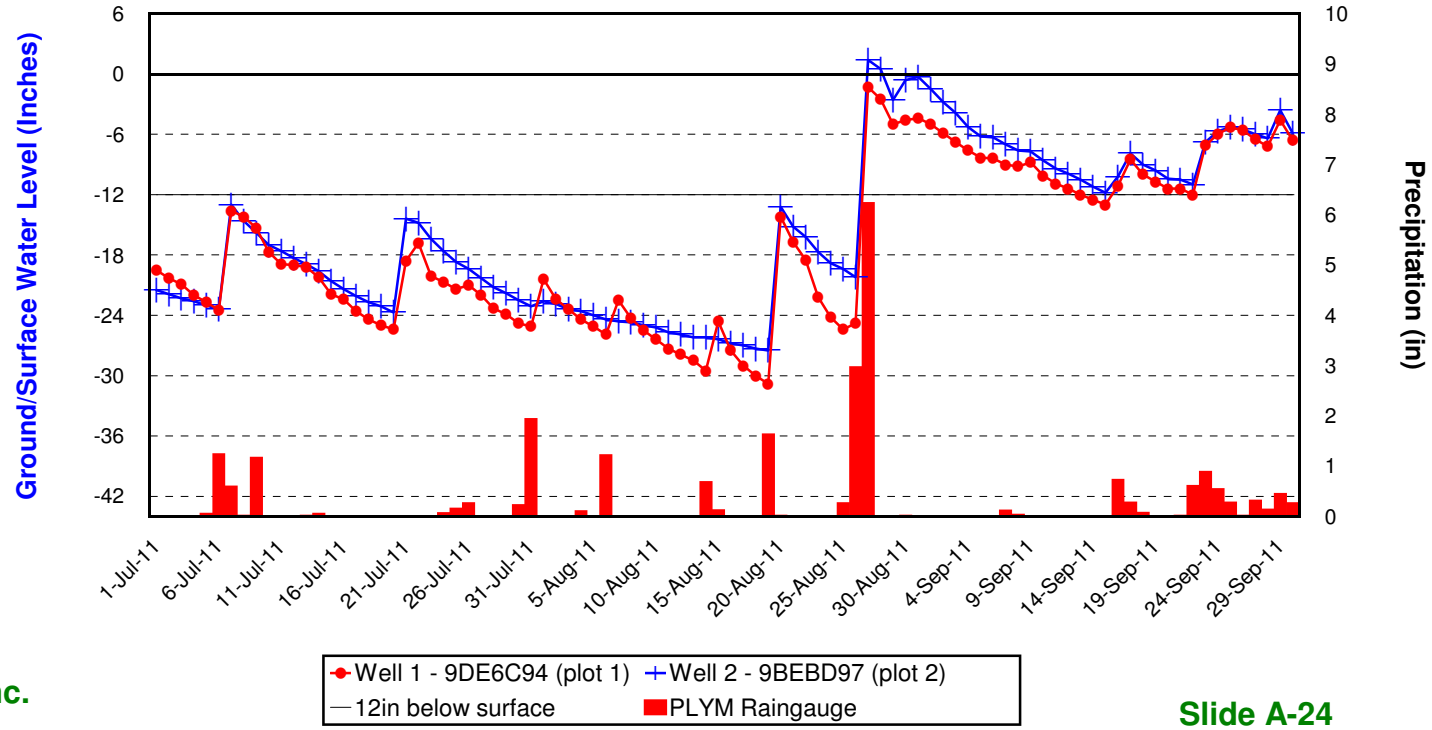
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 1 & 2
- Ecotone - WM 40
- July 1, 2011-
- September 30, 2011
- One reading per day
- at 7:00am

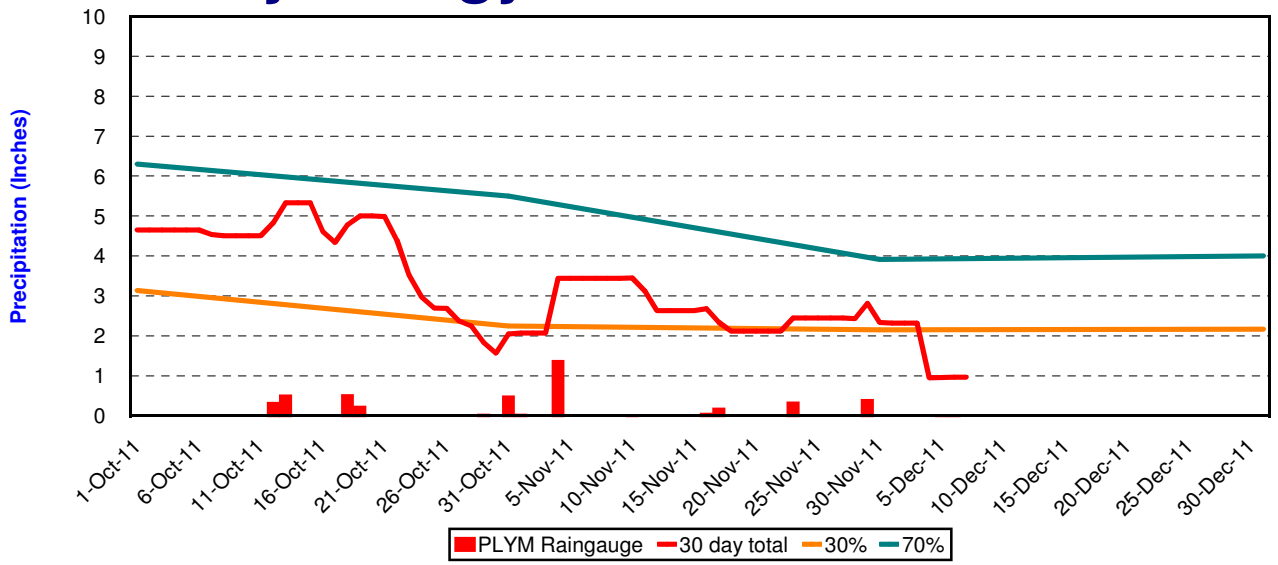


Hydrology Assessment

December, 2011

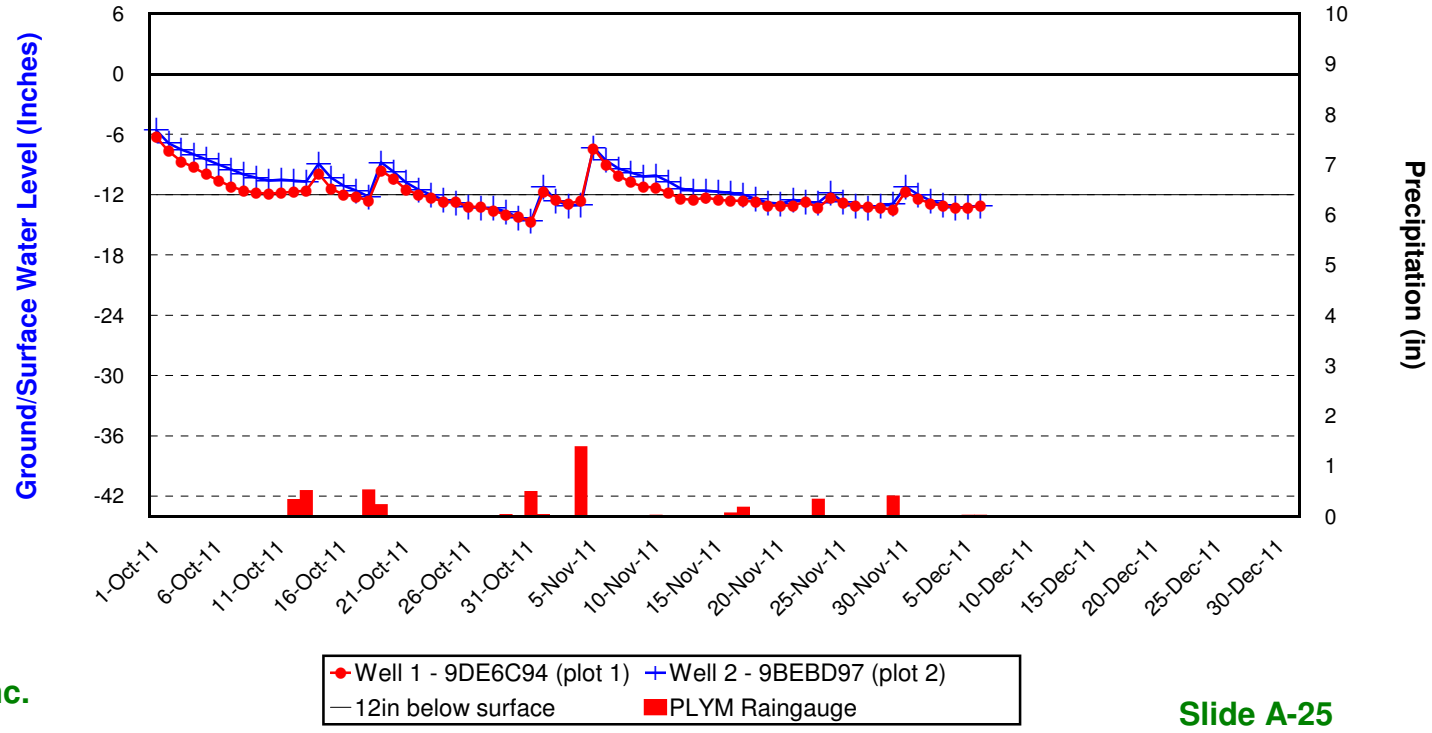
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 1 & 2
- Ecotone - WM 40
- October 1, 2011-
- December 31, 2011
- One reading per day
- at 7:00am

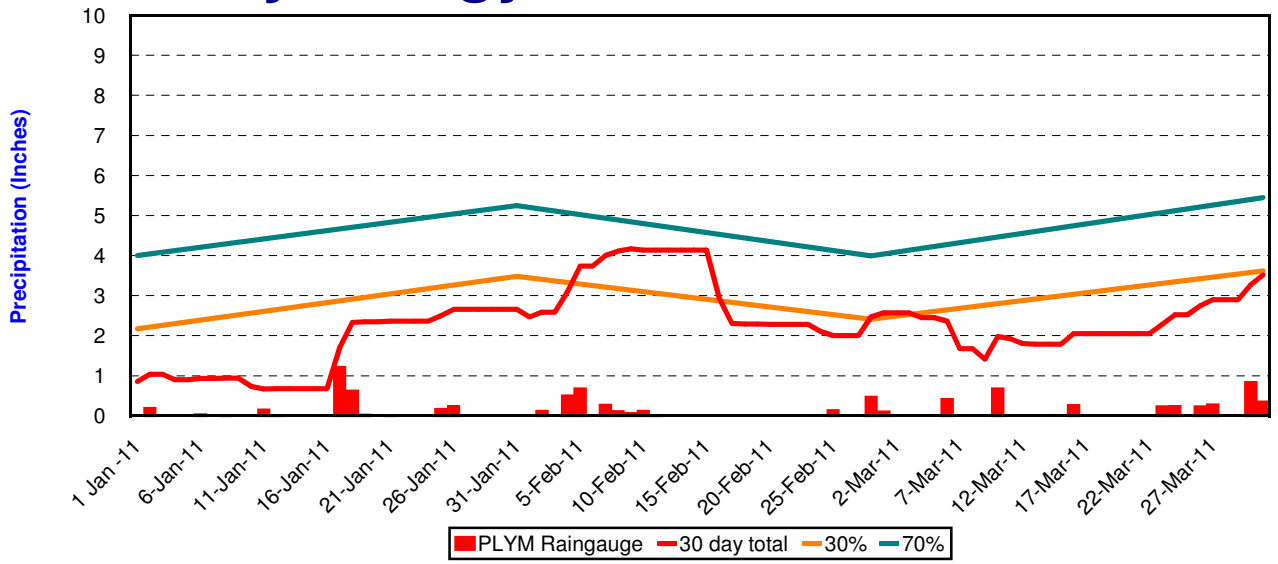


Hydrology Assessment

March, 2011

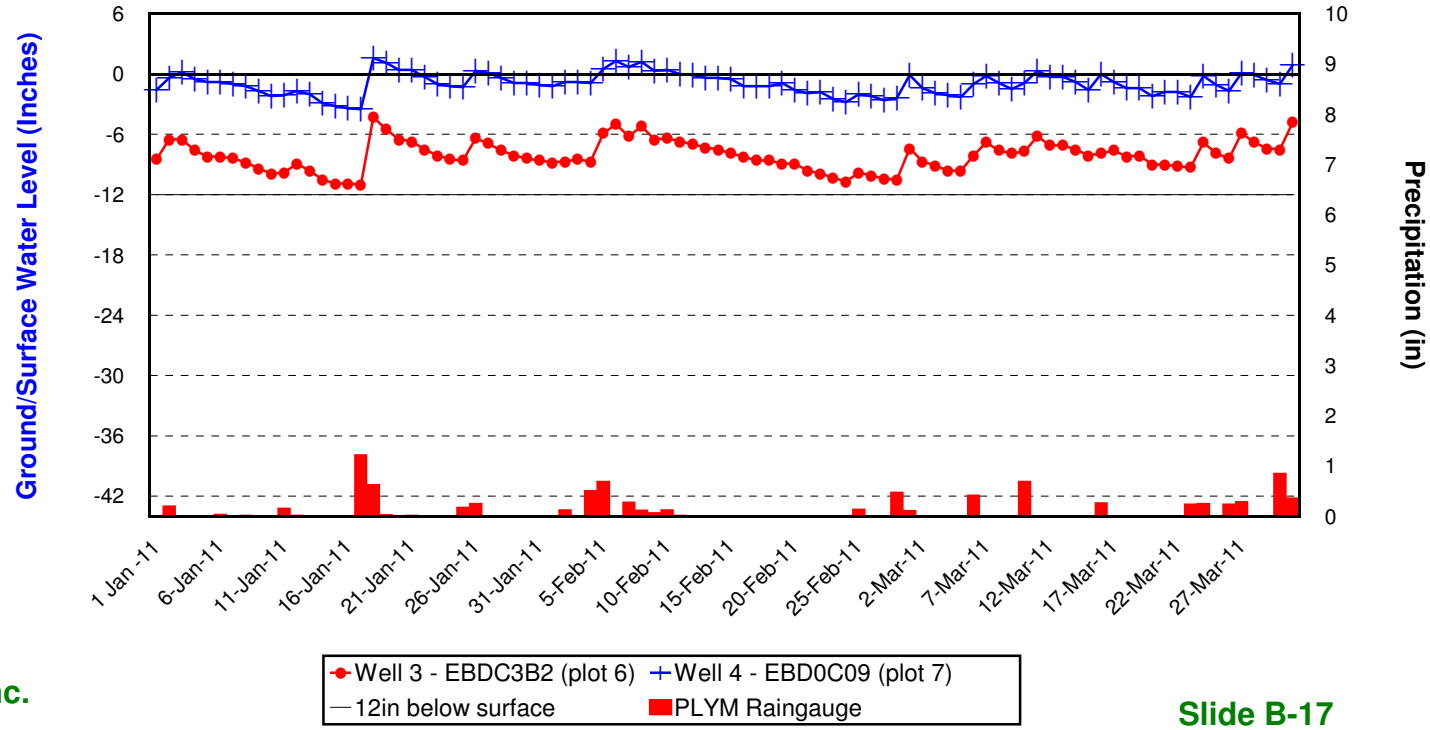
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 3 & 4
- Ecotone - WM 40
- January 1, 2011-
- March 31, 2011
- One reading per day
- at 7:00am

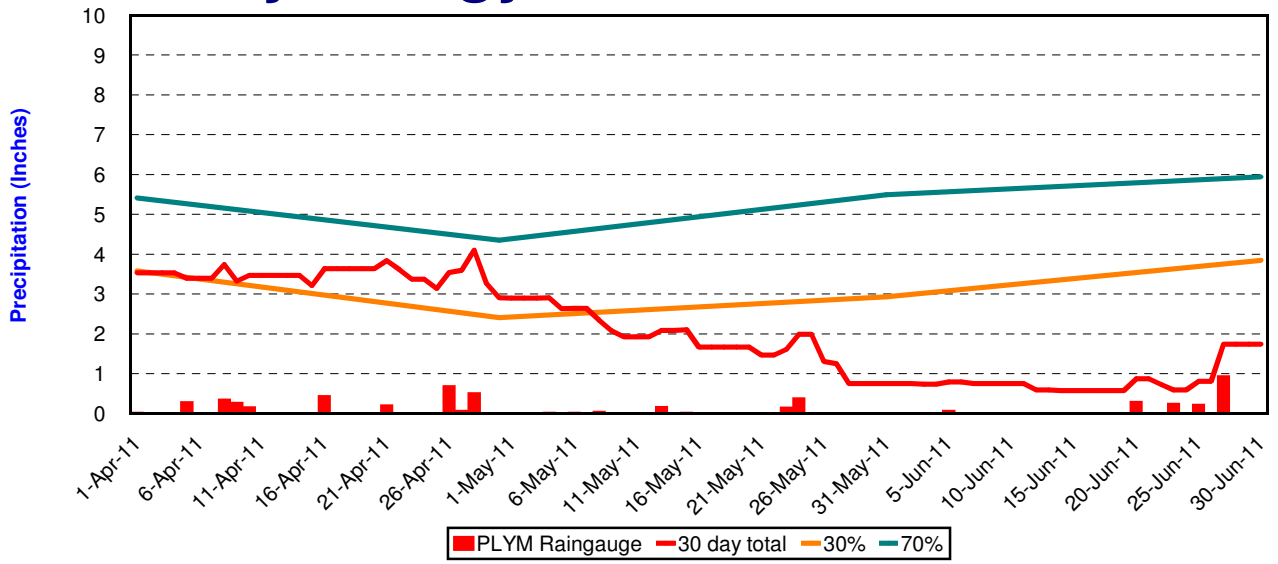


Hydrology Assessment

June, 2011

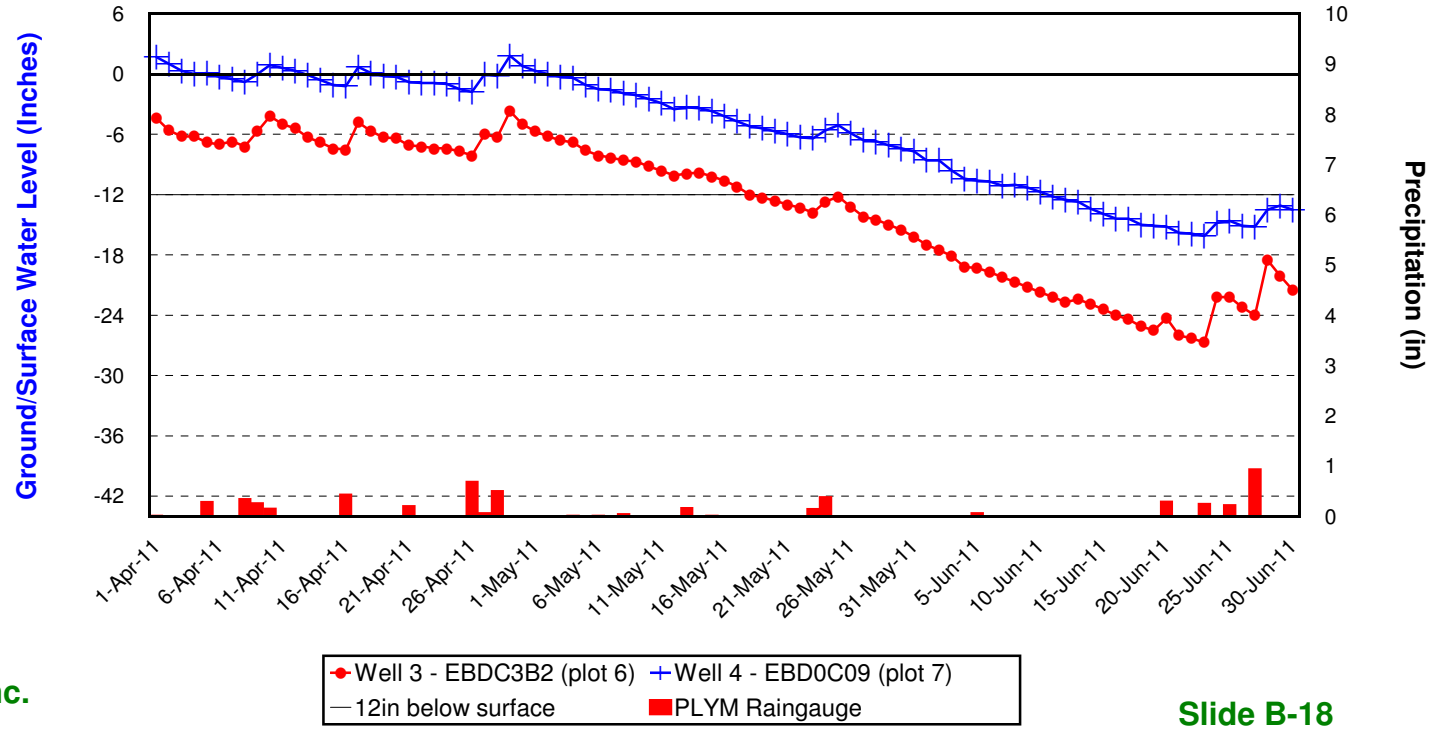
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 3 & 4
- Ecotone - WM 40
- April 1, 2011-
- June 30, 2011
- One reading per day
- at 7:00am

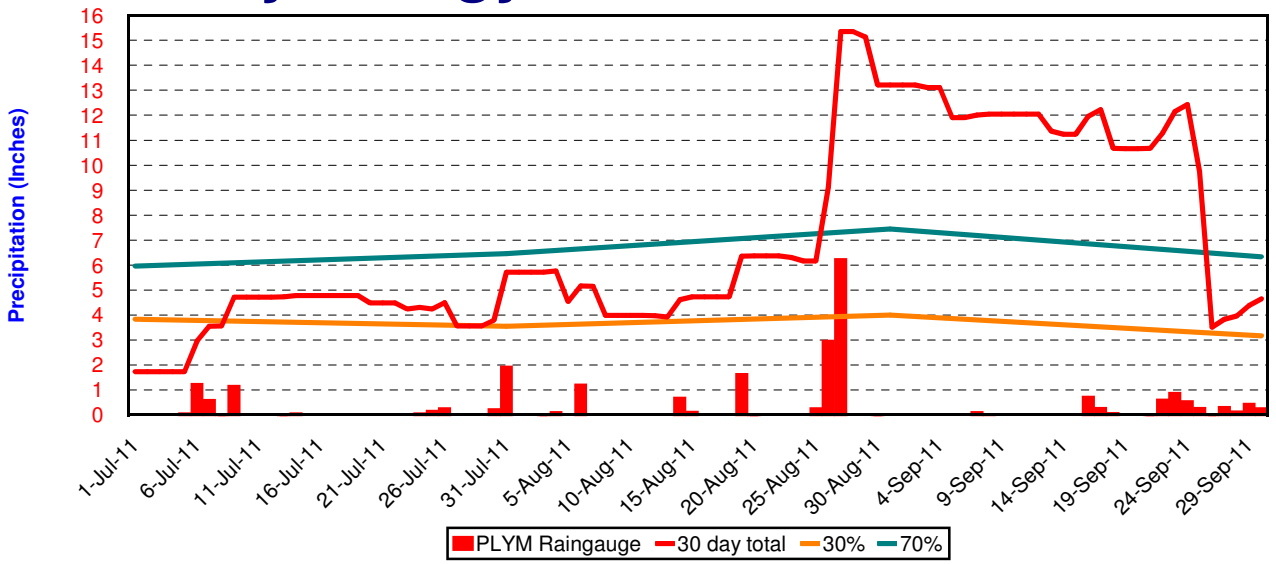


Hydrology Assessment

September, 2011

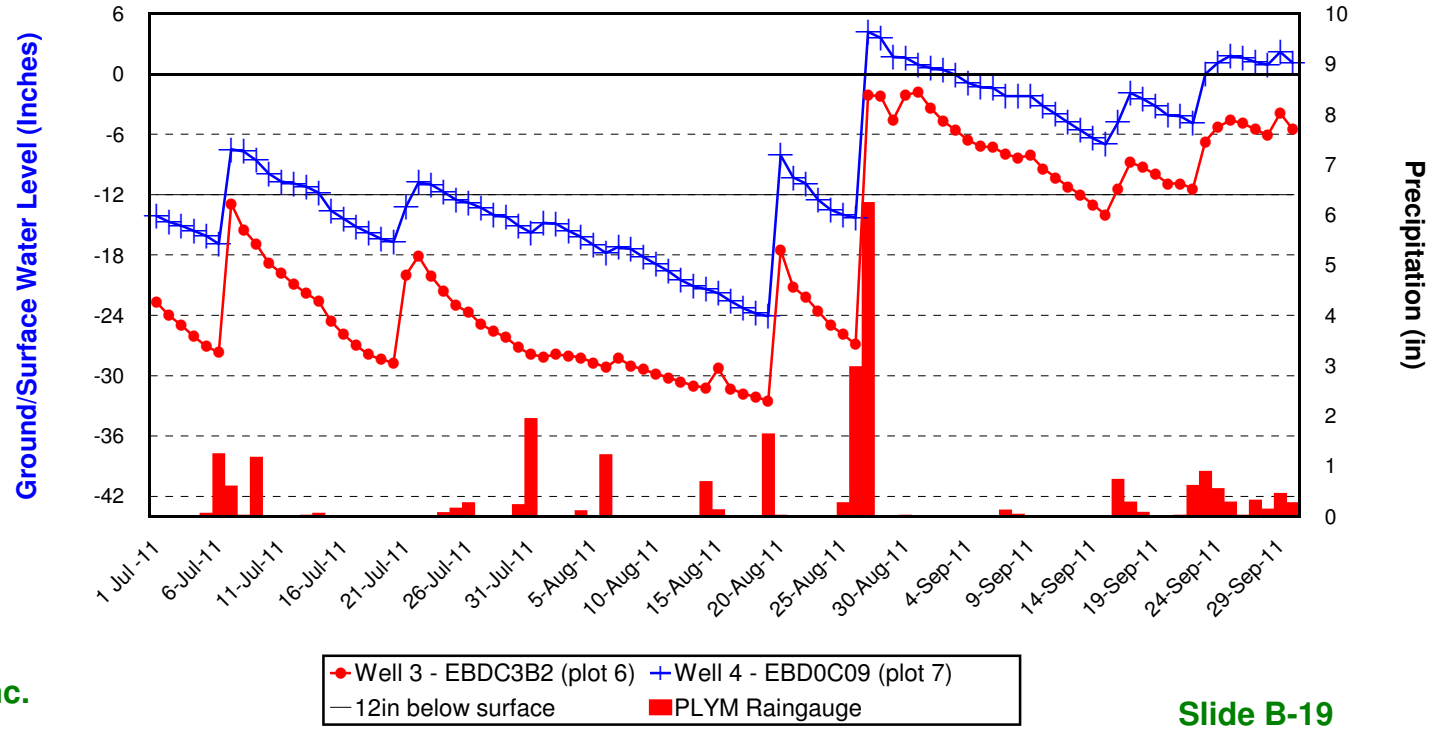
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 3 & 4
- Ecotone - WM 40
- July 1, 2011-
- September 30, 2011
- One reading per day
- at 7:00am

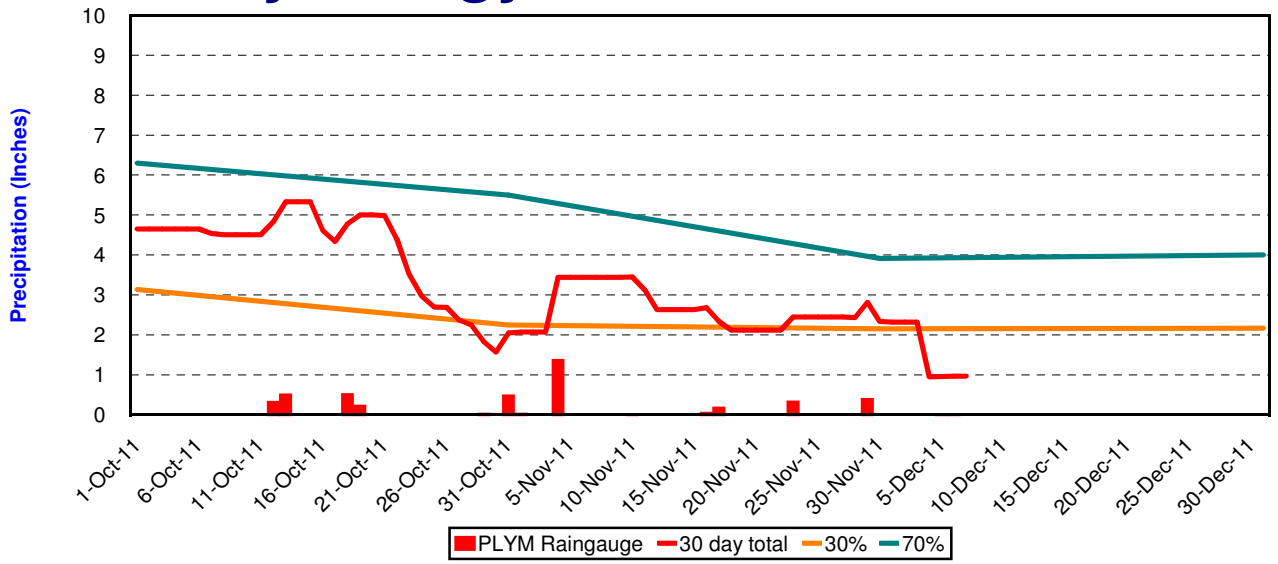


Hydrology Assessment

December, 2011

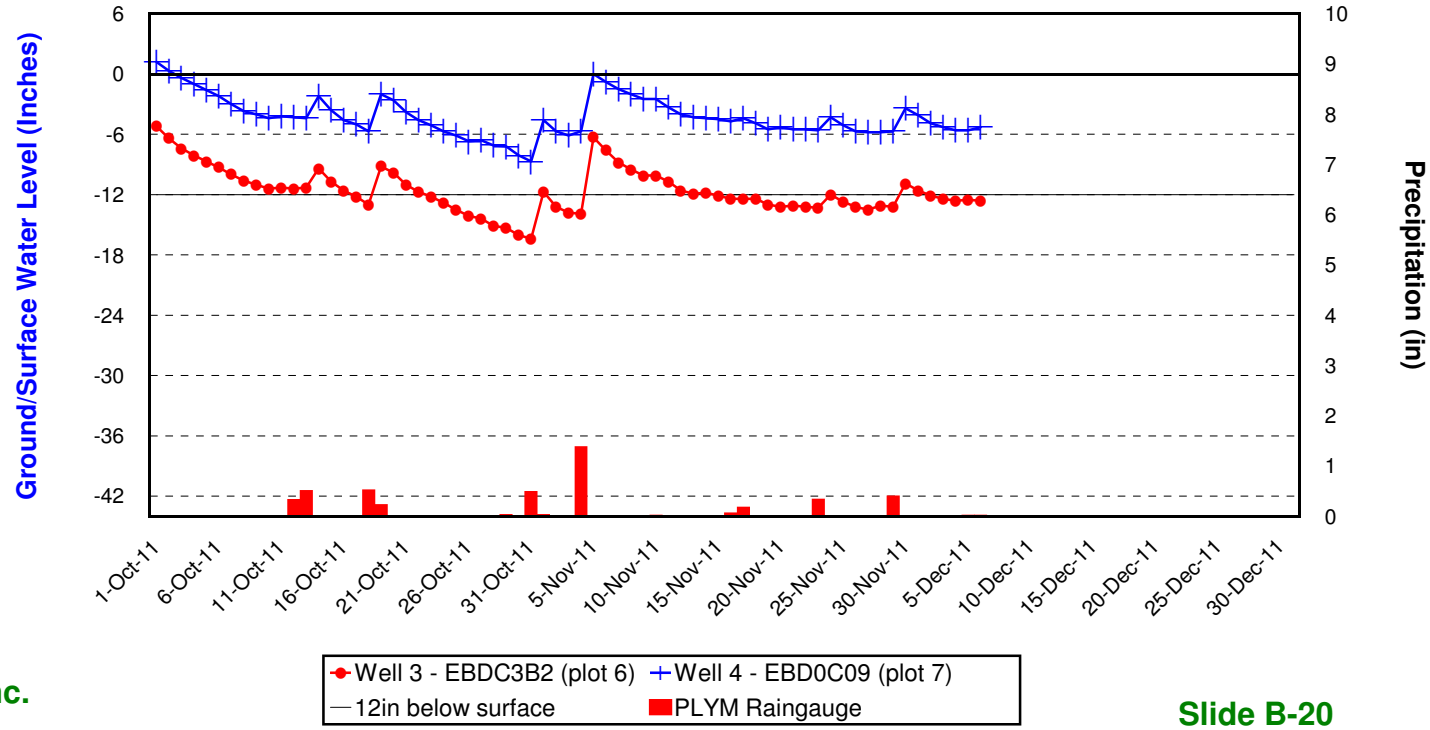
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 3 & 4
- Ecotone - WM 40
- October 1, 2011-
- December 31, 2011
- One reading per day
- at 7:00am

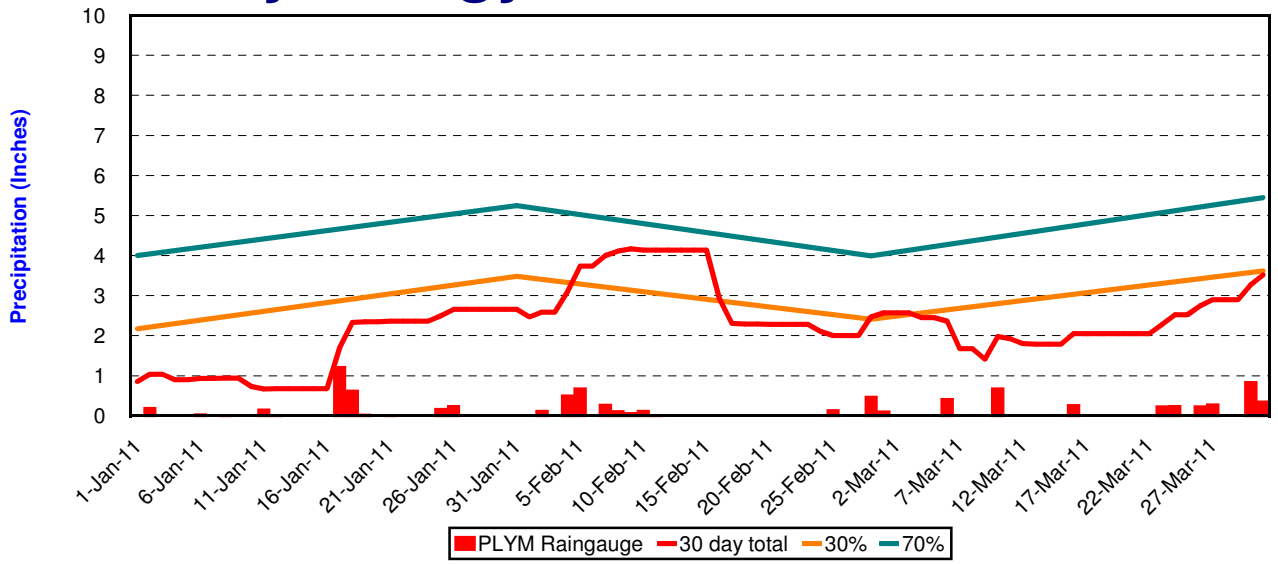


Hydrology Assessment

March, 2011

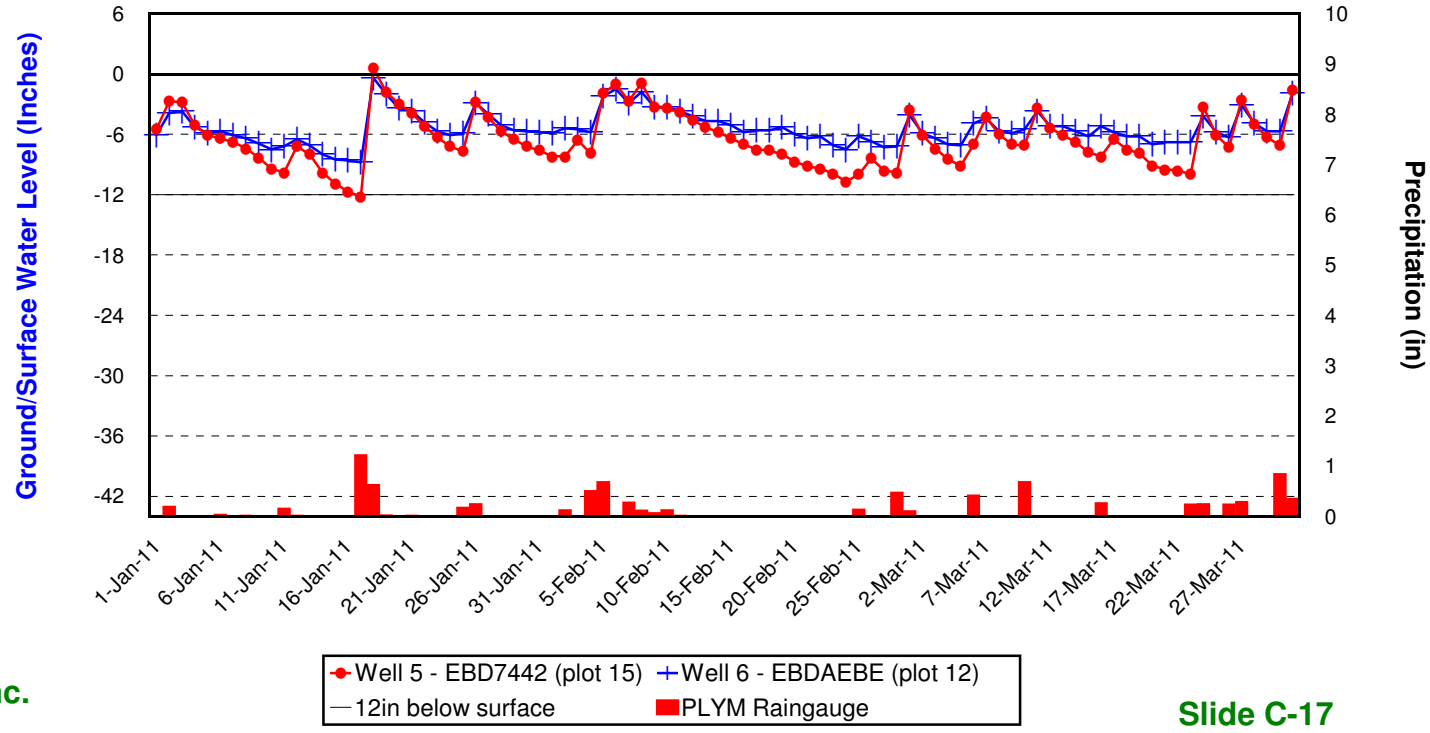
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 5 & 6
- Ecotone - WM 40
- January 1, 2011-
- March 31, 2011
- One reading per day
- at 7:00am



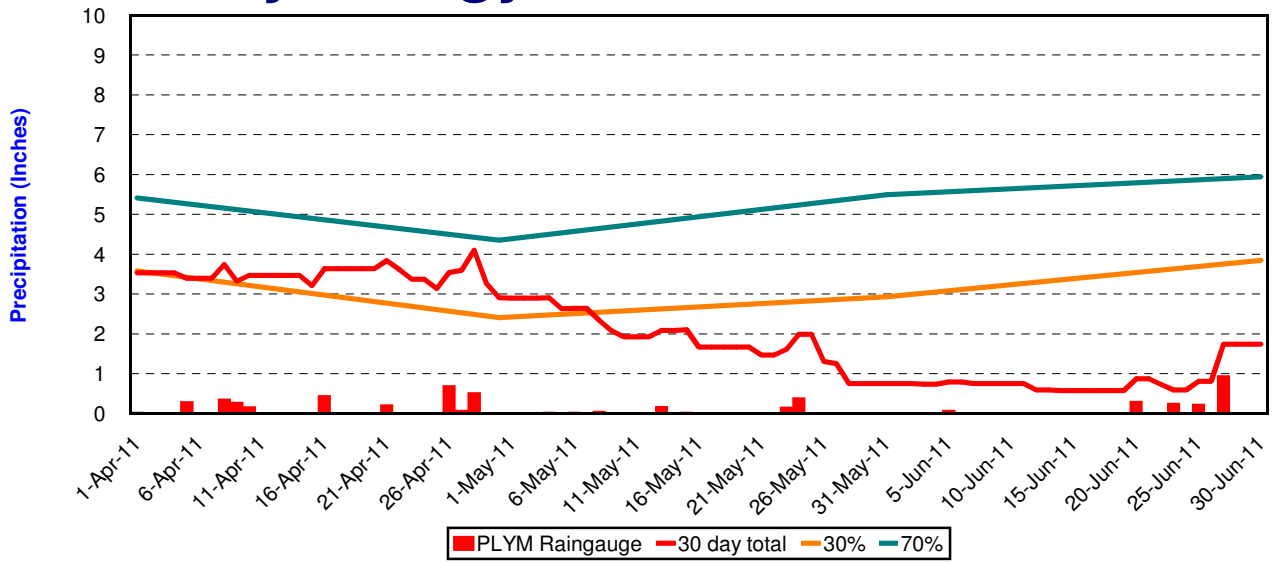
Land Management Group, Inc.
www.lmgroup.net

Hydrology Assessment

June, 2011

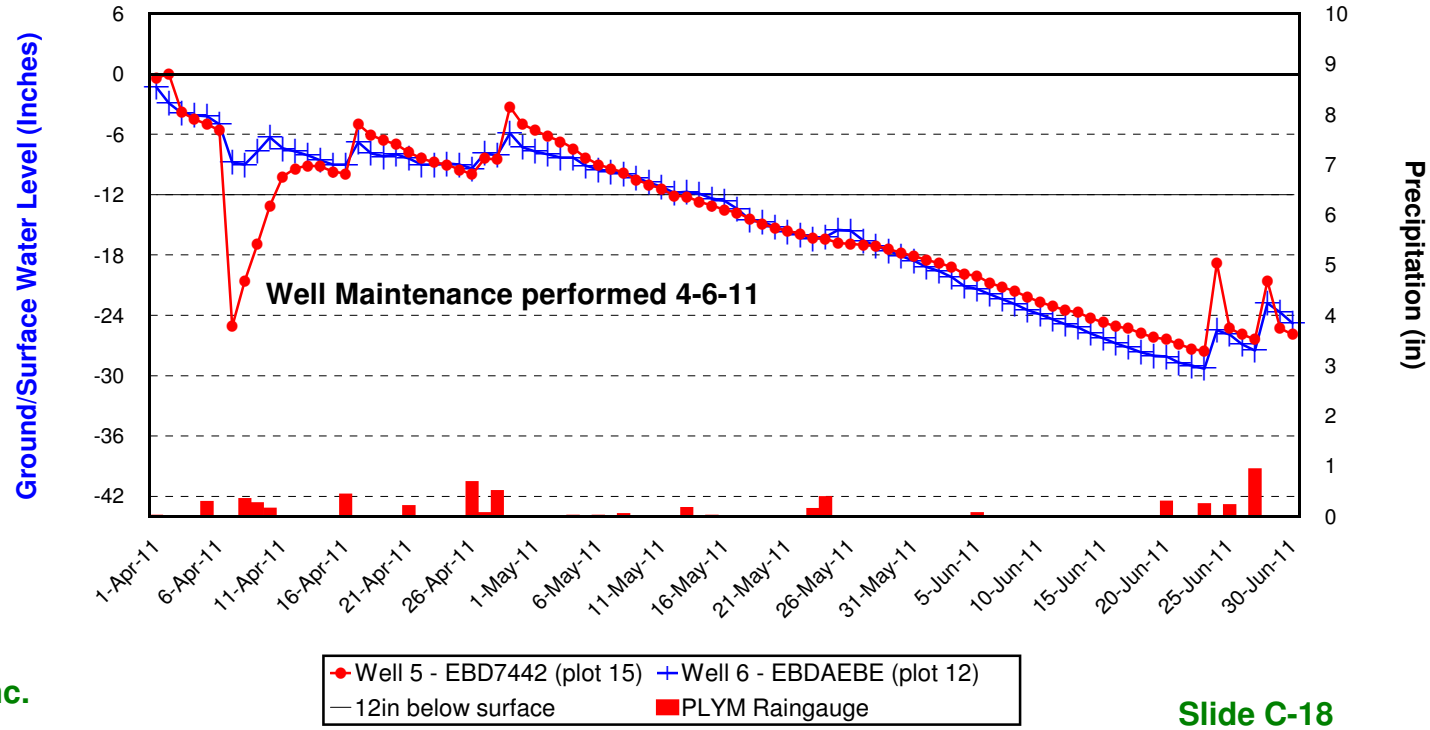
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 5 & 6
- Ecotone - WM 40
- April 1, 2011-
- June 30, 2011
- One reading per day
- at 7:00am

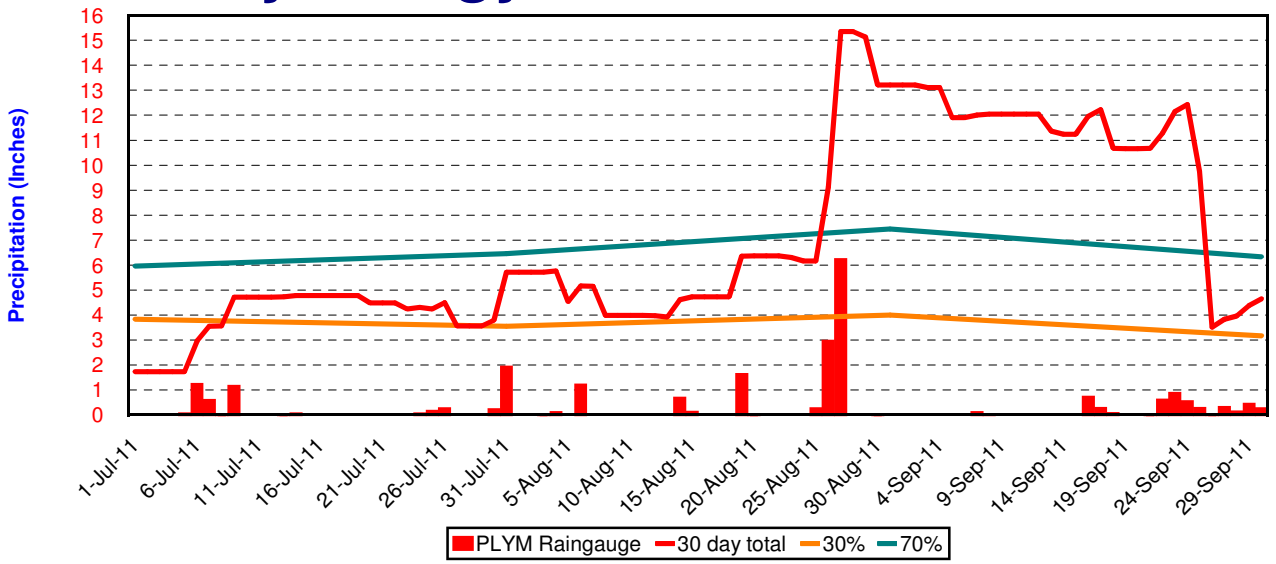


Hydrology Assessment

September, 2011

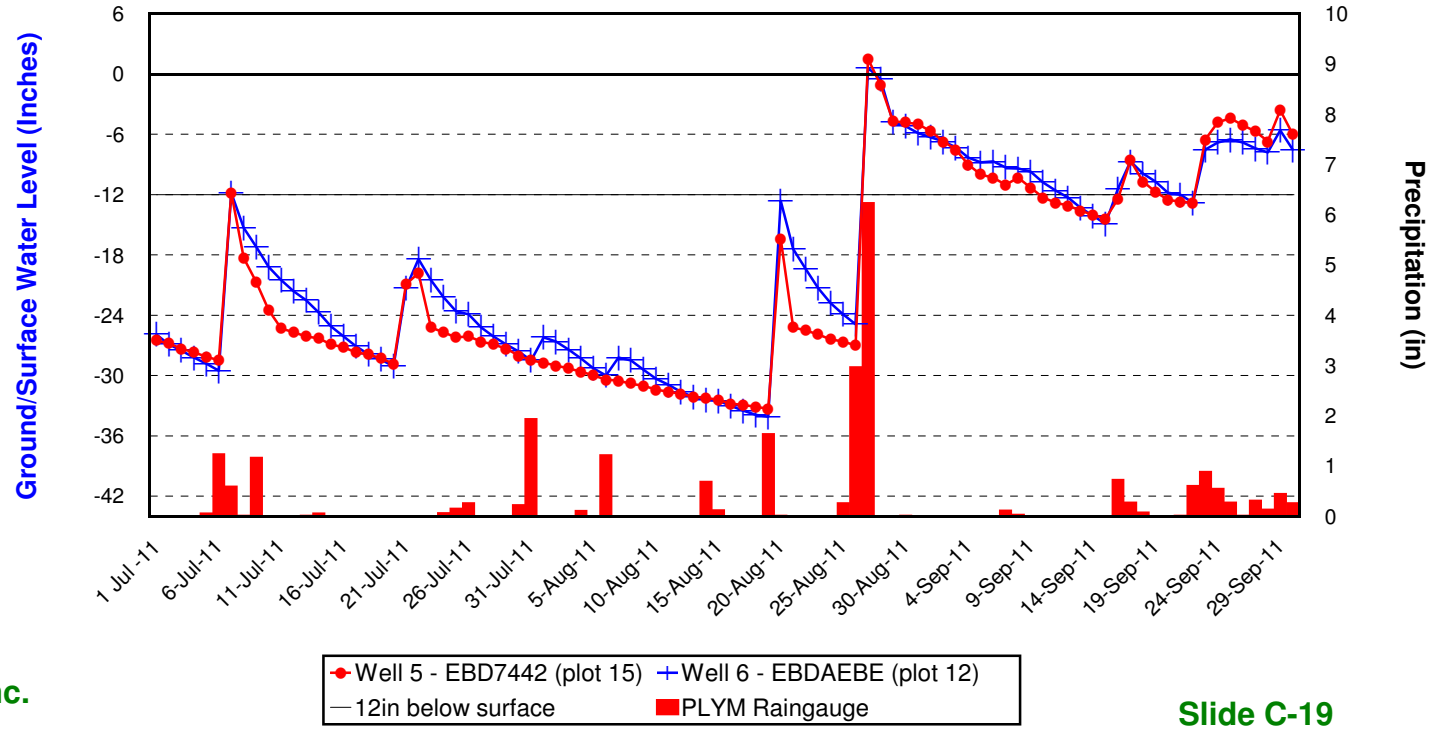
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 5 & 6
- Ecotone - WM 40
- July 1, 2011-
- September 30, 2011
- One reading per day
- at 7:00am

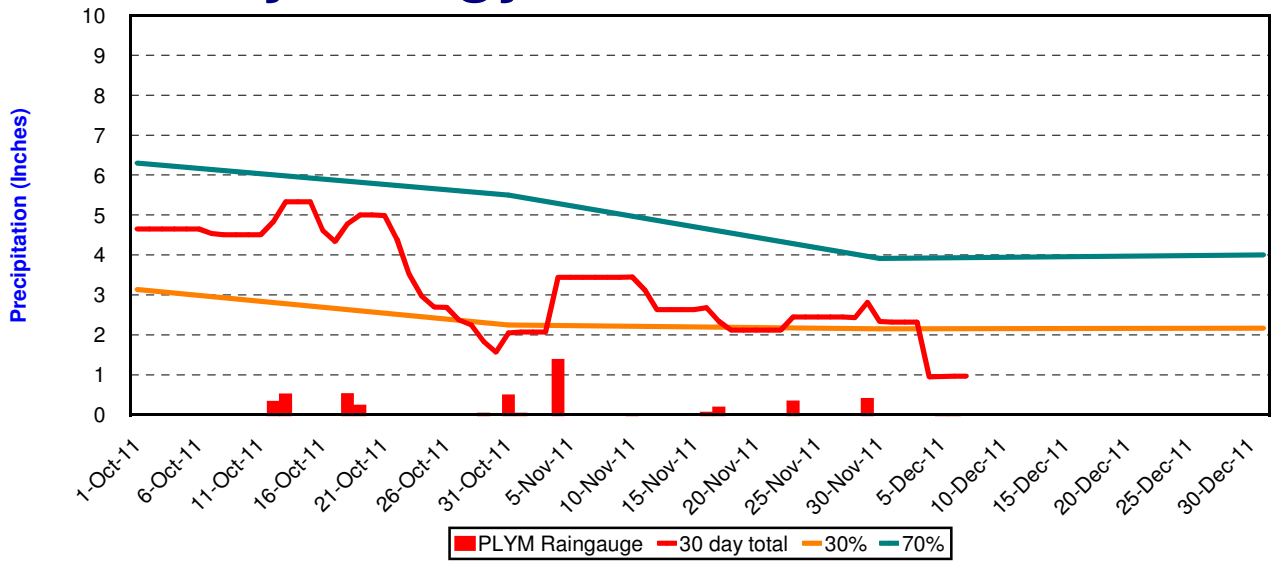


Hydrology Assessment

December, 2011

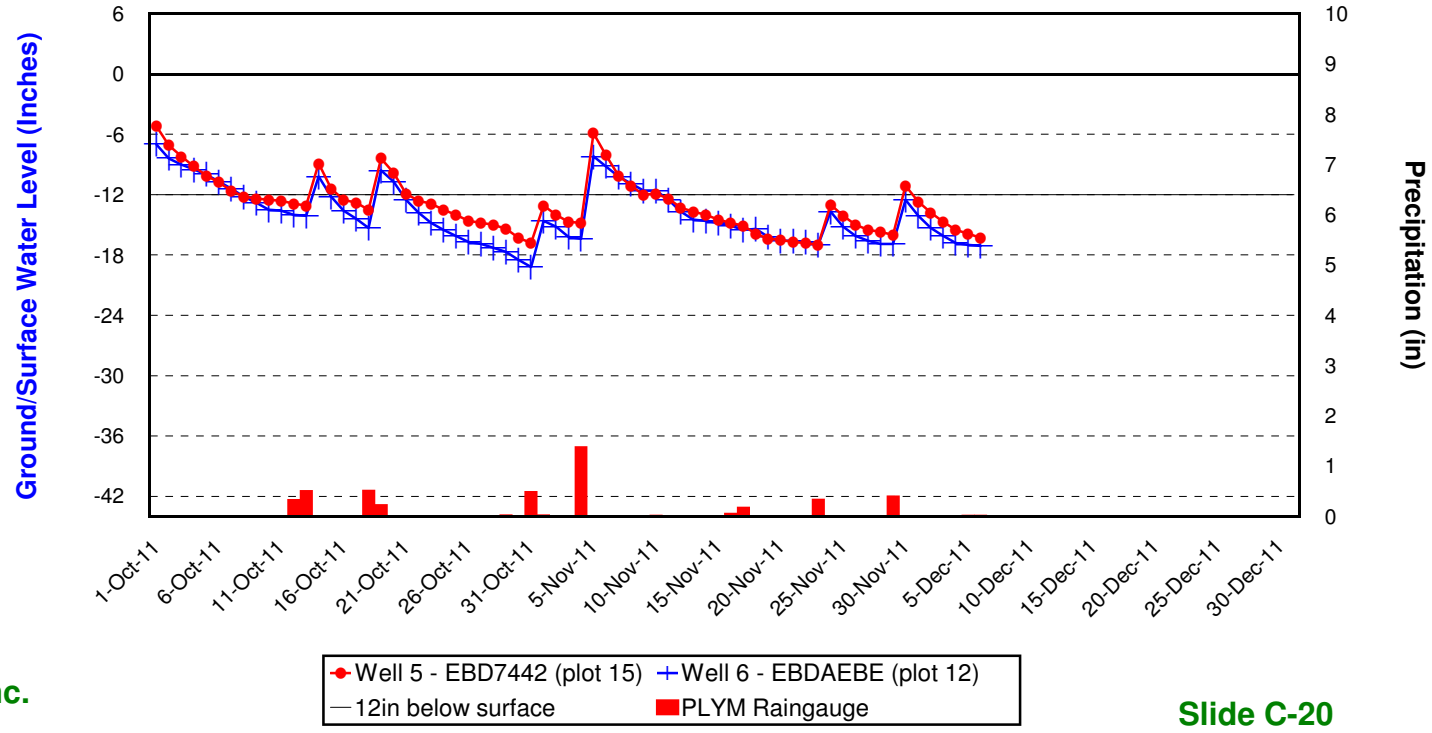
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 5 & 6
- Ecotone - WM 40
- October 1, 2011-
- December 31, 2011
- One reading per day
- at 7:00am

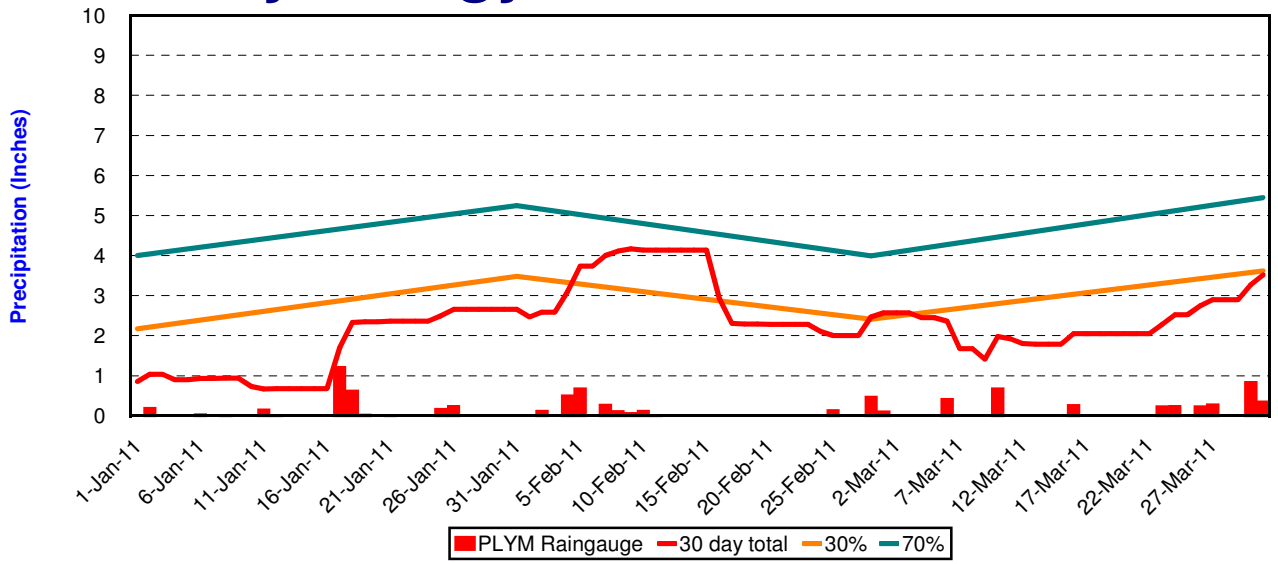


Hydrology Assessment

March, 2011

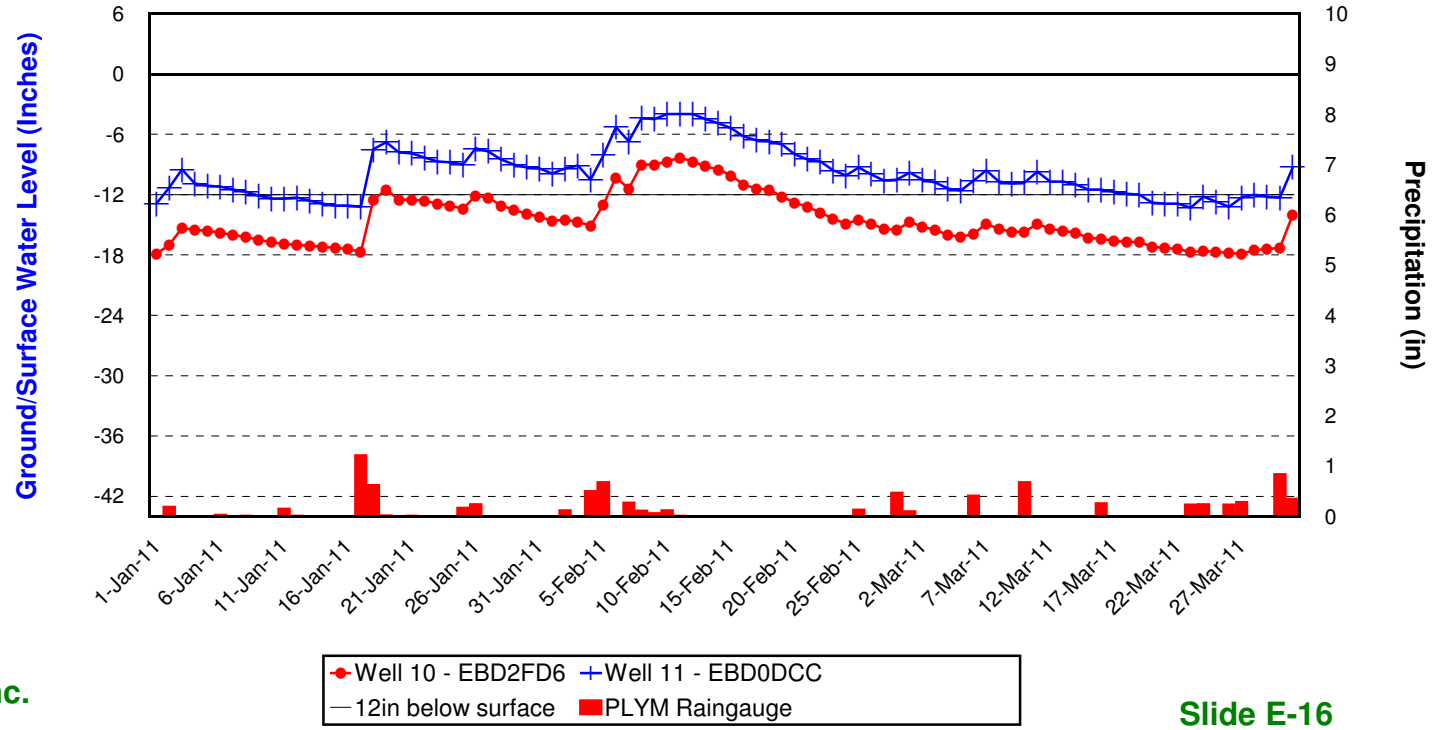
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 10 & 11 (wet ref)
- Ecotone - WM 40
- January 1, 2011-
- March 31, 2011
- One reading per day
- at 7:00am

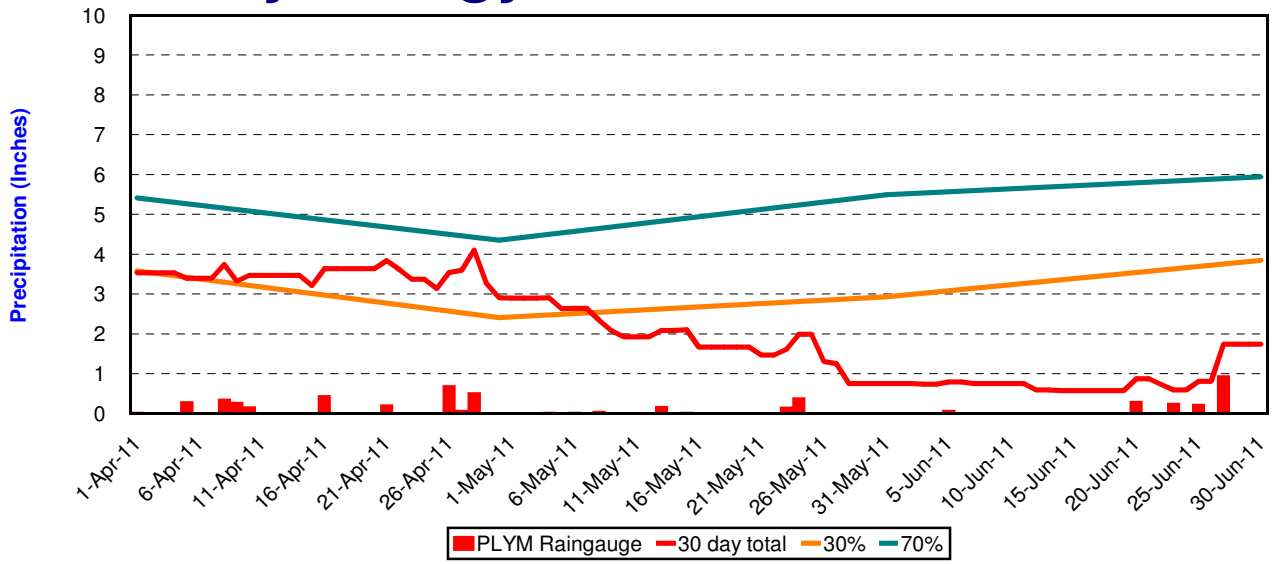


Hydrology Assessment

June, 2011

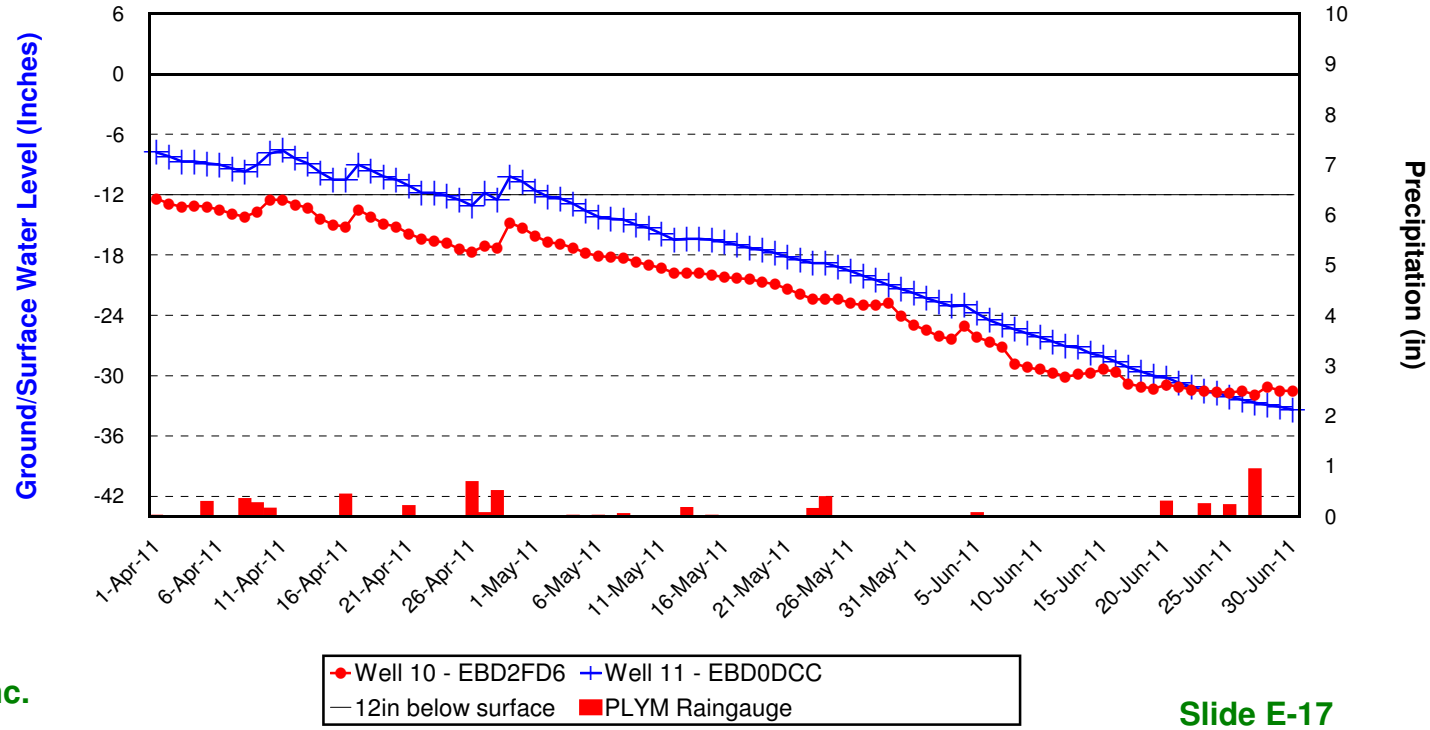
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 10 & 11 (wet ref)
- Ecotone - WM 40
- April 1, 2011-
- June 30, 2011
- One reading per day
- at 7:00am

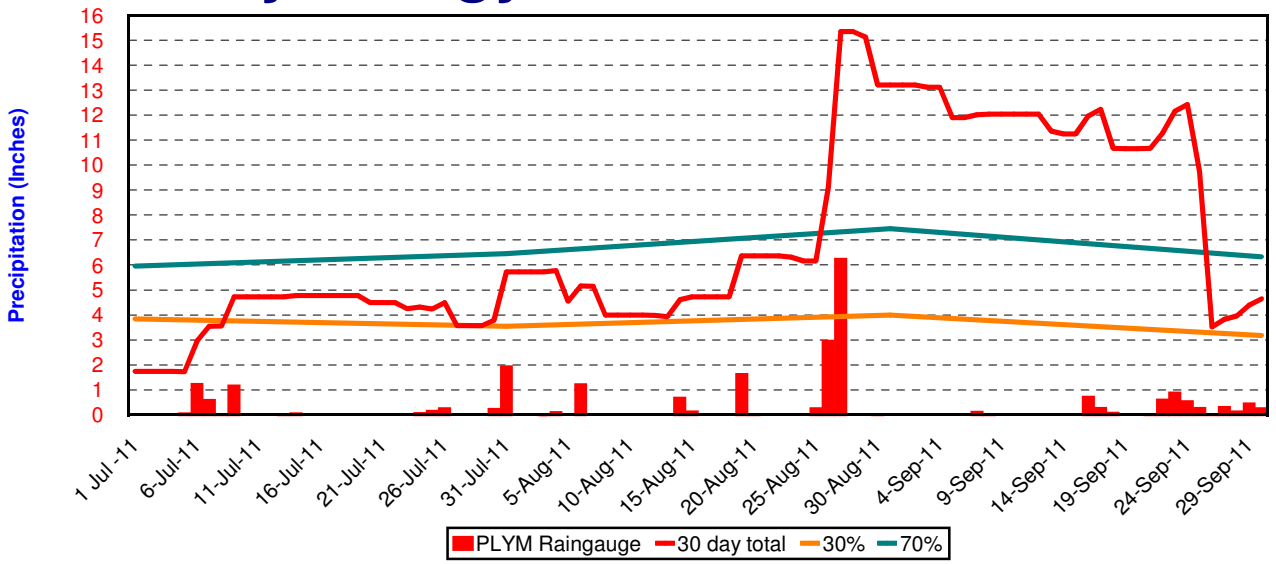


Hydrology Assessment

September, 2011

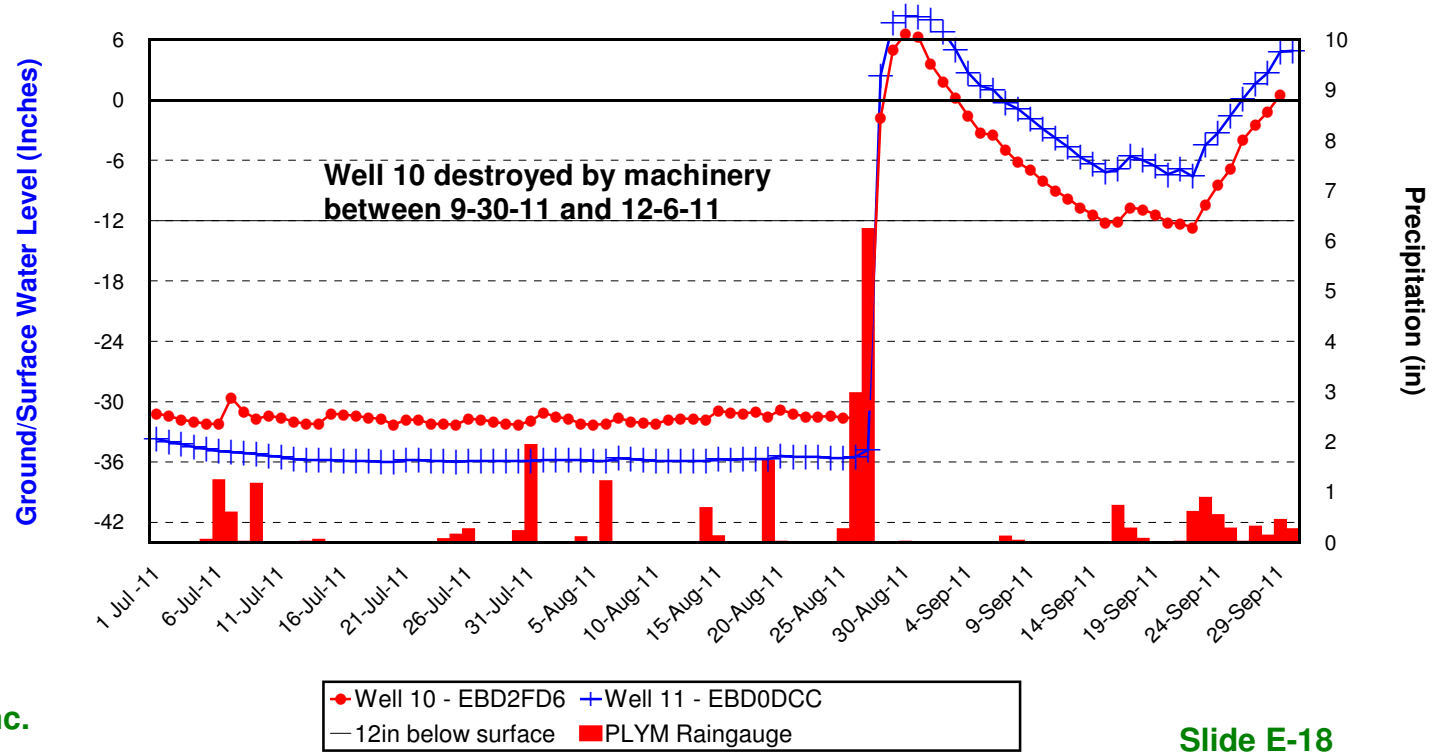
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)



Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 10 & 11 (wet ref)
- Ecotone - WM 40
- July 1, 2011-
- September 30, 2011
- One reading per day
- at 7:00am

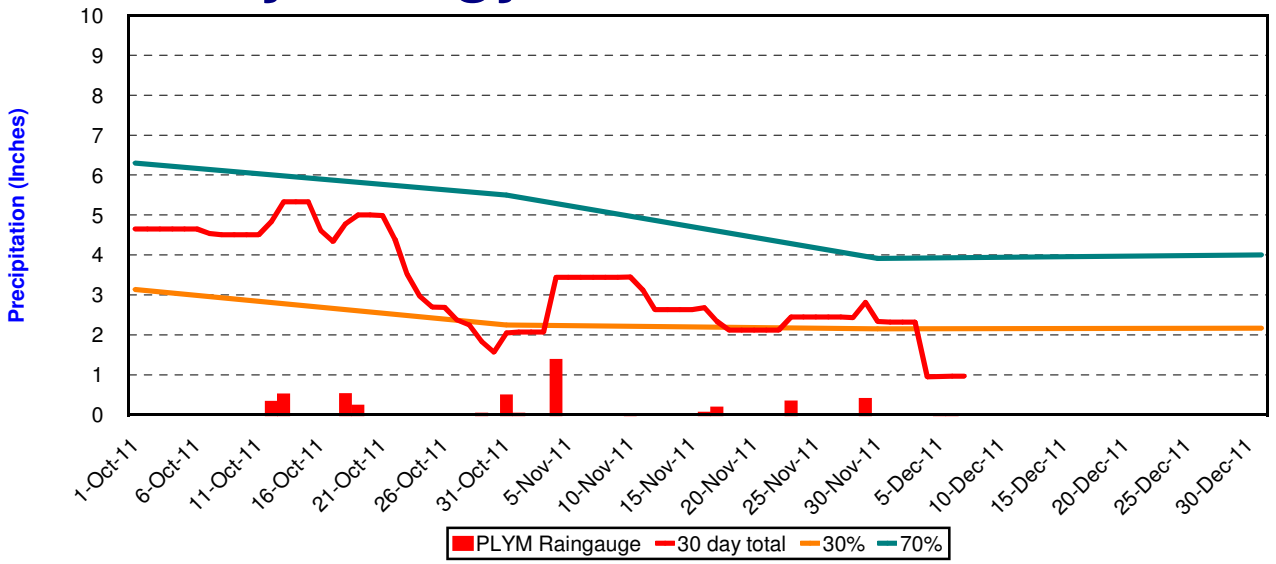


Hydrology Assessment

December, 2011

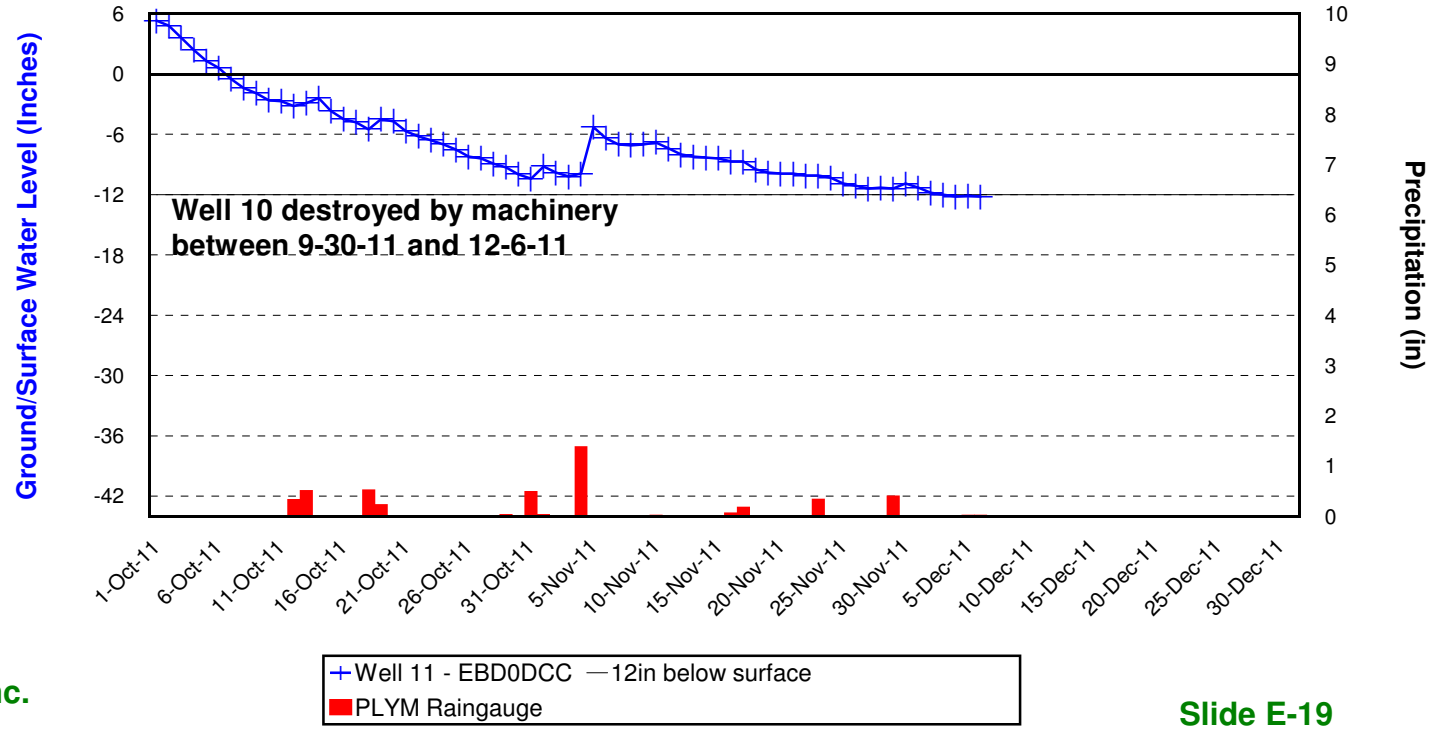
Precipitation data obtained from: station PLYM (www.nc-climate.ncsu.edu)

30% & 70% precipitation data obtained from: WETS Station : PLYMOUTH 5 E, NC6853 (wcc.nrcs.usda.gov)

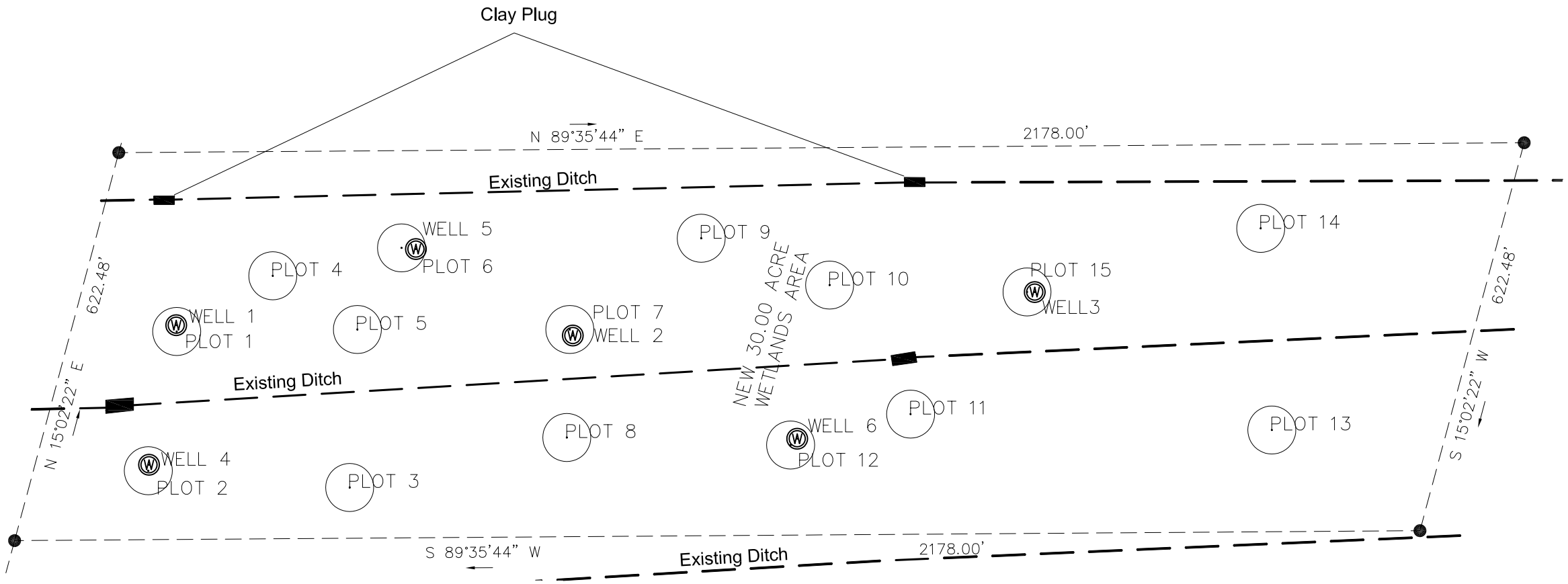


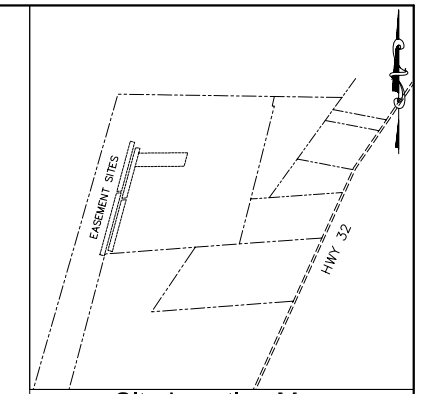
Monitoring Well Record

- Simpson Restoration
- Washington County, NC
- 40-05-624
- Wells 10 & 11 (wet ref)
- Ecotone - WM 40
- October 1, 2011-
- December 31, 2011
- One reading per day
- at 7:00am

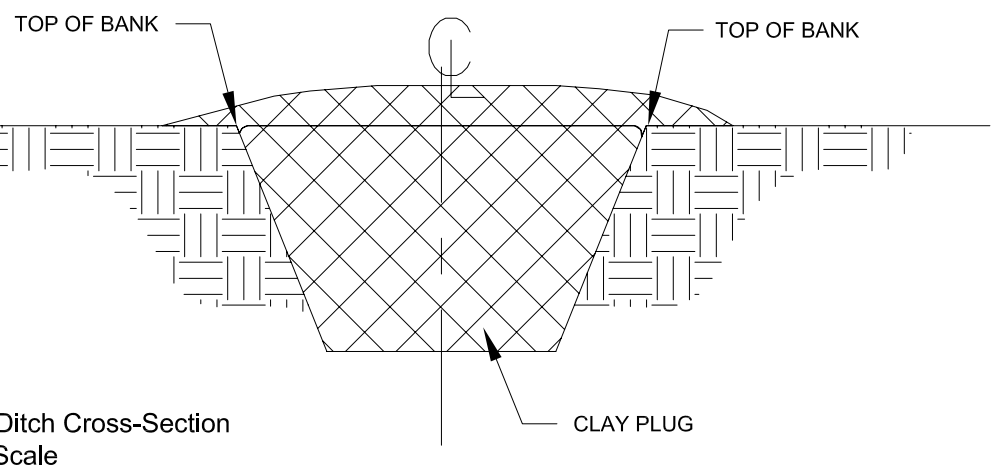


APPENDIX D.
CONSERVATION EASEMENT MAP
& PLOT LOCATIONS





Site Location Map
NTS



Typical Ditch Cross-Section
*Not to Scale

0 50 100 200 400

LAND MANAGEMENT IS NOT RESPONSIBLE FOR LOCATING, OR THE LOCATION OF, UTILITIES. ANY UTILITIES SHOWN ON THIS PLAN HAVE BEEN PROVIDED BY THIRD PARTIES AND ARE FOR GENERAL REFERENCE PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE OWNER/APPLICANT AND/OR CONTRACTOR TO CONTACT A PROFESSIONAL UTILITY LOCATING COMPANY.

THIS MAP IS BASED ON ORIGIANL DRAWINGS AND/OR SURVEY INFORMATION FROM:

THE EAST GROUP
. Engineering . Architecture Surveying Technology

LAND MANAGEMENT IS NOT RESPONSIBLE FOR THE ACCURACY OF SAID INFORMATION

LMG
LAND MANAGEMENT GROUP INC.
Environmental Consultants
Post Office Box 2522
Wilmington, North Carolina 28402
Telephone: 910-452-0001

Project: Simpson Wetland Restoration	Date: 4/17/07	Revision Date:
Applicant:	Scale: 1"=200'	Job Number: 40-05-624
Title:	Drawn By: GSF	Sheet Number: Appendix D.

L:\WETLANDS\2005 WETLANDS FILES\40-05-624 -- Simpson Tract, Wetland Restoration 30 ac, Cal Miller\ACAD\East Group_Final-Consv_Eas.dwg