



## **M&T/LLANO SECO PUMPING PLANT RIPARIAN VEGETATION MITIGATION MONITORING REPORT**

### ***Introduction***

Monitoring was conducted on October 12<sup>th</sup>, 13<sup>th</sup> and 15<sup>th</sup>, 2010 by Northern California Regional Land Trust (NCRLT) Land Projects Coordinator Zach Mendes and NCRLT Board Member and CSU Chico biology professor Colleen Hatfield, Ph.D. at the Capay Unit of the US Fish and Wildlife Service (USFWS) Sacramento National Wildlife Refuge Complex (SNWRC) and at Doe Island on the Llano Seco Rancho (**Figures 1 and 2**). Monitoring was performed to determine the status of riparian plantings completed as mitigation for the *M&T Chico Ranch/Llano Seco Rancho Pumping Plant Maintenance of Channel Alignment Sacramento River Mile 192.5 Project* (Project).

The M&T Chico Ranch, Llano Seco Rancho, California Department of Fish and Game (CDFG), and the U.S. Fish and Wildlife Service (USFWS) Sacramento National Wildlife Refuge Complex (SNWRC) are responsible for overseeing implementation of planting and monitoring of revegetation on the SNWRC and Llano Seco Rancho. As part of the monitoring requirements, the M&T Chico Ranch and Llano Seco Rancho are required to hire an environmental consultant to monitor and report their findings to CDFG and the USFWS SNWRC by January 15<sup>th</sup> of each year regarding the success of the plantings and any need for remedial actions. USFWS SNWRC and CDFG, as the federal and state lead agencies for the channel maintenance project, are responsible for ensuring that the monitoring reports are provided to the National Marine Fisheries Service and the USFWS Sacramento Field Office to satisfy the terms and conditions of the incidental take permit and Section 7 consultation for the project.

### ***Project Background***

The primary objective of the Project is to protect the M&T Chico Ranch/Llano Seco Rancho pumping facility and the outfall for the City of Chico's Wastewater Treatment Plant through the placement of a longitudinal stone toe with tree revetment to stabilize the site. The Project has placed approximately 1,520 feet of rock and tree revetment on the west side of the Sacramento River and removed gravel on the east side of the river. Approximately 9,120 tons of rock has been placed to approximately half of the bank height to an elevation of approximately 120 feet above mean sea level and the base of the revetment is approximately 30 feet in width. Backfilling behind the stone toe will thicken the toe and provide a medium for revegetation. The top of the bench has been an average of approximately ten feet. Woody brush material has been incorporated into the revetment by anchoring the material with cables and partially sunken large boulders to prevent loss during overtopping flows. The brush portion of the revetment consists of multiple, alternative clusters of trees spaced approximately ten to 15 feet apart at two elevations to provide instream and object cover at a range of flows.



The Project removed approximately 1.73 acres of valley foothill riparian habitat. To mitigate these impacts, 3.46 acres of valley-foothill riparian habitat is being restored or enhanced for a restoration ratio of 2:1.

Restoration is being conducted at two separate locations (**Figures 1 and 2**):

1. 0.35 acre of Shaded Riparian Aquatic (SRA) habitat on the Capay Unit of the SRNWRC along the river bank where construction disturbance occurred between the bank and the revetment itself.
2. 3.46 acres of valley foothill riparian habitat at Doe Island on the Llano Seco Rancho easement property held in trust by NCRLT.

### ***Monitoring Methods***

The following metrics and methods were used to monitor the planted riparian habitat:

- **Percent survival:** Percent survival was calculated by dividing the number of established shrubs and trees by the total number planted.
- **Plant vigor:** A minimum of 25% of the plantings in each mitigation were randomly selected and measured to determine canopy cover and stem diameter at stem midpoint (diameter at breast height [dbh] for trees 4 feet and taller), and height. Plant vigor was rated as excellent, good, fair, or poor.
- **Photographic Documentation:** Photographic documentation sampling points were established utilizing a Garmin hand-held global positioning system (GPS) unit.
- **Percent Linear Closure:** This performance standard for the Shaded Riparian Aquatic (SRA) habitat on the Capay Unit of the SRNWRC will be monitored in year 5 of the monitoring period.

### ***Results***

#### ***Site Conditions and Photographic Documentation***

Tree, shrub, and grass/sedge plantings were completed at both units in the spring of 2009. Planting stakes and cardboard milk container grow tubes were used at both sites. Irrigation lines have been installed at each site and were in good condition. Some browsing of plants has occurred at both sites. A majority of the Capay Unit site was replanted in early fall of 2009 due to lack of adequate moisture. Some replanting occurred at the Doe Island site, as well. Field observation forms are included in **Appendix A**.



At the Capay Unit site, plantings include one row of trees, one row of mixed trees and shrubs, and one row of shrubs positioned perpendicular to the river bank, in addition to a Santa Barbara sedge plant at every tree location. Plantings include 98 shrubs consisting of arroyo willow, sandbar willow, and California rose, along with 85 trees comprised of Fremont cottonwood, western sycamore, and white alder.

The Doe Island site was planted in order to connect a mature riparian corridor resulting from a historical river oxbow. Plantings were completed in 14 rows, alternating overstory species (trees/large shrubs) and understory species (small shrubs/grasses) in each row. Overstory species include valley oak, western sycamore, mule fat, box elder, elderberry, coyote brush, California rose, and California blackberry. Understory species include deer grass, creeping ryegrass, mugwort, California goldenrod, hoary nettle, evening primrose, California pipevine, and clematis. The site includes a total of 2058 plantings and 29 volunteer plants.

Photo points were established at each site using a Garmin hand-held GPS unit, with compass bearings taken to record direction of photo observation (**Figures 1 and 2**). Photos are included in **Appendix B**.

#### *Percent Survival*

All plants were evaluated to establish percent survival of plantings at each site. At the Capay Unit, which had been replanted in the early fall of 2009, 123 out of 183 tree/shrub plantings were alive, for a 67% survival rate. Out of 191 sedge plantings, 177 were found to be alive, resulting in a 93% survival rate.

At the Doe Island site there were 2038 original plantings and 20 replants in the fall of 2009, for a total of 2,058. This fall (2010) a total of 1943 plants were determined to be alive at the time of monitoring, for a 95% survival rate.

#### *Plant Vigor*

Of 90 plants monitored at the Capay Unit, the following plant vigor ratings were determined: poor – 1, fair – 18, good – 18, excellent – 21, missing/dead – 32. Of 569 plants evaluated at the Doe Island site, the following plant vigor ratings were determined: poor – 47, fair – 103, good – 144, excellent – 171, missing/dead – 104. Plant vigor rating data sheets are provided in **Appendix A**.

#### *Conclusion*

Plantings at the Capay Unit were of much smaller stature than those at the Doe Island site. This is primarily due to planting dates; however, growing conditions at the Capay Unit are less conducive due to sandy soils. This may continue to impact plant vigor and survival until plantings are fully established.



At this time, fencing is not recommended for either site; however, some browsing has occurred and some plantings will likely need to be replaced.

It is recommended that both sites be monitored throughout the late spring and summer to assure that irrigation lines are functioning and plants are receiving adequate water. This is more critical at the Capay Unit due to sandy soils as mentioned above.

Monitoring will continue in fall 2011.

### *Attachments*

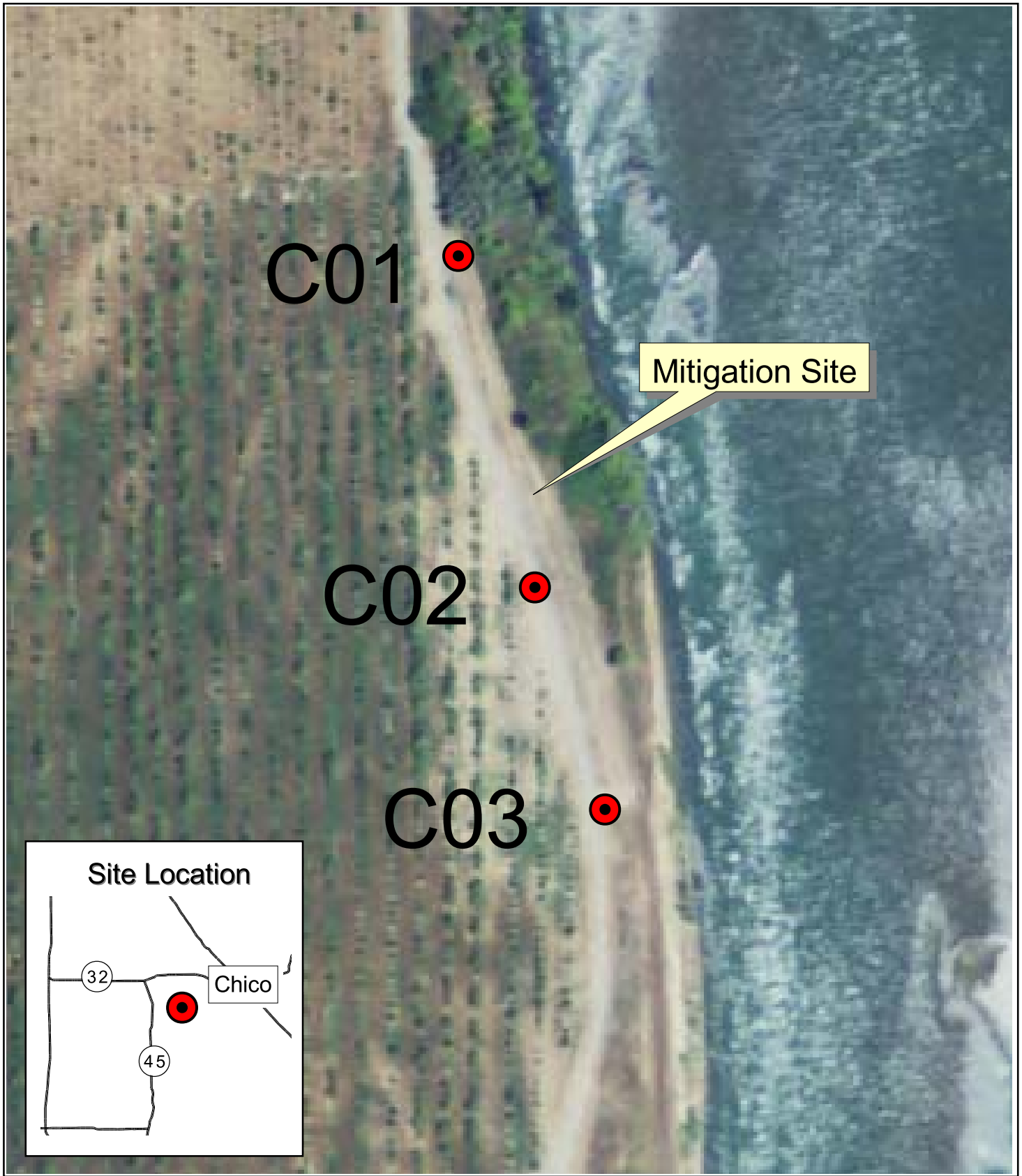
Figure 1. Capay Unit

Figure 2. Doe Island

### *Appendices*

A. NCRLT Vegetation Monitoring and Photo-documentation Dataforms

B. Photos



C01

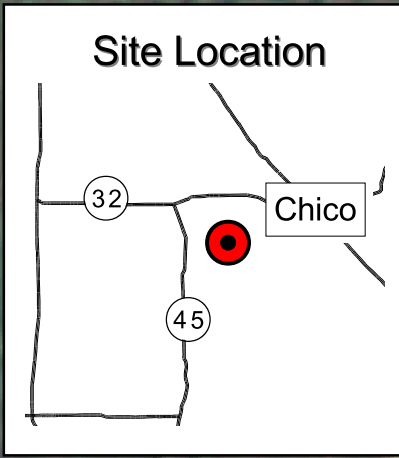


Mitigation Site

C02



C03



N

0 100 Feet

Aerial Imagery: NAIP 2009  
Prepared By: J. Watts  
Date: 1/4/10

"Capay" Mitigation Site  
December 2009 Monitoring

DI01



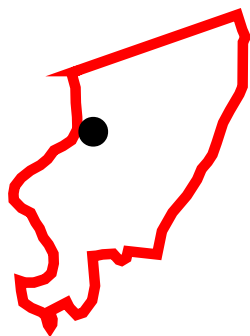
DI03

Mitigation Site

DI02



Site Location



NORTHERN CALIFORNIA  
REGIONAL LAND TRUST



0 100 Feet



Aerial Imagery: NAIP 2009  
Prepared By: J. Watts  
Date: 1/4/10

"Doe Island" Mitigation Site  
December 2009 Monitoring



**Appendix A:**  
**Monitoring Data Forms**

Field Observations Form  
Photodocumentation Data Form  
Vegetation Monitoring Data Form

**NCRLT Field Observations Form**

**Site:** Capay

**County:** Glenn

**Date:** 10/15/10

**Monitor(s):** C. Hatfield and Z. Mendes

**Notes:** general observable conditions (weather, growing conditions, irrigation system, fencing/exclosures, vandalism, etc.)

clear, irrigation system is good, no fence, no vandalism

**Soil moisture:** 1-dry (crumbly and dusty, near wilting point), 2-damp (crumbly but not dusty, some moisture), 3-moist (soft and friable, available water), 4-wet (leaves hand damp, near or above field capacity).

Sample	moisture at depth (cm)			Comments
	0	10		
C01	3	4		very sandy loam
C02	2	2		very sandy loam
C03	2	3		sandy loam

**Understory Vegetation:** height (cm), cover of all veg (%), seed (1-ripe, 2-immature, 3-none)

Sample	Height	Cover	Seed	Dominate Plant Species

**Recommendations or follow-up required:**





# NCRLT Vegetation Monitoring Data Form

Percent survival: The number of established trees and shrubs that were planted during the initial planting are determined during each of the five years in the monitoring timeline.

Plant Vigor: During each of the 5 monitoring years, 25 percent of the plantings in each mitigation area are randomly selected and measured to determine canopy size, stem diameter at stem midpoint (diameter at breast height [dbh] for trees 4 feet and taller), and height. Plant vigor\* is rated as excellent, good, fair, or poor.

**Site:** Capay

**County:** Glenn

**Date:** 10/15/10

**Monitor's Name:** Z. Mendes, C. Hatfield

\*Vigor: poor (discolored, growth stunted, plant stressed), fair (mostly green, average to below average growth, plant not remarkable), good (leaves green, average to above average growth), excellent (rapid growth, plant thriving).

#A/D/M: alive, dead, missing or not planted

Plant ID	A/D/M#	Canopy Size (cm)	Stem Diameter (cm)	Height (cm)	Vigor Rating	Comments
1-2a	M					
1-2b	A	12.5		25	F	
1-5a	D	NA				
1-5b	A	12.5		25	F	
1-7a	D					
1-7b	M					
1-10a	A	112.5	0.5	175	E	
1-10b	A	25		75	G	
1-13a	D					
1-13b	A	27		26	F	
1-20a	D					
1-20b	A	51		13	G	
1-23a	D					
1-23b	A	12.5		10	G	
1-26a	D					
1-26b	A	75		75	E	
1-29a	D					
1-29b	A	13		12	F	
1-31a	A	12.5		50	G	
1-31b	A	26		30	G	
1-33a	A	200	0.5	212	E	
1-33b	A	30		25	E	
1-41a	D					
1-41b	A	100		100	E	
1-45a	A	76		98	G	
1-45b	A	75		26	G	
2-12a	A	97		100	E	
2-12b	A	99		112	E	
2-17A	D					
2-17b	A	75		51	E	
2-22a	D					
2-22b	A	150		126	E	

NCRLT Vegetation Monitoring Data Form

2-26a	A	75		123	G	
2-26b	A	100		130	E	
2-32a	D					
2-32b	D					
2-34a	D					
2-34b	A	100		129	E	
2-40a	D					
2-40b	A	99		75	G	
2-47a	A	100		124	G	
2-47b	D					
2-50a	A	200	0.75	225	E	
2-50b	A	74		100	E	
2-54a	A	100	0.5	200	F	
2-54b	A	24		25	F	
2-56a	A	200		113	G	
2-56b	A	50		25	E	
2-60a	A	300	0.75	300	G	
2-60b	A	23		25	G	
2-63a	A	298	0.5	175	G	
2-63b	A	13		12	F	
2-65a	D					
2-65b	D					
2-69a	D					
2-69b	D					
2-74a	D					
2-74b	A	51		50	E	
2-79a	D					
2-79b	D					
2-81a	A	200	0.5	200	F	
2-81b	D					
3-7a	A	175	3	400	E	
3-7b	A	25		24	F	
3-9a	D					
3-9b	D					
3-11a	D					
3-11b	D					
3-14a	A	113		112	F	
3-14b	A	112		112	F	
3-17a	A	124		113	F	
3-17b	A	13		13	F	
3-23a	A	25		100	E	
3-23b	D					
3-28a	A	100		100	F	
3-28b	A	12		10	F	
3-32a	A	300	1.5	300	E	
3-32b	D					
3-38a	A	312	3.125	500	E	
3-38b	A	25		24	G	





**NCRLT Field Observations Form**

**Site: Doe Island**

**County: Butte**

**Date: 10-12-10**

**Monitor(s): Z. Mendes, C. Hatfield**

**Notes:** general observable conditions (weather, growing conditions, irrigation system, fencing/exclosures, vandalism, etc.)

mostly clear w/ few light clouds  
 no fence  
 irrigation lines good  
 some browsing of planted trees

**Soil moisture:** 1-dry (crumbly and dusty, near wilting point), 2-damp (crumbly but not dusty, some moisture), 3-moist (soft and friable, available water), 4-wet (leaves hand damp, near or above field capacity).

Sample	moisture at depth (cm)			Comments
	0	10		
Plant 1-1	1	3-		silty loam (little sand)
DI 2	2	2+		silty loam (little sand)

**Understory Vegetation:** height (cm), cover of all veg (%), seed (1-ripe, 2-immature, 3-none)

Sample	Height	Cover	Seed	Dominate Plant Species

**Recommendations or follow-up required:**



Percent survival: The number of established trees and shrubs that were planted during the initial planting are determined during each of the five years in the monitoring timeline.

Plant Vigor: During each of the 5 monitoring years, 25 percent of the plantings in each mitigation area are randomly selected and measured to determine canopy size, stem diameter at stem midpoint (diameter at breast height [dbh] for trees 4 feet and taller), and height. Plant vigor\* is rated as excellent, good, fair, or poor.

\*Please note that due to the high number of plantings on this site, only data collected for the "plant vigor" sub-sample are included on this datasheet. Survivorship data were documented in a different format following the planting map provided by Llano Seco Rancho and are available upon request.

**Site: Doe Island**

**County: Butte**

**Date: 10-12-10**

**Monitor's Name: Z. Mendes, C. Hatfield**

\*Vigor: poor (discolored, growth stunted, plant stressed), fair (mostly green, average to below average growth, plant not remarkable), good (leaves green, average to above average growth), excellent (rapid growth, plant thriving).

#A/D/M: alive, dead, missing or not planted

Plant ID	A/D/M#	Canopy Size (cm)	Stem Diameter (cm)	Height (cm)	Vigor Rating	Comments
1-1a	A	150	2.5	225	F	
1-1b	A	12		124	G	
1-5a	A	25		30	G	
1-5b	A	75	2	100	E	
1-9a	A	400	2.5	330	E	
1-9b	A	100		175	E	
1-11a	A	25	1	150	F	
1-11b	A	20		30	F	
1-15a	A	29		60	E	
1-15b	A	120		110	E	
1-20a	A	40		98	E	
1-20b	A	200		140	E	
1-23a	A	30		100	E	
1-23b	A	75		60	F	
1-27a	A	200	1.2	250	E	
1-27b	A	100		75	G	
1-29a	A	400	2	400	E	
1-29b	A	250		150	E	
1-30a	A	74	1	150	E	
1-30b	A	125		175	E	
1-34a	A	148	2	225	G	
1-34b	A	100		76	E	
1-38a	A	300		50	E	
1-38b	A	10		40	F	
1-43a	A	275	2.5	300	E	
1-43b	A	20		75	P	
1-46a	A	300	2.5			
1-46b	A	100		100	E	



1-51a	A	75		150	G	
1-51b	A	148		100	E	
1-55a	A	26		50	E	
1-55b	A	175		120	E	
1-57a	A	150	1.5	200	F	
1-57b	A	100		175	P	
1-62a	A	74	1	175	P	
1-62b	D					
1-64a	D					
1-64b	A	123		175	E	
1-69a	A	175	2	250	E	
1-69b	A	100		173	G	
1-73a	D					
1-73b	D					
2-1a	A	200	1.75	220	G	
2-1b	A	200		175	E	
2-5a	A	25		40	G	
2-5b	M					
2-11a	A	230	2.5	300	E	
2-11b	A	50		75	G	
2-15a	A	30		50	F	
2-15b	A	50		220	G	
2-20a	A	10		40	P	
2-20b	A	30		130	E	
2-23a	A	40	0.75	125	P	
2-23b	A	250		220	E	
2-27a	A	200	1.5	150	E	
2-27b	A	350		320	G	
2-29a	A	300	2.5	230	G	
2-29b	A	50		30	F	
2-34a	A	500	1.75	300	E	
2-34b	A	148		120	E	
2-38a	A	200	2.2	350	E	
2-38b	A	75		130	F	
2-43a	M					
2-43b	A	300		230	E	
2-46a	A	100	1	220	P	
2-46b	A	10		10	P	
2-51a	A	150	1.5	175	G	
2-51b	A	220		120	E	
2-55a	A	20		50	E	
2-55b	A	49		120	F	
2-57a	A	200	1.75	200	G	
2-57b	A	200		98	E	
2-62a	A	10		20	P	
2-62b	A	220		197	E	
2-64a	A	30	0.5	175	P	
2-64b	A	20		30	F	

2-73a	A	10		10	P	
2-73b	A	100		175	E	
3-73a	A	10		49	P	
3-73b	A	19		80	G	
3-69a	A	47		75	F	
3-69b	A	150		150	E	
3-64a	A	98	0.2	150	P	
3-64b	A	50		75	G	
3-62a	A	76	0.3	220	F	
3-62b	A	400		225	E	
3-57a	M					
3-57b	A	100		149	E	
3-55a	A	125	1.5	100	P	
3-55b	A	10		40	P	
3-51a	A	75		60	G	
3-51b	A	400		225	E	
3-46a	A	50		50	G	
3-46b	A	200		400	E	
3-43a	A	200	1.75	248	F	
3-43b	A	75		125	E	
3-38a	A	100	1	227	P	
3-38b	A	75		150	G	
3-34a	A	200		75	E	
3-34b	A	150	1	150	E	
3-30a	M					
3-30b	A	30		50	F	
3-29a	A	350	3	300	E	
3-29b	A	200		400	E	
3-27a	A	125	1.5	250	G	
3-27b	A	20		30	P	
3-23a	A	300	2.5	300	E	
3-23b	M					
3-20a	A	50		80	G	
3-20b	D					
3-15a	A	30		48	F	
3-15b	A	75		50	G	
3-11a	A	49	0.5	125	P	
3-11b	A	77		180	G	
3-9a	A	247	2	250	G	
3-9b	A	50		50	P	
3-5a	A	40		50	G	
3-5b	A	31		50	P	
3-1a	M					
3-1b	A	130		75	E	
4-1a	A	275	2.5	250	F	
4-1b	A	250		125	E	
4-5a	A	20		50	P	
4-5b	A	250		250	E	

4-9a	M					
4-9b	A	125		80	P	
4-11a	M					
4-11b	A	100	0.3	25	F	
4-15a	A	248		75	G	
4-15b	A	50		150	G	
4-20a	A	300	3	275	E	
4-20b	A	96		175	G	
4-23a	A	350	2.5	300	E	
4-23b	A	30		50	G	
4-27a	A	47		75	F	
4-27b	M					
4-29a	A	40		60	F	
4-29b	A	75		50	F	
4-30a	A	200	2	225	G	
4-30b	A	250		250	E	
4-34a	A	250	2	225	G	
4-34b	A	178		200	E	
4-38a	A	150	1.75	275	F	
4-38b	A	200		200	G	
4-43a	A	10		30	P	
4-43b	A	200		200	E	
4-46a	A	350	1	300	E	
4-46b	A	200		250	E	
4-51a	M					
4-51b	A	30		40	P	
4-55a	M					
4-55b	A	150		400	G	
4-57a	A	25		47	F	
4-57b	M					
4-62a	A	50		60	F	
4-62b	A	300		250	E	
4-64a	A	175	2	180	P	
4-64b	A	175		125	E	
4-69a	A	200	1	200	P	
4-69b	A	198		175	G	
4-73a	A	150	3.5	400	P	
4-73b	A	75		175	G	
5-73a	A	50		70	P	
5-73b	A	250		180	E	
5-69a	A	300	2	250	G	
5-69b	M					
5-57a	M					
5-57b	M					
5-55a	A	150	2	200	P	
5-55b	A	175		400	E	
5-51a	M					
5-51b	A	50		125	F	

5-46a	A	400	2.5	425	E	
5-46b	M					
5-43a	M					
5-43b	A	180		200	G	
5-38a	A	250		100	E	
5-38b	A	10		10	P	
5-34a	A	300	2.5	250	G	
5-34b	A	200		100	E	
5-30a	A	75	1	100	E	
5-30b	A	250		225	E	
5-29a	A	375	1.75	425	E	
5-29b	A	120		75	E	
5-27a	A	275	3	300	G	
5-27b	A	149		50	E	
5-23a	A	350	4	450	G	
5-23b	A	50		125	F	
5-20a	A	77	1	75	E	
5-20b	A	30		50	F	
5-15a	A	51	1	75	G	
5-15b	A	30		61	F	
5-11a	A	49	1	150	G	
5-11b	A	75		77	P	
5-9a	A	400	2	350	E	
5-9b	A	30		50	F	
5-5a	A	30		48	F	
5-5b	M					
5-1a	M					
5-1b	M					
6-1a	A	150	1.75	220	F	
6-1b	A	100		150	E	
6-5a	A	30		75	G	
6-5b	A	100		125	E	
6-9a	M					
6-9b	A	200		200	E	
6-11a	A	250	1.75	220	G	
6-11b	M					
6-15a	A	30	1	100	F	
6-15b	M					
6-20a	M					
6-20b	M					
6-23a	A	300	2.5	350	E	
6-23b	M					
6-27a	A	200	2	220	E	
6-27b	A	50		150	E	
6-29a	A	200	2.5	300	F	
6-29b	A	200		250	E	
6-30a	A	20		60	G	
6-30b	A	100		200	E	

6-34a	A	300	1.75	500	E	
6-34b	A	100		175	E	
6-38a	A	100	1.75	200	P	
6-38b	A	50		175	E	
6-43a	M					
6-43b	A	150		220	E	
6-46a	A	175	1.75	275	F	
6-46b	M					
6-51a	A	50	2.5	200	P	
6-51b	M					
6-55a	D					
6-55b	A	100		200	G	
6-57a	A	75	1.75	175	P	
6-57b	A	100		300	E	
6-62a	A	200	1.25	220	G	
6-62b	A	150		225	G	
6-64a	M					
6-64b	A	25		100	F	
6-69a	A	20		50	F	
6-69b	A	150		175	E	
6-73a	A	300	1.5	400	E	
6-73b	A	20		50	G	
7-1a	A	150	1	210	G	
7-1b	A	100		175	G	
7-5a	A	25		60	G	
7-5b	A	120		100	E	
7-9a	A	150	1.5	225	F	
7-9b	A	100		100	G	
7-11a	A	175	2	300	G	
7-11b	A	250		200	E	
7-15a	A	25		75	G	
7-15b	A	10		100	G	
7-20a	A	75		100	G	
7-20b	A	50		75	G	
7-23a	A	200	3	350	E	
7-23b	M					
7-27a	A	40		80	F	
7-27b	M					
7-29a	A	220	2	210	G	
7-29b	A	75		210	F	
7-30a	A	75		150	G	
7-30b	A	100		150	E	
7-34a	A	200		100	E	
7-34b	M					
7-38a	A	100	0.5	350	G	
7-38b	A	200		250	E	
7-43a	A	300	3	500	E	
7-43b	A	10		150	F	

7-46a	A	150		75	G	
7-46b	M					
7-51a	A	150		150	G	
7-51b	M					
7-55a	A	30		150	G	
7-55b	A	70		125	P	
7-57a	A	75		50	F	
7-57b	A	50		100	F	
7-62a	A	10	0.5	150	G	
7-62b	A	120		250	E	
7-64a	M					
7-64b	M					
7-69a	A	25		75	G	
7-69b	A	25		100	F	
7-73a	A	150		175	E	
7-73b	M					
8-1a	A	220	3	400	E	
8-1b	A	300		220	E	
8-5a	M					
8-5b	A	125		110	E	
8-9a	A	300	2	300	G	
8-9b	A	100		50	G	
8-11a	A	100		200	E	
8-11b	A	200		175	E	
8-15a	A	140	2	350	G	
8-15b	A	75		210	E	
8-20a	A	50		125	G	
8-20b	A	12.5		75	P	
8-23a	A	220	1.5	200	E	
8-23b	A	100		175	G	
8-27a	A	12.5		80	G	
8-27b	A	12.5		50	F	
8-29a	A	200	3	400	E	
8-29b	A	200		225	E	
8-30a	A	200	2	325	G	
8-30b	A	75		400	E	
8-34a	A	125		150	E	
8-34b	A	150		175	E	
8-38a	A	300	3	400	E	
8-38b	A	150		125	E	
8-43a	A	175	1	200	G	
8-43b	A	50		150	G	
8-46a	A	12.5		50	F	
8-46b	A	100		125	F	
8-51a	A	12.5		25	F	
8-51b	M					
8-55a	A	100		50	F	
8-55b	A	75		200	E	

8-57a	A	100		175	E	
8-57b	A	25		150	G	
8-62a	A	25	0.5	150	F	
8-62b	M					
8-64a	A	40	0.1	175	G	
8-64b	A	25		75	G	
8-69a	M					
8-69b	A	200		200	E	
8-73a	M					
8-73b	A	100		150	G	
9-1a	A	150	1	212	G	
9-1b	A	100		125	E	
9-5a	A	12.5		50	G	
9-5b	A	150		200	E	
9-9a	A	350	2	350	E	
9-9b	A	150		175	E	
9-11a	A	150	1	250	G	
9-11b	A	250		300	G	
9-15a	A	30		50	G	
9-15b	A	200		175	E	
9-20a	A	25		75	F	
9-20b	A	100		100	F	
9-23a	A	300	3	350	E	
9-23b	M					
9-27a	A	175	2.5	300	G	
9-27b	A	25		100	G	
9-29a	A	300	1.75	300	E	
9-29b	M					
9-30a	A	25		75	G	
9-30b	A	50		125	F	
9-34a	M					
9-34b	A	25		175	F	
9-38a	M					
9-38b	A	300		213	E	
9-43a	A	250	3	313	G	
9-43b	A	50		175	G	
9-46a	A	300	2.5	300	G	
9-46b	A	50		175	G	
9-51a	A	25		75	G	
9-51b	A	50		125	F	
9-55a	A	25		30	F	
9-55b	A	100		175	E	
9-57a	A	75	2	213	P	
9-57b	A	200		175	E	
9-62a	A	100	2	212	F	
9-62b	A	100		150	F	
9-64a	A	175	2.5	250	F	
9-64b	M					

9-69a	A	300	1.5	300	G	
9-69b	A	50		180	F	
9-73a	A	25	1	200	P	
9-73b	M					
10-1a	A	75	1	200	G	
10-1b	A	175		175	E	
10-5a	A	12.5		30	F	
10-5b	A	75		180	G	
10-9a	A	175		75	E	
10-9b	A	175		175	E	
10-11a	A	200	3	400	E	
10-11b	A	175		200	G	
10-15a	A	25		60	E	
10-15b	A	200		180	E	
10-20a	A	25		60	G	
10-20b	A	75		200	E	
10-23a	A	10		125	F	
10-23b	A	100		125	F	
10-27a	A	200		175	G	
10-27b	A	300		300	E	
10-29a	A	200	1.75	300	G	
10-29b	A	200		175	E	
10-30a	A	50	1	175	E	
10-30b	A	200		400	E	
10-34a	A	200	1.75	400	E	
10-34b	A	100		400	E	
10-38a	A	200	3	300	G	
10-38b	M					
10-43a	A	100		100	F	
10-43b	A	100		175	F	
10-46a	A	250	2.5	400	G	
10-46b	M					
10-51a	A	150	1.25	213	F	
10-51b	A	50		100	G	
10-55a	A	13		30	F	
10-55b	A	25		75	P	
10-57a	A	50		125	P	
10-57b	M					
10-62a	A	12		75	P	
10-62b	M					
10-64a	M					
10-64b	A	13		100	G	
10-69a	A	25		100	E	
10-69b	A	175		400	E	
10-73a	M					
10-73b	A	100		200	G	
11-1a	A	150	2	300	G	
11-1b	A	200		200	E	



11-5a	A	25		60	F	
11-5b	A	150		175	E	
11-9a	A	300	1.5	200	F	
11-9b	A	50		175	G	
11-11a	A	150	1.75	250	G	
11-11b	A	200		150	E	
11-15a	A	25		50	F	
11-15b	A	50		75	F	
11-20a	A	30		75	F	
11-20b	A	300		200	E	
11-23a	A	300	3	300	G	
11-23b	A	300		175	G	
11-27a	A	75	1	300	F	
11-27b	A	300		300	E	
11-29a	A	300	2.5	300	E	
11-29b	A	25		200	G	
11-30a	A	25		75	F	
11-30b	A	75		150	F	
11-34a	A	100		50	G	
11-34b	A	75		150	E	
11-38a	A	200	2.5	300	E	
11-38b	A	13		50	F	
11-43a	A	250	1.5	300	F	
11-43b	A	50		150	G	
11-46a	A	30		75	G	
11-46b	A	25		75	P	
11-51a	A	25		75	F	
11-51b	A	200		200	E	
11-55a	M					
11-55b	M					
11-62a	D					
11-62b	M					
11-64a	A	200	1.75	275	G	
11-64b	A	150		175	G	
11-69a	A	150		125	G	
11-69b	M					
11-73a	M					
11-73b	M					
12-1a	A	200	2.5	213	F	
12-1b	A	75		75	F	
12-5a	D					
12-5b	M					
12-9a	A	10		30	F	
12-9b	A	200		213	E	
12-11a	A	100	1.75	175	G	
12-11b	A	13		125	F	
12-15a	A	30		150	F	
12-15b	A	25		150	G	

12-20a	A	50		125	G	
12-20b	A	200		175	E	
12-23a	A	275	3	300	G	
12-23b	A	200		150	G	
12-27a	A	25		75	G	
12-27b	M					
12-29a	A	200	1	250	G	
12-29b	A	175		175	E	
12-30a	A	300	2	300	E	
12-30b	A	250		300	E	
12-34a	M					
12-34b	M					
12-38a	A	200	1.75	300	G	
12-38b	A	75		75	G	
12-43a	M					
12-43b	A	75		175	G	
12-46a	M					
12-46b	M					
12-51a	A	18		25	F	
12-51b	M					
12-55a	A	100	1.5	225	G	
12-55b	A	100		150	G	
12-57a	M					
12-57b	M					
12-62a	A	20		30	F	
12-62b	A	75		75	F	
12-64a	D					
12-64b	A	200		175	F	
12-69a	A	150	1	300	F	
12-69b	M					
12-73a	A	175	1	200	P	
12-73b	M					
13-1a	A	75	2.5	300	F	
13-1b	A	25		50	G	
13-5a	A	25		75	F	
13-5b	A	25		75	G	
13-9a	A	200	1.5	400	E	
13-9b	A	200		150	E	
13-11a	A	150	1	225	F	
13-11b	A	25		100	G	
13-15a	M					
13-15b	A	25		75	F	
13-20a	M					
13-20b	A	200		175	E	
13-23a	A	175	1	250	G	
13-23b	A	100		225	E	
13-27a	A	200	2.5	300	G	
13-27b	A	150		275	E	

13-29a	A	300	1.5	325	E	
13-29b	M					
13-30a	A	25		50	F	
13-30b	M					
13-34a	A	150		25	G	
13-34b	M					
13-38a	A	175	1	200	F	
13-38b	M					
13-43a	A	175	1	200	F	
13-43b	M					
13-46a	M					
13-46b	M					
13-51a	A	175	1.5	150	E	
13-51b	M					
13-55a	A	175	1	200	P	
13-55b	M					
13-57a	M					
13-57b	M					
13-62a	A	200	1	325	G	
13-62b	A	200		150	E	
13-64a	A	150	1.75	213	P	
13-64b	M					
13-69a	A	25		75	P	
13-69b	M					
13-73a	M					
13-73b	M					
14-1a	A	30		50	P	
14-1b	A	100		175	E	
14-5a	A	25		50	F	
14-5b	A	75		125	G	
14-9a	A	50		50	F	
14-9b	A	150		175	E	
14-11a	A	200	1.75	225	F	
14-11b	A	200		100	G	
14-15a	A	25		75	G	
14-15b	A	25		150	G	
14-20a	A	150	2	213	G	
14-20b	A	50		150	F	
14-23a	M					
14-23b	A	75		100	G	
14-27a	A	200	2.5	313	F	
14-27b	A	25		100	G	
14-29a	A	13		30	G	
14-29b	A	50		200	E	
14-30a	M					
14-30b	M					
14-34a	M					
14-34b	A	25		113	E	
14-38a	A	100		25	G	
14-38b	A	13		50	F	
14-43a	A	100	1	200	P	
14-43b	A	13		50	F	
14-46a	A	13		30	F	





**Appendix B:**  
**Photos**

## Appendix B: M&T Riparian Restoration – Capay Unit



Photo Point C01, Direction of View – 354 degrees  
UTM's – 590373 east, 4395319 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point C02, Direction of View – 44 degrees  
UTM's - 590399 east, 4395210 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point C02, Direction of View – 20 degrees  
UTM's – 590399 east, 4395210 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point C03, Direction of View – 214 degrees  
UTM's - 590421 east, 4395139 north  
Surveyor – Z. Mendes, Date – 10/15/10

## Appendix B: M&T Riparian Restoration – Doe Island Unit



Photo Point DI-01, Direction of View – 210 degrees  
UTM's – 588140 east, 4384748 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point DI-01, Direction of View – 210 degrees  
UTM's - 588140 east, 4384748 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point DI-02, Direction of View – 340 degrees  
UTM's – 588298 east, 4384748 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point DI-02, Direction of View – 260 degrees  
UTM's - 588298 east, 4384748 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point DI-03, Direction of View – 60 degrees  
UTM's – 588117 east, 4384692 north  
Surveyor – Z. Mendes, Date – 10/15/10



Photo Point DI-03, Direction of View – 100 degrees  
UTM's – 588117 east, 4384692 north  
Surveyor – Z. Mendes, Date – 10/15/10