

**Natural Resource Damage Assessment Settlement**

**ANNUAL MONITORING REPORT**

**Fort Wayne Reduction Site  
Allen County, Indiana**

**Submitted: November 17, 2001**

**Prepared for:  
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## Natural Resource Damage Assessment Settlement

Fort Wayne Reduction Site  
Allen County, IN

### Annual Monitoring Report

The following report summarizes the monitoring work that was completed on the Fort Wayne Reduction Site Reforestation project located in Allen County, IN. (See Location Map A). This report is submitted as part of the requirement of the Trustee approved Restoration Plan dated December 23, 1999.

Planting of the seedlings was completed on May 6-7<sup>th</sup>, 2000. 25,400 seedlings were machine planted on approximately 47 acres and annual herbicide was applied at the time of planting. The trees were planted on as close to a 9' x 9' spacing as possible. It should be noted that small changes in soil type, moisture, and terrain may result in trees being planted either somewhat closer or farther apart than that. The following seedlings based upon nursery availability, were planted on the site:

Bur Oak	3,000
Pin Oak	2,500
Swamp White Oak	1,500
Swamp Chestnut Oak	1,500
Overcup Oak	1,000
Green Ash	3,500
Sycamore	3,500
River Birch	3,000
Shellbark Hickory	1,000
Buttonbush	1,600
Silky Dogwood	1,700
Red Osier Dogwood	<u>1,600</u>
	25,400

### **Monitoring**

Three, one acre test plots approximately (208' x 208'), were established on September 14-15<sup>th</sup>, 2001. Metal "T" fence posts were installed at the corners of all three plots to mark the boundaries. The test plots were located to sample tree survival rates in areas that have different soil types, as well as differences in elevation (depressional areas and high ground). Three photographic stations were also set up in the monitoring areas to

provide visual documentation of development of the areas. Observations of wildlife were noted during all site visits to the reforestation property to document usage of the property.

### **Monitoring Area #1**

Monitoring area # 1 is located in the far west field north of Parrott Road and east of the abandoned Nail Road. The terrain in this field is fairly level with the one exception being a low depression in the far southeast corner of the field next to the drainage ditch. This field was the last area to be planted. In order to plant the trees that we had remaining, the field was planted on an approximately 8'x 8' spacing (680 trees/acre).

Results:

(See attached Monitoring Area #1 Table for complete results)

Total Stems Surviving for Monitoring Area #1 was 586/Acre. Green Ash and Silky Dogwood were the most abundant species followed by Sycamore and Red Osier Dogwood. Total Percent Stem Survival for Area #1 was 86% and 11 different species were identified. Deer damage on the Dogwood shrubs and Rabbit damage to the River Birch trees was noticed.

### **Monitoring Area #2**

Monitoring Area #2 is located in the far southeast corner of the property on the north side of Parrott Road. This area was selected as a monitoring area to sample seedling survival in an area that has frequently saturated soil conditions. The test plot is located in a depression area on the landscape and is frequently saturated by runoff from surrounding areas.

Results:

(See attached Monitoring Area #2 Table for complete results)

Total Stems Surviving for Monitoring Area #2 was 470/Acre. Swamp White Oak and Green Ash were the most abundant species followed by River Birch and Bur Oak. Total Percent Stem Survival for Area #2 was 87% and 8 different species were identified. Rabbit damage to the River Birch and Deer damage on the Dogwood shrubs was noticed again.

### **Monitoring Area #3**

Monitoring Area #3 is located along the north side of Parrott Road in the southwest corner of the field. The test plot area is mostly level and provides a good sampling area that is fairly representative of the high areas in the rest of the field.

Results:

(See attached Monitoring Area #3 Table for complete results)

Total Stems Surviving for Monitoring Area #3 was 544/acre. Pin Oak and Swamp White Oak were the most abundant species followed by Bur Oak and River Birch. Total Percent Stem Survival for Area #3 was 100% and 8 different species were identified. Rabbit damage to the River Birch and Deer damage to the Dogwood shrubs was once again noticed.

### **General Discussion**

Prior to the reforestation project, the field was farmed in a corn and soybean rotation with the field last planted to soybeans in 1999. Nearly average precipitation levels and weather have provided suitable growing conditions allowing the seedlings to do quite well. A pre-emergent herbicide was applied in April 2001 to provide weed control and help reduce the competition from grasses. An annual herbicide will also be applied in 2002 to provide one additional year of weed control and promote establishment of the tree seedlings. In addition to the planted seedlings, volunteer seedlings are also starting to provide additional habitat. Volunteer species identified include; Silver Maple, Red Maple, Slippery Elm, Box Elder, White Ash, Sycamore, and Cottonwood.

Water quality benefits to the Maumee River are also noticeable on the project area. Crop residue drift lines and sediment covered debris indicate that the area has experienced some inundation from the Maumee River since the area was planted in May of 2000.

Wildlife habitat has improved due to the increased cover in the field. Wildlife observed on May 16, 2001 and on September 14-15<sup>th</sup>, 2001 include the following:

- Wood duck (nesting along the river bank)
- Mallard
- Hooded Merganser (nesting along the river bank)
- Red wing Blackbird
- Crow
- Brown headed Cowbird
- Gold Finch
- Cardinal
- Cooper's Hawk
- Red Tail Hawk
- Deer
- Rabbit
- Fox Squirrel
- Coyote
- Opossum
- Northern Leopard Frog
- Snapping Turtle

## **Conclusions**

The reforestation project is meeting the goals of the Restoration Plan. The three monitoring areas averaged 91% Total Stem Survival and had an average of 9 different species present since the initial planting in May 2000. Volunteer tree species and planted seedlings are beginning to provide additional cover for wildlife and water quality benefits are already being provided in the form of sediment deposition and nutrient removal from the water column.

Monitoring Area #1 Approximately 1 Acre (208' x 208')

Species List	Total Stems Surviving by Species	% Stem Survival by Species
Bur Oak	3	1.0%
Pin Oak	17	2.9%
Swamp White Oak	33	5.6%
Swamp Chestnut Oak	6	1.0%
Green Ash	236	40.3%
Sycamore	75	12.8%
River Birch	18	3.1%
Shellbark Hickory	0	0.0%
Overcup Oak	4	1.0%
Silky dogwood	126	21.5%
Red Osier Dogwood	54	9.2%
Buttonbush	14	2.4%

Total Stems Surviving for Monitoring Area #1 586/Acre

Total Percent Stem Survival\* = 86% (586 / 680)

Species Richness = 11

\* Total Percent Stem Survival = Total Surviving Stems / 680 trees per acre planted on 8' x 8' spacing.

NOTE: Area #1 was the last area to be planted. In order to plant the approximate 3 acre field, remaining trees were planted on an approximately 8' x 8' spacing (680 Trees/Acre.)

Monitoring Area #2 Approximately 1 Acre (208' x 208')

<b>Species List</b>	<b>Total Stems Surviving by Species</b>	<b>% Stem Survival by Species</b>
Bur Oak	62	13%
Pin Oak	54	11.5%
Swamp White Oak	77	16.4%
Swamp Chestnut Oak	25	5.3%
Green Ash	75	16.0%
Sycamore	50	10.6%
River Birch	69	14.7%
Shellbark Hickory	0	0.0%
Overcup Oak	0	0.0%
Silky dogwood	58	12.3%
Red Osier Dogwood	0	0.0%
Buttonbush	0	0.0%

Total Stems Surviving for Monitoring Area #2     470/Acre

Total Percent Stem Survival\* = 87% (470 / 540)

Species Richness = 8

\* Total Percent Stem Survival = Total Surviving Stems / 540 trees per acre planted on 9' x 9' spacing.

Monitoring Area #3 Approximately 1 Acre (208' x 208')

Species List	Total Stems Surviving by Species	% Stem Survival by Species
Bur Oak	81	15%
Pin Oak	150	27.0%
Swamp White Oak	105	19.0%
Swamp Chestnut Oak	20	3.0%
Green Ash	55	10.0%
Sycamore	35	6.0%
River Birch	63	11.0%
Shellbark Hickory	0	0.0%
Overcup Oak	2	<1%
Silky dogwood	33	6.0%
Red Osier Dogwood	0	0.0%
Buttonbush	0	0.0%

Total Stems Surviving for Monitoring Area #3     544/Acre

Total Percent Stem Survival\* = 100% (544 / 540)

Species Richness = 8

\* Total Percent Stem Survival = Total Surviving Stems / 540 trees per acre planted on  
9' x 9' spacing.



**Location Map A**  
Reforestation Areas and  
Monitoring Areas  
Fort Wayne Reduction Site NRDA  
Allen County, IN

1N

NAIL ROAD

**TREE PLANTING**

+PS  
PS

Monitoring Area #1

**TREE PLANTING**

+PS Monitoring Area #3

Monitoring Area #2

+PS

+PS = photo STATION  
SCALE: 1" = 400'

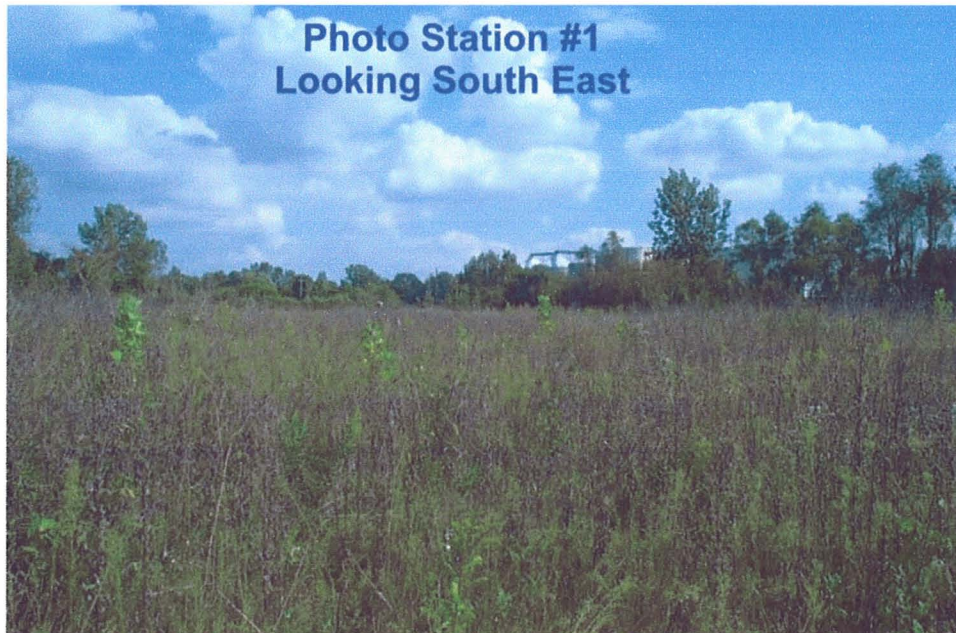
PARRETT ROAD

HARTZELL ROAD





**Photo Station #1**  
**Looking South East**



**Photo Station #1**  
**2' tall Pin Oak**





**Photo Station #2**  
**Looking North East**  
**5' Tall Sycamore Trees**



**Photo Station #2**  
**Looking North West**



**Photo Station #3  
Looking West**



**Photo Station #3  
Looking East  
Sycamore and Green Ash**

