

**WETLAND MITIGATION MONITORING
REPORT No. 3 (SPRING 2008)**

**CLARION Co. ECONOMIC DEVELOPMENT CORPORATION
BEAVER TOWNSHIP INDUSTRIAL PARK PHASE II
INFRASTRUCTURE DEVELOPMENT
WETLAND MITIGATION SITE**

BEAVER TOWNSHIP, CLARION COUNTY

**PREPARED FOR:
CLARION Co. ECONOMIC DEVELOPMENT COUNCIL
21 NORTH 6TH AVENUE
CLARION, PA 16214**

JUNE 2008

**CLARION COUNTY ECONOMIC DEVELOPMENT CORPORATION
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1.0 INTRODUCTION

The following wetlands monitoring report was prepared to document the presence, extent and progression of the constructed wetland within the area referred to herein as the mitigation site, as completed in conjunction with the Clarion County Economic Development Corporation's (CCEDC) Beaver Township Industrial Park Phase II Infrastructure Development project. This document details the spring evaluation findings of year two (2) of the three year bi-annual monitoring reports as required by the Pennsylvania Department of Environmental Protection (PADEP) in accordance to PA Code Title 25 § Chapter 105 Water Obstruction and Encroachment and Wetlands permits (E16-125) issued to the CCEDC and document number 363-0300-001 Design Criteria – Wetlands Replacement/Monitoring.

The mitigation site was constructed during the fall of 2006. The project areas are located immediately east of SR 338 and north and south of T-392 Kribbs Road (mitigation area 2) in Beaver Township, Clarion County. The construction of the industrial park infrastructure and appurtenances resulted in a total of 0.69 acres of wetland impact to a Palustrine Emergent (PEM) and Palustrine forested (PFO) wetlands. Mitigation efforts proposed to construct 0.89 acres of wetland within the project area, off which approximately 0.41 acres of PEM wetlands and 0.43 acres of PFO/PEM wetlands were constructed adjacent to existing wetlands; thereby, enhancing the existing wetland. The general project location is shown on Figure 1 Location Map.

This report provides the information on the mitigation area wetland characteristics, including the three criteria: soils, vegetation and hydrology. The characteristics of the project area and wetlands are further documented with color photographs and a wetland data forms. The second year spring monitoring of the three (3) year bi-annual evaluation occurred on June 10, 2008 by Gwin, Dobson & Foreman, Inc. (GD&F).

2.0 MONITORING SCHEDULE

The following Monitoring Schedule is proposed to evaluate and monitor the constructed wetlands in accordance to the Department's monitoring requirements:

| MONITORING YEAR | SPRING | FALL |
|-----------------------------------|---------------|-------------|
| Biannual Sampling Schedule | | |
| 2008 | Completed | September |
| 2009 | June | September |
| Annual Sampling Schedule | | |
| 2010 | June | |
| 2011 | June | |

3.0 METHODOLOGY

The study area was evaluated to determine the extent and progression of the CCEDC's mitigation site on June 10, 2008. Wetland identification and delineations were conducted in accordance with the guidelines established by the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987), which requires the evaluation of soils, vegetation and hydrology. The Routine-On-Site Determination Method was used due to the homogenous characteristics of the study area. This technique uses a multi-parameter approach, which requires positive evidence of the three main criteria, hydrophytic vegetation, soils and wetland hydrology.

Classification of all wetlands was conducted in accordance to the United States Fish and Wildlife Service (USFWS) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, 1979). The mitigation site and adjoining wetland and upland area was characterized in the field. Routine Wetland Determination Forms were completed for the wetland and a representative upland location (Appendix A).

Soils were characterized by evaluating the upper horizons of the soil profile. Soil pits were dug in each wetland and upland area using a "sharpshooter" spade. Soil horizons were evaluated using normal field protocols for determining texture and nomenclature. The *Munsell Soil Charts* (GregMacBeth, 2000) were used to determine the colors of horizons and redoximorphic features. The *Soil Survey of Clarion County, Pennsylvania* (USDA-SCS, 1958) was used for identifying soil types and verifying field descriptions.

Vegetation was verified using a variety of field guides and professional experience. Plant species were assigned an indicator status [e.g., Upland (UPL), Facultative Upland (FACU), Facultative (FAC), Facultative Wetland (FACW) or Obligate Wetland (OBL)] based on the USFWS *National List of Plant Species that Occur In Wetlands: 1988 National Summary* (Reed, 1988).

Wetland hydrology was characterized for the site using observations of indicators such as inundation, saturation, water stained leaves, drift lines, sediment deposition etc. Other primary and secondary wetland hydrology indicators were recorded if present. Methods for determining hydrologic indicators were categorized according to the type of indicator.

The monitoring efforts were completed using three (3) transects that traverse the contoured site. Wetland boundaries were determined along each transect as well as several areas between transects to further define wetland boundaries.

4.0 WETLAND CHARACTERISTICS

The mitigation sites are constructed in accordance to the mitigation plan submitted as part of the Chapter 105 Water Obstruction and Encroachment Permit (E16-125). Two separate mitigation wetlands were constructed to replace the function and value of the wetlands disturbed by the construction activities. Mitigation area 1 is a 0.41 acre PEM wetland constructed adjacent to an existing PEM/PSS wetland. Mitigation area 2 is a 0.41 acre PEM/PFO wetland constructed adjacent to a PEM/PFO wetland along T-392 (Kribbs Road).

During the June 10, 2008 monitoring event, hydrology was found to vary through the mitigation areas. It was evident that hydrology was being readily supplied from the high ground water table and surface water runoff in mitigation Area 2, while mitigation area 1 was saturated with pockets of inundation, however overall was damp throughout. Test pits and soil borings showed that the majority of the area was damp throughout the soil column, thereby assuring that the system was performing as designed and is functioning as a true evolving wetland ecological system considering the lack of rain over the course of few weeks prior to the evaluation. Evidence of inundation was documented at several locations, in which the soils were darker, residual staining was visible, and a more diverse quantity of hydrophytic vegetation was documented in these areas.

Based on field investigations of the mitigation site, a total of 0.84 acres of potential wetland habitat was created, of which 0.43 acre was constructed to function as a PFO. Despite the site having only been seeded in the fall of 2006, the overall diversity and density of the proposed vegetation through the two (2) growing season has established very successfully. It was noted that several hydrophytic species had emerged and are presumed to continue to thrive over the next few growing seasons, thereby providing for a self-sustaining wetland system. The survival rate of the tree species within the wetland area was exceptional with a 90% survival rate. The tree species have grown substantially over the past two years, with some growing more than 24-inches over the past year.

Of the vegetation documented within the site, approximately 75% of the vegetation is either Facultative or Obligate species, emphasizing that governing environmental conditions for hydrophytic vegetation continue to exist after two (2) growing season. It is to be noted that in determining whether an area is "vegetated" for the purpose of Section 404, investigators must consider the density of vegetation at the site being evaluated. While it is not possible to develop a numerical method to determine how many plants or how much biomass is needed to establish an area as being vegetated or unvegetated, it is intended that the predominant condition of the site be used to make that characterization. As such, based on the June 10, 2008 monitoring event, the overall conditions and vegetation at the site were found to be very satisfactory based on the establishment diversity and density since the past two (2) evaluations.

4.1 Soils

The soils used for the creation of the mitigation wetland were either existing or placed during construction and represent the Bethesda soils (193D), gently sloping to moderately steep, very stony. It is noted that much of the soil used for construction of the mitigation wetland areas was extracted from the impacted wetland located within the ± 28.3 acres disturbed. As such, this segregated soil was hydric in nature and provided a suitable substrate for the development of the mitigation sites. It is presumed that the site conditions and succession of the mitigation sites are

persistent, thereby allowing hydric conditions to prevail, and as such remain saturated or inundated long enough during the growing season to maintain anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation.

Numerous test pits were dug along each transect to observe soil conditions. Test pits were dug to depths in excess of 18 inches, where Munsell soil color charts were used to aid in the determination of presence/absence of hydric soil conditions (i.e. organic material, mottling, gleying, Munsell chromas of two or less, saturation, histic epipedons, sulfidic odors, and iron/manganese concretions.) Additional test pits were dug along wetland/upland boundaries to further define the extent of the created wetland. Within the mitigation site, the soils were largely damp with some saturation and evidence of areas allowing for prolonged reducing conditions to exist. Conversely, soils within the upland areas remained oxidized having higher chromas. Due to the relatively young age of the created wetland and the use of impacted hydric soils, it is difficult to distinguish from previous soil characteristics or evolving hydric conditions. It is anticipated that over the next several years true hydric soil conditions will exist. The overall success of the soils to sustain hydrophytic vegetation was present and is anticipated to continue to prevail within the site.

**TABLE 1
STUDY AREA SOIL(S)**

| STUDY AREA | SERIES NAME - SYMBOL | MAPPING UNIT (SCS DESCRIPTION) | HYDRIC CONDITIONS |
|-------------------|-----------------------------|--|--|
| Mitigation Area 1 | Bethesda Soils (193D) | Gently sloping to moderately steep very stony soils, which are well drained. Permeability is slow. Seasonal water table > 60 in. | YES 1) Damp/Saturated in upper 12" 2) Water stained leaves 3) Mud Cracks |
| Mitigation Area 2 | Bethesda Soils (193D) | Gently sloping to moderately steep very stony soils, which are well drained. Permeability is slow. Seasonal water table > 60 in. | YES 1) Evidence of existing and previous Inundation 2) Damp/Saturated throughout the soil column 3) Water stained leaves 4) Mud Cracks |
| Upland Sites | Bethesda Soils (193D) | Gently sloping to moderately steep very stony soils, which are well drained. Permeability is slow. Seasonal water table > 60 in. | NO |

4.2 Vegetation

The created wetlands were seeded approximately twelve (12) months prior this first monitoring event, thereby providing two (2) full growing season for the initial establishment of vegetation. The site was seeded with a combination of herbaceous wetland seeding mixes (OBL-FACW – ERNMX 120 by Ernst Conservation Seed) and a wildlife shrub mix (Wildlife Food & Shelter Shrub Mix – ERNMX 138 by Ernst Conservation Seed) to simulate an enhanced wetlands similar to that of the impacted wetlands. Vegetation composition and interspersions necessary to replace the proposed impacted wetland habitat consists of emergent and scrub/shrub species and tree

species as was documented within the site. The field reconnaissance documentation from the Spring 2007 monitoring event was to be used to set the baseline for evaluating the overall success of the mitigation project. It is believed that the combination of seed mixes, natural seed dispersal from the adjacent wetlands and overall site conditions have and will continue to allow for a wetland system to flourish, thus providing numerous ecological and environmental functions to the immediate area. Photographic documentation is provided in Appendix B.

After a thorough evaluation of the vegetation occurring in this project area, plant species were identified by an environmental scientist/ecologist. Plant community composition consisting of greater than 50% dominant OBL, FACW and FAC species is considered hydrophytic for the purpose of the wetland classification criteria. The dominant vegetation of mitigation Area 1 documented during the fall 2007 monitoring event consisted of American Managrass (*Glyceria grandis*); Reed Canary Grass (*Phalaris arundinacea*); Wild Prone Grass (*Bromus latiglumis*); and Joe Rye Weed (*eupatorium fistubsum*). Upland species at both mitigation sites consisted of Red Maple (*Acer rubrum*); Big Tooth Aspen (*Populus grandidentata*); Jack Pine (*Pinus ranksiana*); and White Ash (*Fraxinus Americana*). Mitigation Area 2 consists of American Managrass (*Glyceria grandis*); Reed Canary Grass (*Phalaris arundinacea*); Rattlesnake Grass (*Glyceria Canadensis*); Soft Rush (*Juncus effuses*); Black Chokeberry (*Aronia Melanocarpa*); Elderberry (*Sambucus Conadensis*); Pussy Willow (*Salix Discolor*); Red Maple (*Acer rubrum*); and Pin Oak (*Quercus Palustra*).

The current vegetative status of the created wetlands is largely herbaceous. As previously stated, it is presumed that a gradual transition to a scrub/shrub community will occur from natural succession and seeding over the course of the next several years. It is recommended that a detailed vegetative survey continue to be conducted over the course of the next few growing seasons to better analyze the diversity of species present throughout this wetland, considering this is a newly established replacement wetland and the overall vegetative community has only begun to emerge.

Please refer to Table 2, Wetland Summary and Appendix A, Wetland Data Forms for a detailed listing of vegetative species and classification.

**TABLE 2
WETLAND SUMMARY**

| WETLAND | COWARDIN CLASSIFICATION SYSTEM | DOMINANT VEGETATION | | SOIL SERIES | HYDROLOGY |
|------------------------|--------------------------------|---|--|-------------|---|
| | | Common Name | Scientific Name | | |
| Mitigation Site Area 1 | PEM | American Managrass Reed Canary Grass Wild Brone Grass Joe Rye Weed | <i>Glyceria grandis</i> <i>Phalaris arundinacea</i> <i>Bronus latiglumis</i> <i>Eupatorium fistubsum</i> | 193D | Mud Cracks/ Damp |
| Mitigation Site Area 2 | PEM/PFO | American Managrass Reed Canary Grass Rattlesnake Grass Soft Rush Black Chokeberry Elderberry Pussy Willow Red Maple Pin Oak | <i>Glyceria grandis</i> <i>Phalaris arundinacea</i> <i>Glyceria Canadensis</i> <i>Juncus effuses</i> <i>Aronia melanocarpa</i> <i>Sambucus Canadensis</i> <i>Salix discolor</i> <i>Acer rubrum</i> <i>Quercus palustra</i> | 193D | Mud Cracks/ Water Stained Leaves Saturated Soils Inundation |

4.3 Hydrology

Determination of hydrology during the field investigation was based on visual observations of permanent or periodic inundation of the soil, soil moisture conditions in the upper 18 inches, and any other related features indicating a near surface water table and/or wetland hydrology occurring for minimum of seven consecutive days during the growing season. Based on the conditions documented during the site investigation and previous site visits, it is evident that the hydrology is present for sufficient time throughout the growing season and year to adequately supply the mitigation wetland. As such, it was evident that the mitigation site is functioning hydrologically as a natural wetland.

**TABLE 3
PALUSTRINE WETLAND LEGEND**

| CLASS | SUBCLASS | |
|-----------------------------------|---|---|
| RB = Rock Bottom | 1 = Bedrock | 2 = Boulder |
| UB = Unconsolidated Bottom | 1 = Cobble/Gravel 3 = Mud | 2 = Sand 4 = Organic |
| AB = Aquatic Bed | 1 = Submergent Algal 3 = Submergent Moss 5 = Floating 7 = Unknown Surface | 2 = Submergent Vascular 4 = Floating -Leaved 6 = Unknown Submergent |
| ML = Moss/Lichen | 1 = Moss | 2 = Lichen |
| EM = Emergent | 1 = Persistent 2 = Nonpersistent 3 = Narrow-leaved Nonpersistent 4 = Broad-leaved Nonpersistent 5 = Narrow-leaved Persistent 6 = Broad-leaved Persistent | |
| SS = Scrub Shrub FO = Forested | 1 = Broad-leaved Deciduous 2 = Needle-leaved Deciduous 3 = Broad-leaved Evergreen 4 = Needle-leaved Evergreen 5 = Dead 6 = Deciduous 7 = Evergreen | |
| OW = Open Water | Unknown Bottom | |
| <u>Non-Tidal Water Regime</u> | | |
| A = Temporary | F = Semipermanent | U = Unknown |
| B = Saturated | G = Intermittently Exposed | W = Intermittently Flooded/Temporary |
| C = Seasonal | H = Permanent | Y = Saturated/Semipermanent/Seasonal |
| D = Seasonal Well-drained | J = Intermittently Flooded | Z = Intermittently Exposed/Permanent |
| E = Seasonal Saturated | K = Artificial | |
| <u>Special Modifiers</u> | | |
| b = Beaver | f = Farmed | r = Artificial |
| d = Partially Drained/Ditched | h = Diked | s = Spoil |
| | x = Excavated | |

5.0 CONCLUSION

A wetland determination was made where criteria for all three parameters were met, unless one of the parameters was absent do to seasonal or physical alterations. In cases where one or more the these parameters was absent do to natural, seasonal, or man-made disturbances, a determination was made as to whether the missing parameter(s) would occur under normal circumstances based on additional supporting data, field indicators, and/or best professional judgment. Assessment points were established to document vegetation, soils and hydrology at various locations to delineate the wetland/non-wetland boundary. Vegetation, soils and hydrology data were recorded on wetland data forms (Appendix A). Qualifications of the wetland investigator are located in Section 7.0 of this report.

5.1 Wetland Mapping

A detailed as-built drawing of the mitigated site is shown in Figure 2.

5.2 Description of Identified Wetland Habitat(s)

Based on the field investigations and review of the mitigation plan it is evident that the CCEDC has successfully created environmentally and ecologically functional replacement wetlands. However, because the site vegetation has only recently established and been exposed to a limited growing season (two years) prior to the third monitoring event, it is presumed that the overall vegetative diversity and density is very satisfactory. Based on this evaluation and documentation of the diversity and density of the vegetation it is evident that a sustainable wetland system has been implemented.

It is further expected that do to the location of this wetland in association with adjacent wetland habitat(s) and the use of the hydric soil containing root residuals from the disturbed wetland that natural succession of native species will emerge over the next several years, thereby eventually establishing to the point of reclassification from emergent status to scrub/shrub and forested habitat. After approximately two (2) years from the time of construction the total mitigated wetland area was delineated and found to be approximately 0.41 acres for mitigation area 1 and 0.43 acres for mitigation area 2. As such, there was a documented 0.15 acre net gain of wetland habitat within the project area, which continues to evolve and flourish with various plant species typically found in the wetlands of the local region.

The constructed wetlands contain all three wetland criteria including hydric soils, hydrophytic vegetation and supporting hydrology. Since the original field investigation which classified this area as upland, it is evident that species diversity has been converted to hydrophytic vegetation. It is evident that those mitigated wetlands are continuing to develop and evolve into a sustainable wetland system capable of supporting hydrophytic vegetation, maintaining hydrology, and developing hydric soils.

The fourth monitoring event is scheduled for the fall of 2008 (September). Reports will be submitted biannually through the fall of 2009, at which time annual monitoring and reporting will be conducted until 2012, unless otherwise allowed to cease as directed by the PA Department of Environmental Protection.

5.3 Recommendations

It is noted that this mitigated wetland only experiencing two (2) full growing seasons has successfully established and the overall diversity and density of vegetation is abundant and sustainable. As such, the only recommendations at this time are to allow the wetland to evolve and in the Fall of 2008 pending the results of the monitoring event present any recommendations which may pertain to the overall enhancement of this site (i.e. revegetation, seeding enhancements etc.). In summation, the mitigated wetlands are functioning as designed, maintaining an adequate hydrologic supply to encourage inundation and saturation to the areas, and are providing additional habitats to existing wetlands. The survival rate and rate of growth of the tree species planted is excellent and will only further enhance the wetland system in time. Considering the seasonally conditions of the 2008 spring growing season, vegetation established and has successfully sustained itself, established a dense mattress of root growth to aid in further retaining water and is functioning on several environmental and ecological levels. As such, it is very encouraging that mitigated areas will continue to thrive and evolve into fully function persistent wetland habitats.

6.0 REFERENCES

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7.0 INVESTIGATOR/PREPARER

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Fax: (814) 943 – 8494

Qualifications:

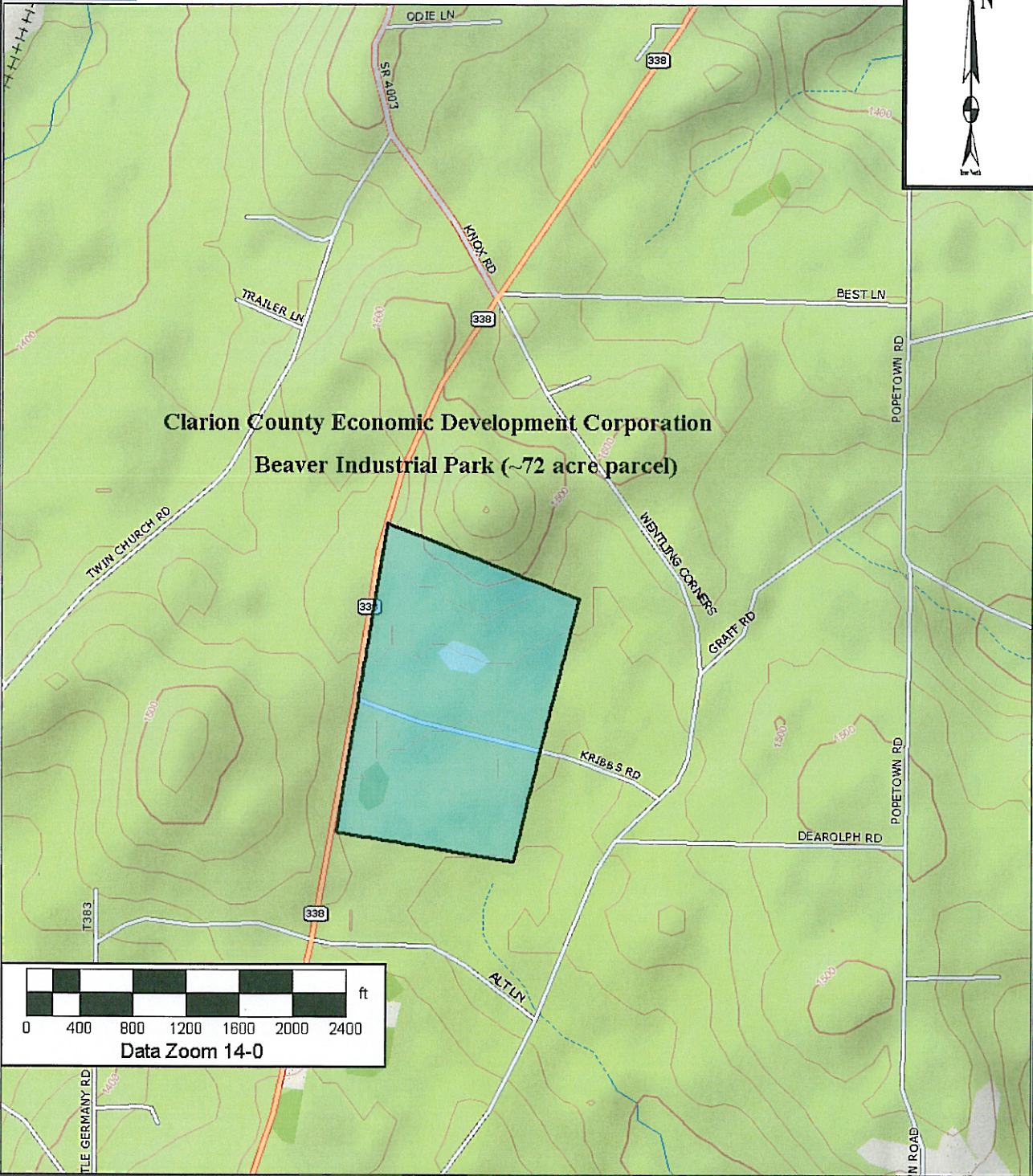
- Wetland Identification, Delineation and Hydrology Training, U.S. Army Corps of Engineers, 1998
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- Watershed Academy, Principles of Watershed Management, Pennsylvania Department of Environmental Protection, 2000
- Natural Stream Channel Restoration Concepts Levels I-IV, Greene County (NY) Conservation District, 2001
- Environmentally Sensitive Maintenance of Dirt and Gravel Roads, Dirt and Gravel Road Program, Pennsylvania State Conservation Commission
- 2001 Conservation Planning Modules 1-5, U.S. Department of Agriculture, Natural Resources Conservation Service, 2001
- OSHA 40-hour Hazardous Waste Operations and Emergency Response - No. 193-66-1235-2167G (2001)

Professional Experience:

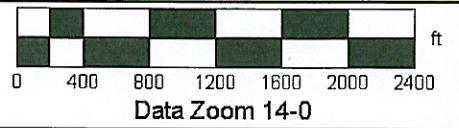
9 Years

FIGURE 1

LOCATION MAP



**Clarion County Economic Development Corporation
Beaver Industrial Park (~72 acre parcel)**



GD&F

**GWIN,
DOBSON &
FOREMAN, INC.**

CONSULTING ENGINEERS

3121 FAIRWAY DRIVE
ALTOONA, PA 16602
(814) 943 - 5214

SOURCE:
TOPO USA 6.0
Knox, PA
Quadrangle

DATE: June 15, 2007

SCALE: 1" = 2,000'

PROJECT NO: 07005

DRAWN BY: TJL

LOCATION MAP

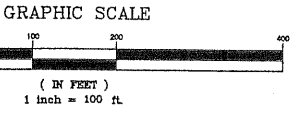
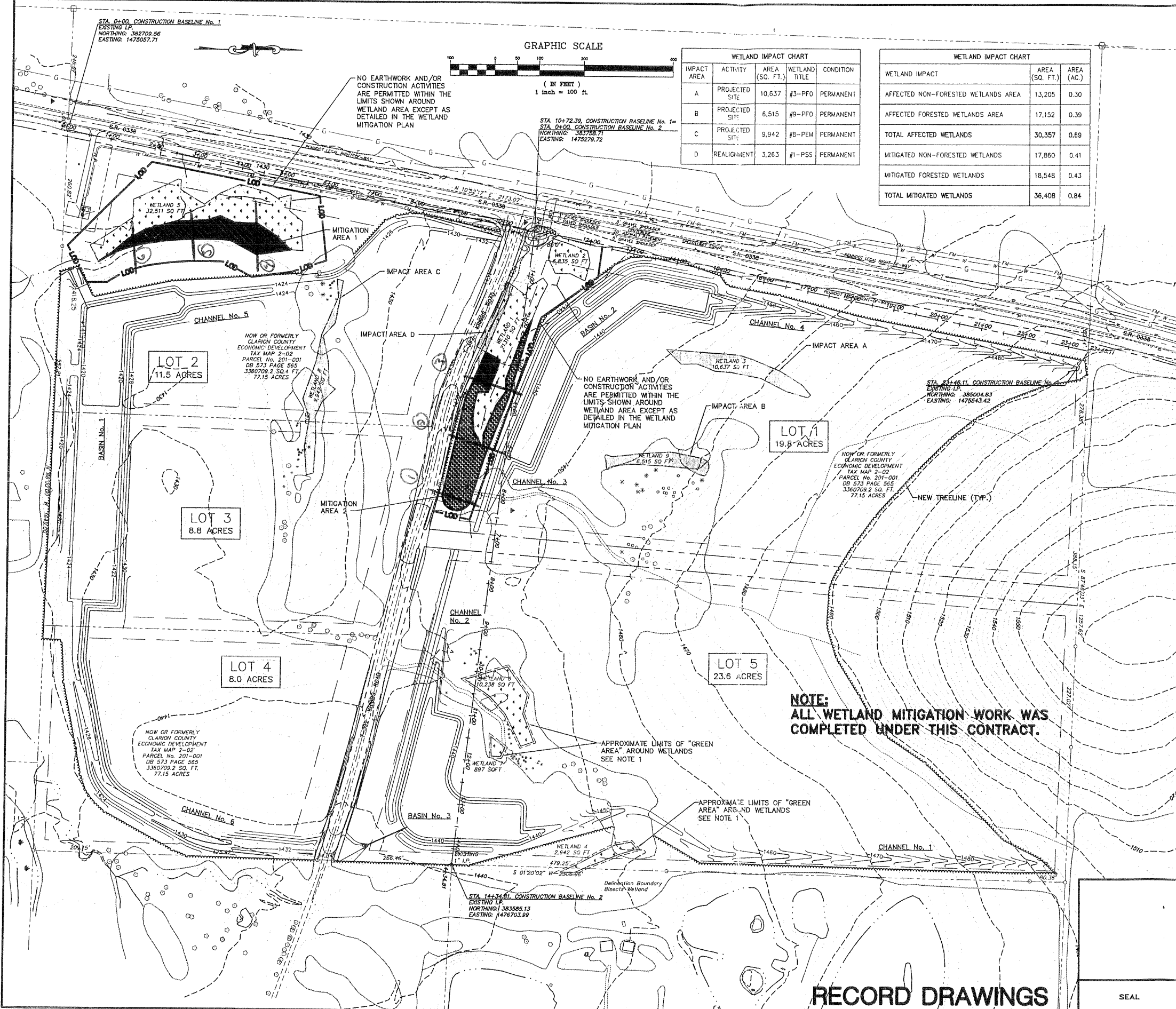
Clarion County Economic Development Corporation

**Beaver Industrial Park – Phase II
Infrastructure Development**

Beaver Township, Clarion County

FIGURE 2

WETLAND MAP



| WETLAND IMPACT CHART | | | | |
|----------------------|----------------|----------------|---------------|-----------|
| IMPACT AREA | ACTIVITY | AREA (SQ. FT.) | WETLAND TITLE | CONDITION |
| A | PROJECTED SITE | 10,637 | #3-PFO | PERMANENT |
| B | PROJECTED SITE | 6,515 | #9-PFO | PERMANENT |
| C | PROJECTED SITE | 9,942 | #8-PEM | PERMANENT |
| D | REALIGNMENT | 3,263 | #1-PSS | PERMANENT |

| WETLAND IMPACT CHART | | |
|-------------------------------------|----------------|-------------|
| WETLAND IMPACT | AREA (SQ. FT.) | AREA (AC.) |
| AFFECTED NON-FORESTED WETLANDS AREA | 13,205 | 0.30 |
| AFFECTED FORESTED WETLANDS AREA | 17,152 | 0.39 |
| TOTAL AFFECTED WETLANDS | 30,357 | 0.69 |
| MITIGATED NON-FORESTED WETLANDS | 17,860 | 0.41 |
| MITIGATED FORESTED WETLANDS | 18,548 | 0.43 |
| TOTAL MITIGATED WETLANDS | 36,408 | 0.84 |

LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING TREELINE
- EXISTING STREAM
- EXISTING RIGHT OF WAY
- EXISTING STABILIZED
- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING SANITARY FORCE MAIN
- EXISTING WATERLINE
- EXISTING STORM SEWER
- EXISTING WETLANDS
- IMPACTED WETLANDS
- PROPOSED NON-FORESTED WETLAND MITIGATION SITE
- PROPOSED FORESTED WETLAND MITIGATION SITE
- EXISTING ROAD
- PROPOSED UTILITY EASEMENT
- PROPOSED ACCESS ROAD RIGHT OF WAY LINE
- PROPOSED PROPERTY LINE
- WETLAND "GREEN AREAS" LINE
- BUILDING LINE SETBACK
- LIMIT OF DISTURBANCE
- NEW TREELINE

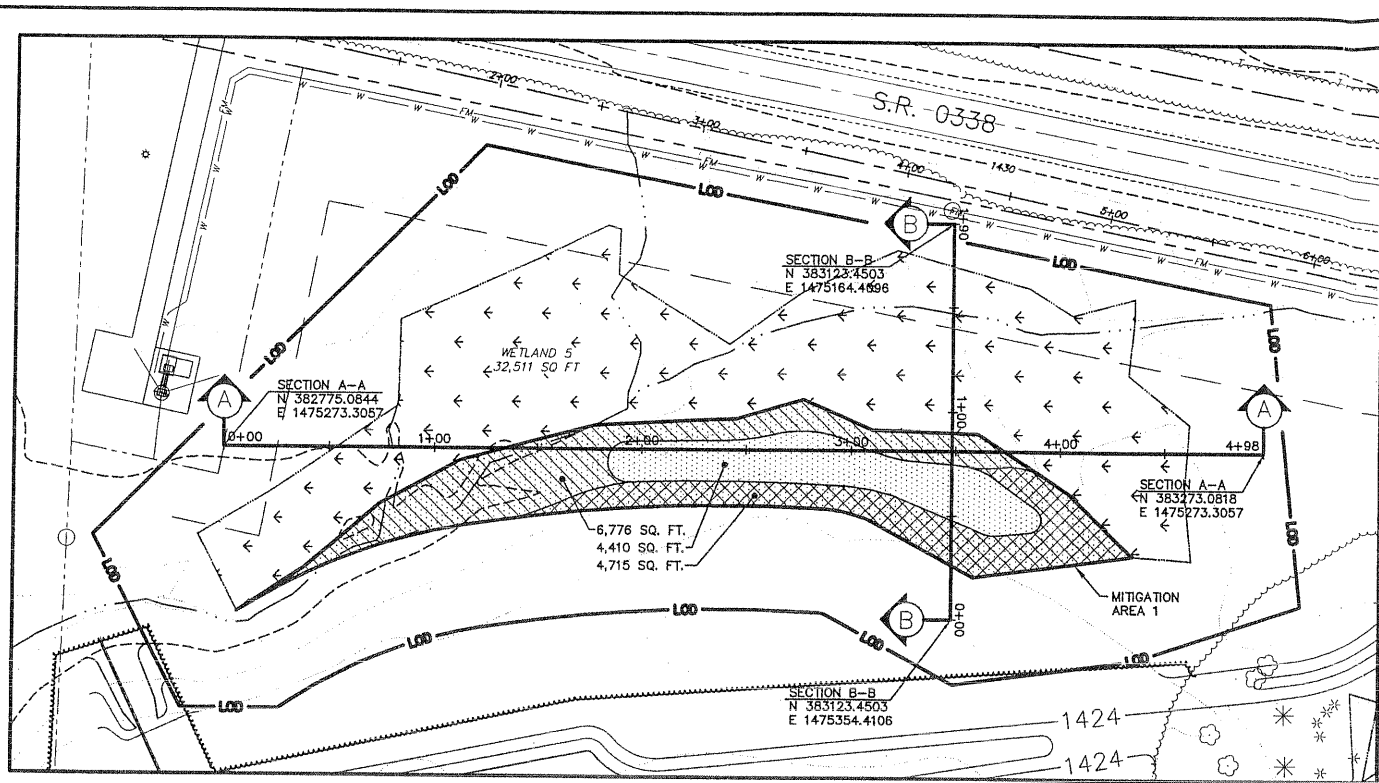
GENERAL NOTES

1. "GREEN AREAS" AROUND WETLANDS ARE APPROXIMATE. THESE AREAS SHALL NOT BE DISTURBED. THE CONTRACTOR MUST HAVE APPROVAL PRIOR TO ANY EARTHWORK RELATED ACTIVITIES WITHIN THESE AREAS FROM THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION.
2. CONTRACTOR SHALL NOT DISTURB OR OTHERWISE AFFECT ANY WETLANDS OTHER THAN THE WETLANDS INDICATED ON THIS PLAN.
3. ALL CONSTRUCTION IS TO CONFORM TO THE SPECIFICATIONS AND THE CURRENT CLARION COUNTY SUBDIVISION AND LAND DEVELOPMENT ORDINANCE.
4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE TO VERIFY THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
5. ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. CONTRACTOR IS TO VERIFY THE EXACT LOCATIONS AND INVERTS OF THESE UTILITIES BY EXPLORATORY EXCAVATIONS.
6. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL CONFORM TO PaDEP CHAPTER 102 FOR EROSION CONTROL DETAILS.
7. REFER TO SPECIFICATIONS APPENDIX FOR LOCATION AND DESCRIPTIONS OF TEST BORINGS (FOR INFORMATIONAL PURPOSES ONLY).
8. ALL DIMENSIONS AND GRADES SHOWN ON THE PLANS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY PLAN OR GRADE CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
9. ALL UTILITIES ARE STATIONED FROM THE CONSTRUCTION BASELINES UNLESS OTHERWISE SPECIFICALLY NOTED.
10. BASIN No. 1 AND CHANNEL Nos. 5 AND 6 ARE TO BE UTILIZED FOR EROSION AND SEDIMENTATION CONTROL FOR EARTH DISTURBANCE ACTIVITIES: CLEARING AND GRUBBING OF LOT 2, 3 AND 4, UTILITY INSTALLATION, AND ROADWAY IMPROVEMENTS OF T-392. BASIN No. 1 AND CHANNEL Nos. 5 AND 6 WILL BE UTILIZED AS PERMANENT STORMWATER MANAGEMENT FACILITIES FOR THE ENTIRE INDUSTRIAL PARK ONCE THE LOTS ARE SOLD AND DEVELOPED.
11. BASIN No. 2 AND No. 3 AND CHANNEL Nos. 1, 2, 3 AND 4 ARE TO BE UTILIZED FOR EROSION AND SEDIMENTATION CONTROL FOR EARTH DISTURBANCE ACTIVITIES: CLEARING AND GRUBBING LOT NUMBERS 1 AND 5. BASIN No. 2 AND No. 3 AND CHANNEL Nos. 2 AND 3 MAY BE REMOVED ONCE A UNIFORM 70% PERENNIAL VEGETATIVE COVER EXISTS. CHANNEL Nos. 1 AND 4 ARE TO REMAIN AS PERMANENT CHANNELS FOR CONVEYING STORMWATER TO STORMWATER BASIN No. 1. SEE STORMWATER MANAGEMENT PLAN FOR PERMANENT BASIN AND CHANNEL LAYOUTS AND DETAILS.
12. ALL EXCAVATION FOR PERMANENT DRAINAGE STRUCTURES SHALL BE AT A MINIMUM OF 50' FROM ALL WETLAND AREAS. UPON COMPLETION OF SITE CONSTRUCTION, TEMPORARY E&S FACILITIES SHALL BE REMOVED AND AREAS WITHIN 50' OF ALL WETLANDS SHALL BE RETURNED TO THEIR ORIGINAL CONTOURS.
13. CONTRACTOR SHALL REMOVE EXISTING VEGETATION WITHIN THE LIMIT OF DISTURBANCE ONLY AS NEEDED FOR CONSTRUCTION OF THE WETLAND WITHIN THE MITIGATION AREA.
14. UPON THE EXPIRATION OF THE CONTRACTOR'S ONE (1) YEAR WARRANTY/GUARANTEE PERIOD, THE CCDC SHALL BE RESPONSIBLE FOR PHYSICALLY REMOVING OR CHEMICALLY TREATING FOR NUISANCE SPECIES, SUCH AS CATTAILS AND PHRAGMITES, IF THEY BECOME DOMINANT WITHIN THE WETLAND MITIGATION AREAS.

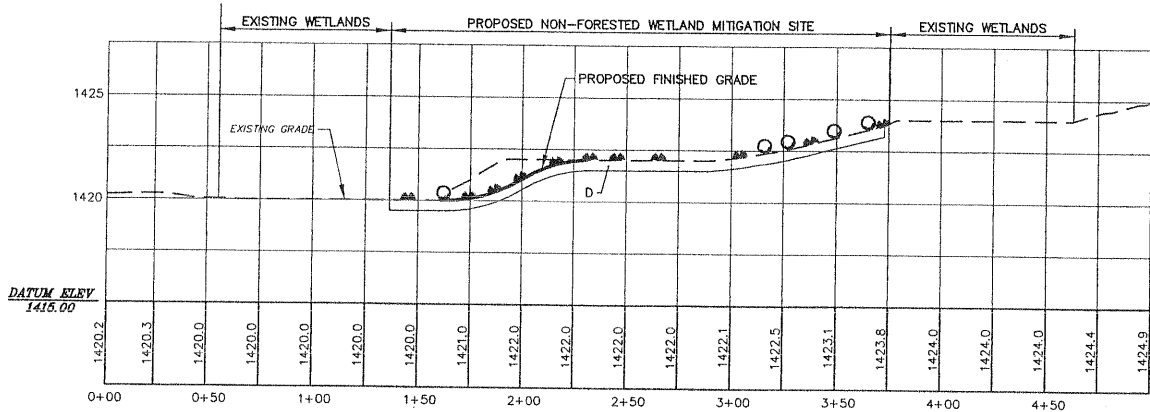
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| 11/16/06 | RECORD DRAWINGS | |
| 11/14/05 | REBID | |
| NO. | DATE | DESCRIPTION |

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|---|------------------------|---|
| WETLAND MITIGATION PLAN CLARION COUNTY ECONOMIC DEVELOPMENT CORPORATION BEAVER TOWNSHIP INDUSTRIAL PARK PHASE II INFRASTRUCTURE DEVELOPMENT CONTRACT No. 1 | | GWIN DOBSON & FOREMAN INC. <i>Consulting Engineers</i> <small>3221 Fairway Drive Allentown, PA 18103</small> |
| BEAVER TOWNSHIP, CLARION COUNTY, PENNSYLVANIA DATE: 11/17/05 JOB: 03038 SCALE: AS NOTED FILE: 03038_018 DRAWN BY: JAS/DWR CHECKED BY: TEB/WRO | | |
| SEAL | SHEET NO: 18 | |

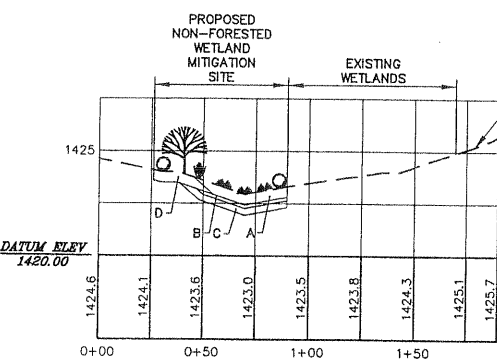
RECORD DRAWINGS



NON-FORESTED WETLAND MITIGATION AREA PLAN
SCALE: 1" = 40'

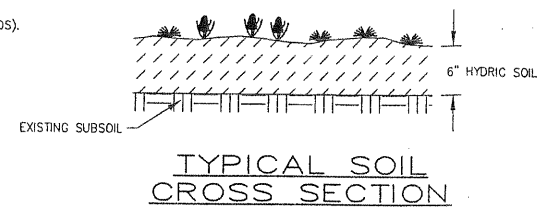


SECTION A-A
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



SECTION B-B
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

- NOTES:**
- A. 6" UNCOMPACTED LIFT OF COMPOST MIXTURE (50% MUSHROOM COMPOST AND A MAXIMUM OF 50% HYDRIC SOIL TAKEN FROM IMPACTED WETLANDS).
 - B. 2" WOOD CHIPS (1/4-2 INCHES IN SIZE).
 - C. 4" UNCOMPACTED LIFT OF HYDRIC SOIL.
 - D. 6" UNCOMPACTED LIFT OF HYDRIC SOIL.
- CONTRACTOR SHALL REMOVE EXISTING VEGETATION WITHIN THE LIMIT OF DISTURBANCE ONLY AS NEEDED FOR CONSTRUCTION OF THE WETLAND WITHIN THE MITIGATION AREA.
 - HYDRIC SOIL SHALL BE OBTAINED FROM AFFECTED WETLAND AREAS LOCATED ON THE PROJECT SITE.
 - ALL SEED MIX AND WETLAND SOIL QUANTITIES ARE APPROXIMATE. CONTRACTOR SHALL VERIFY QUANTITIES PRIOR TO CONSTRUCTION.



PLANTING AND SUBSTRATE TYPICAL
NO SCALE

PLANTING PLAN

- MIXED SEED**
- VIRGINIA WILD RYE (ELYMUS VIRGINICUS)
 - FOX SEDGE (CAREX VULPINOIDEA)
 - SENSITIVE FERN (ONOCLEA SENSIBILIS)
 - GIANT BUR-REED (SPARGANIUM EURYCARPUM)
 - NODDING BUR-MARIGOLD (BIDENS CERNUA)
 - WOOLGRASS (SCIRPUS CYPERINUS)
 - BLUE VERVAIN (VERBENA HASTATA)
 - RICE CUTGRASS (LEERSIA ORYZOIDES)
 - EASTERN LESSER BUR-REED (SPARGANIUM AMERICANUM)
 - AMERICAN MANNAGRASS (GLYCERIA GRANDIS)
 - SOFT RUSH (JUNCUS EFFUSUS)
 - COSMOS/BRISTLY SEDGE (CAREX COMOSA)
 - LURID SEDGE (CAREX LURIDA)
 - UMBRELLA/FLAT-TOP ASTER (ASTER UMBELLATUS)
 - HOP SEDGE (CAREX LUPULINA)
 - WILD BROMEGRASS (BROMUS ALTISSIMA)
- SHRUB SEED**
- FOX SEDGE (CAREX VULPINOIDEA)
 - SILKY DOGWOOD (CORNUS AMOMUM)
 - GREY DOGWOOD (CORNUS RACEMOSA)
 - VIRGINIA WILD RYE (ELYMUS VIRGINICUS)
 - NORTHERN ARROWWOOD (VIBURNUM RECOGNITUM)
 - HERCULE'S CLUB (ARALIA SPINOSA)
 - HOP SEDGE (CAREX LUPULINA)
 - LURID SEDGE (CAREX LURIDA)
 - COSMOS/BRISTLY SEDGE (CAREX COMOSA)
 - SWAMP ROSE (ROSA PALUSTRIS)
 - STEEPLEBUSH (SPIRAEA TOMENTOSA)
 - AWL SEDGE (CAREX STIPATA)
 - NANNYBERRY (VIBURNUM LENTAGO)
- BAREROOT PLANTS AND TREES**
- BLACK CHOKEBERRY (ARONIA MELANOCARPA)
 - ELDERBERRY (SAMBUCUS CANADENSIS)
 - PUSSY WILLOW (SALIX DISCOLOR)
 - GREEN ASH (FRAXINUS PENNSYLVANICA)

LEGEND

- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING TREELINE
- EXISTING STREAM
- EXISTING RIGHT OF WAY
- EXISTING STABILIZED
- EXISTING PROPERTY LINE
- EXISTING GAS LINE
- EXISTING SANITARY FORCE MAIN
- EXISTING WATERLINE
- EXISTING STORM SEWER
- EXISTING WETLANDS
- EXISTING ROAD
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED ACCESS ROAD RIGHT OF WAY LINE
- PROPOSED PROPERTY LINE
- BUILDING LINE SETBACK
- LIMIT OF DISTURBANCE
- NEW TREELINE
- MIXED SEED
- MIXED SEED AND SHRUB SEED
- MIXED SEED, SHRUB SEED AND BAREROOT PLANTS AND TREES

WETLAND MITIGATION CONSTRUCTION SEQUENCE

- WETLAND CONSTRUCTION ACTIVITIES WILL BE MONITORED BY THE ENGINEER FAMILIAR WITH WETLAND CONSTRUCTION TECHNIQUES.
- CONTRACTOR SHALL PROTECT TREES, SHRUBS, LAWN, ROCK OUTCROPPING AND OTHER FEATURES TO REMAIN AS PART OF THE FINAL LANDSCAPE.
- IDENTIFY MITIGATION AREA BY SURVEY AND FIELD MARK WITH FLAGGING.
- INSTALL SILT FENCING AND CONSTRUCTION FENCING WHERE NECESSARY BETWEEN EXCAVATION AREAS AND EXISTING WETLANDS AND/OR DRAINAGE. USE BEST MANAGEMENT PRACTICES (BMP) FOR FILL SEDIMENTATION AND EROSION CONTROL. SILT FENCES MUST BE OF NATURAL MATERIALS (I.E., WOODEN STAKES, BURLAP, HAY BALES).
- REMOVE WOODY VEGETATION AS INDICATED AND TRANSPORT AWAY FROM WORK AREA. DISPOSE OF WOODY MATERIAL AND DEBRIS AS PER APPROPRIATE FEDERAL, STATE AND LOCAL CODES. MATERIAL CAN BE CHIPPED AND/OR COMPOSED FOR LATER USE ON SITE (IN CONSTRUCTED WETLANDS).
- TEMPORARILY DIVERT DRAINAGE AWAY FROM PROPOSED MITIGATION AREAS, WHERE POSSIBLE, TO PREVENT SOIL DAMAGE FROM WORKING IN SATURATED OR INUNDATED CONDITIONS.
- GRADE MITIGATION SITE TO DESIRED SUBGRADE ELEVATION(S), SHAPE AND SIZE. REMOVE SURPLUS MATERIAL FROM WORK AREAS USING BMPs FOR E&S CONTROL.
- IN THE BAREROOT PLANT AND TREE MITIGATION AREA, PLACE A FOUR (4) INCH LIFT OF UNCOMPACTED HYDRIC SOIL FROM AFFECTED WETLAND AREAS LOCATED ON THE PROJECT FOLLOWED BY A TWO (2) INCH LIFT OF WOOD CHIPS FOLLOWED BY A SIX (6) INCH LIFT OF ORGANIC MULCH MIX IN THE MITIGATION AREAS TO BRING THE AREA UP TO FINAL GRADE. FILL EXCAVATED AREA WITH UNEVEN, IRREGULAR SURFACES PROVIDING DIVERSITY TO THE SITE. FOR NON-FORESTED WETLAND AREAS, FILL EXCAVATION WITH HYDRIC SOIL FROM AFFECTED WETLAND AREAS LOCATED ON THE PROJECT SITE.
- INSTALL AN EROSION CONTROL MAT OVER THE SUBSTRATE MATERIAL WHERE REQUIRED.
- ALL DISTURBED AREAS, WHICH ARE NOT TO HAVE SPECIFIC SUBSTRATE APPLICATIONS, MUST BE COVERED WITH A MINIMUM OF SIX (6) INCHES OF TOPSOIL. ALL DISTURBED AREAS MUST BE MULCHED WITH STRAW IMMEDIATELY AFTER COMPLETION OF SUBSTRATE OR TOPSOIL PLACEMENT AND BEFORE OR DURING PLANTING/SEEDING.
- DELINEATE AND IDENTIFY PLANTING LOCATIONS IN FIELD.
- PLANT PROPOSED WETLAND SEED MIXTURE ACCORDING TO SPECIFICATIONS AND CONSTRUCTION DRAWINGS.
- REMOVE WATER FLOW AND DRAINAGE DIVERSIONS TO THE AREA AND ALLOW FLOODING AND SATURATION TO OCCUR.
- WATER PLANTINGS AS NEEDED ACCORDING TO SPECIFICATION DURING DRY PERIODS.
- OPTIMUM SEASON TO UNDERTAKE THIS WORK IS SPRING FOR BEST USE OF THE HYDRIC SOIL AS SEED SOURCE AND ESTABLISHMENT OF PLANTS. HOWEVER, WORK MUST BE DONE IN SEQUENCE AS DESCRIBED IN THE EROSION AND SEDIMENTATION CONTROL CONSTRUCTION SEQUENCE ON SHEET No. 15, REGARDLESS OF TIME OF YEAR (SEASON).

RECORD DRAWINGS

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| 1 | 11/14/05 | RECORD DRAWINGS |
| 1 | 11/14/05 | REBID |
| NO. | DATE | DESCRIPTION |
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MITIGATION AREA 1 PLAN

CLARION COUNTY ECONOMIC DEVELOPMENT CORPORATION

BEAVER TOWNSHIP INDUSTRIAL PARK PHASE II INFRASTRUCTURE DEVELOPMENT CONTRACT No. 1

BEAVER TOWNSHIP, CLARION COUNTY, PENNSYLVANIA

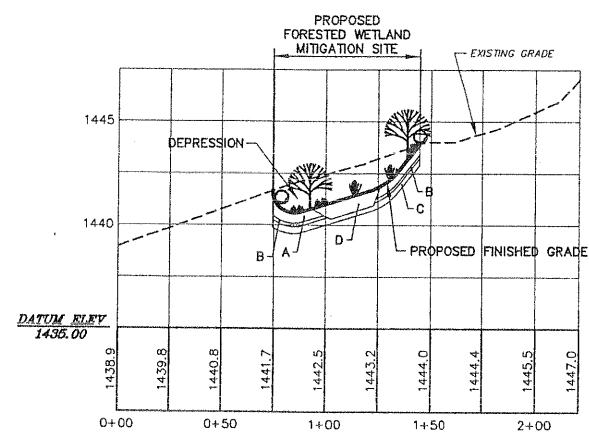
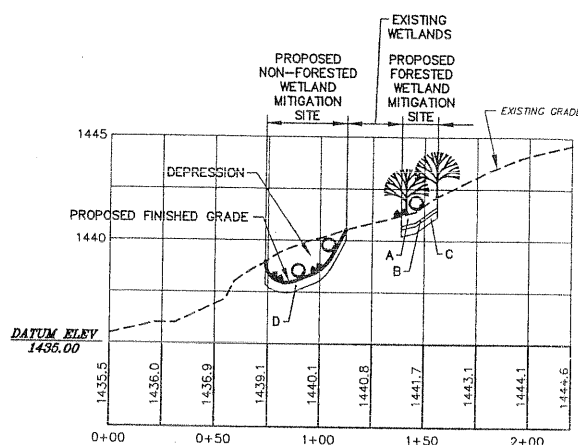
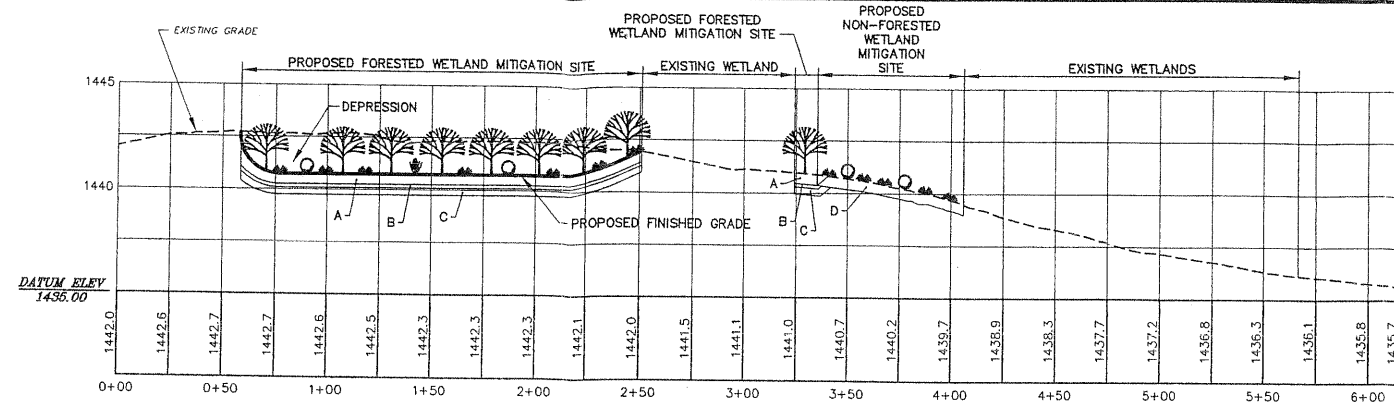
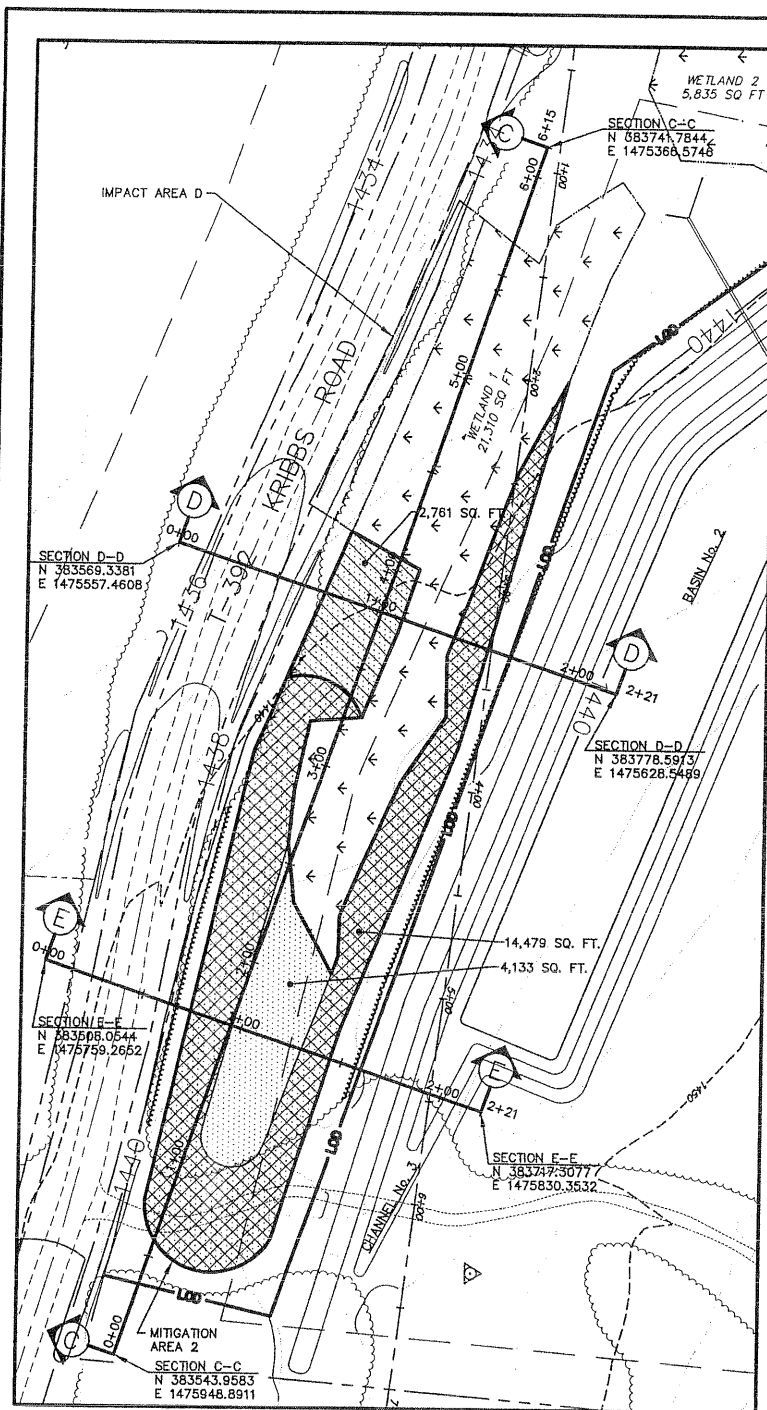
DATE: 11/14/05 JOB: 03038 SCALE: AS NOTED

FILE: 03038-019 DRAWN BY: DBA CHECKED BY: TER/MRO

SHEET NO: 19

GD&F

GWIN DOBSON & FOREMAN INC.
Consulting Engineers
3121 Fairway Drive
Allentown, PA 18602



- LEGEND**
- EXISTING MINOR CONTOUR
 - EXISTING MAJOR CONTOUR
 - EXISTING TREELINE
 - EXISTING STREAM
 - EXISTING RIGHT OF WAY
 - EXISTING STABILIZED
 - EXISTING PROPERTY LINE
 - EXISTING GAS LINE
 - FM EXISTING SANITARY FORCE MAIN
 - W EXISTING WATERLINE
 - ST EXISTING STORM SEWER
 - EXISTING WETLANDS
 - IMPACTED WETLAND
 - EXISTING ROAD
 - PROPOSED MINOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - PROPOSED ACCESS ROAD RIGHT OF WAY LINE
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 - LIMIT OF DISTURBANCE
 - NEW TREELINE
 - MIXED SEED
 - MIXED SEED AND SHRUB SEED
 - MIXED SEED, SHRUB SEED AND BAREROOT PLANTS AND TREES

WETLAND MITIGATION CONSTRUCTION SEQUENCE

1. WETLAND CONSTRUCTION ACTIVITIES WILL BE MONITORED BY THE ENGINEER FAMILIAR WITH WETLAND CONSTRUCTION TECHNIQUES.
2. CONTRACTOR SHALL PROTECT TREES, SHRUBS, LAWN, ROCK OUTCROPPING AND OTHER FEATURES TO REMAIN AS PART OF THE FINAL LANDSCAPE.
3. IDENTIFY MITIGATION AREA BY SURVEY AND FIELD MARK WITH FLAGGING.
4. INSTALL SILT FENCING AND CONSTRUCTION FENCING WHERE NECESSARY BETWEEN EXCAVATION AREAS AND EXISTING WETLANDS AND/OR DRAINAGE. USE BEST MANAGEMENT PRACTICES (BMP) FOR FILL SEDIMENTATION AND EROSION CONTROL. SILT FENCES MUST BE OF NATURAL MATERIALS (I.E., WOODEN STAKES, BURLAP, HAY BALES).
5. REMOVE WOODY VEGETATION AS INDICATED AND TRANSPORT AWAY FROM WORK AREA. DISPOSE OF WOODY MATERIAL AND DEBRIS AS PER APPROPRIATE FEDERAL, STATE AND LOCAL CODES. MATERIAL CAN BE CHIPPED AND/OR COMPOSED FOR LATER USE ON SITE (IN CONSTRUCTED WETLANDS).
6. TEMPORARILY DIVERT DRAINAGE AWAY FROM PROPOSED MITIGATION AREAS, WHERE POSSIBLE, TO PREVENT SOIL-DAMAGE FROM WORKING IN SATURATED OR INUNDATED CONDITIONS.
7. GRADE MITIGATION SITE TO DESIRED SUBGRADE ELEVATION(S), SHAPE AND SIZE. REMOVE SURPLUS MATERIAL FROM WORK AREAS USING BMPs FOR E&S CONTROL.
8. IN THE BAREROOT PLANT AND TREE MITIGATION AREA, PLACE A FOUR (4) INCH LIFT OF UNCOMPACTED HYDRIC SOIL FROM AFFECTED WETLAND AREAS LOCATED ON THE PROJECT FOLLOWED BY A TWO (2) INCH LIFT OF WOOD CHIPS FOLLOWED BY A SIX (6) INCH LIFT OF ORGANIC MULCH MIX IN THE MITIGATION AREAS TO BRING THE AREA UP TO FINAL GRADE. FILL EXCAVATED AREA WITH UNEVEN, IRREGULAR SURFACES PROVIDING DIVERSITY TO THE SITE. FOR NON-FORESTED WETLAND AREAS, FILL EXCAVATION WITH HYDRIC SOIL FROM AFFECTED WETLAND AREAS LOCATED ON THE PROJECT SITE.
9. INSTALL AN EROSION CONTROL MAT OVER THE SUBSTRATE MATERIAL WHERE REQUIRED.
10. ALL DISTURBED AREAS, WHICH ARE NOT TO HAVE SPECIFIC SUBSTRATE APPLICATIONS, MUST BE COVERED WITH A MINIMUM OF SIX (6) INCHES OF TOPSOIL. ALL DISTURBED AREAS MUST BE MULCHED WITH STRAW IMMEDIATELY AFTER COMPLETION OF SUBSTRATE OR TOPSOIL PLACEMENT AND BEFORE OR DURING PLANTING/SEEDING.
11. DELINEATE AND IDENTIFY PLANTING LOCATIONS IN FIELD.
12. PLANT PROPOSED WETLAND SEED MIXTURE ACCORDING TO SPECIFICATIONS AND CONSTRUCTION DRAWINGS.
13. REMOVE WATER FLOW AND DRAINAGE DIVERSIONS TO THE AREA AND ALLOW FLOODING AND SATURATION TO OCCUR.
14. WATER PLANTINGS AS NEEDED ACCORDING TO SPECIFICATION DURING DRY PERIODS.
15. OPTIMUM SEASON TO UNDERTAKE THIS WORK IS SPRING FOR BEST USE OF THE HYDRIC SOIL AS SEED SOURCE AND ESTABLISHMENT OF PLANTS. HOWEVER, WORK MUST BE DONE IN SEQUENCE AS DESCRIBED IN THE EROSION AND SEDIMENTATION CONTROL CONSTRUCTION SEQUENCE ON SHEET No. 15, REGARDLESS OF TIME OF YEAR (SEASON).

NOTES:

1. A. 6" UNCOMPACTED LIFT OF COMPOST MIXTURE (50% MUSHROOM COMPOST AND A MAXIMUM OF 50% HYDRIC SOIL TAKEN FROM IMPACTED WETLANDS).
- B. 2" WOOD CHIPS (1/4-2 INCHES IN SIZE).
- C. 4" UNCOMPACTED LIFT OF HYDRIC SOIL.
- D. 6" UNCOMPACTED LIFT OF HYDRIC SOIL.
2. CONTRACTOR SHALL REMOVE EXISTING VEGETATION WITHIN THE LIMIT OF DISTURBANCE ONLY AS NEEDED FOR CONSTRUCTION OF THE WETLAND WITHIN THE MITIGATION AREA.
3. HYDRIC SOIL SHALL BE OBTAINED FROM AFFECTED WETLAND AREAS LOCATED ON THE PROJECT SITE.
4. ALL SEED MIX AND WETLAND SOIL QUANTITIES ARE APPROXIMATE. CONTRACTOR SHALL VERIFY QUANTITIES PRIOR TO CONSTRUCTION.

- MIXED SEED**
1. VIRGINIA WLD RYE (ELYMUS VIRGINICUS)
 2. FOX SEDGE (CAREX VULPINOIDEA)
 3. SENSITIVE FERN (MONOCLEA SENSIBILIS)
 4. GIANT BUR-REED (SPARGANIUM EURYCARPUM)
 5. NODDING BUR-MARIGOLD (BIDENS CERNUA)
 6. WOODGRASS (SCIRPUS CYPERINUS)
 7. BLUE VERVAIN (VERBENA HASTATA)
 8. RICE CUTGRASS (LEERSIA ORYZOIDES)
 9. EASTERN LESSER BUR-REED (SPARGANIUM AMERICANUM)
 10. AMERICAN MANNAGRASS (GLYCERIA GRANDIS)
 11. SOFT RUSH (JUNCUS EFFUSUS)
 12. COSMOS/BRISTLY SEDGE (CAREX COMOSA)
 13. LURID SEDGE (CAREX LURIDA)
 14. UMBRELLA/FLAT-TOP ASTER (ASTER UMBELLATUS)
 15. HOP SEDGE (CAREX LUPULINA)
 16. WILD BROMEGRASS (BROMUS ALTISSIMA)

- SHRUB SEED**
1. FOX SEDGE (CAREX VULPINOIDEA)
 2. SILKY DOGWOOD (CORNUS AMOMUM)
 3. GREY DOGWOOD (CORNUS RACEMOSA)
 4. VIRGINIA WLD RYE (ELYMUS VIRGINICUS)
 5. NORTHERN ARROWWOOD (VIBURNUM RECOGNITUM)
 6. HERCULE'S CLUB (ARALIA SPINOSA)
 7. HOP SEDGE (CAREX LUPULINA)
 8. LURID SEDGE (CAREX LURIDA)
 9. COSMOS/BRISTLY SEDGE (CAREX COMOSA)
 10. SWAMP ROSE (ROSA PALUSTRIS)
 11. STEEPLEBUSH (SPIRAEA TOMENTOSA)
 12. AML SEDGE (CAREX STIPATA)
 13. NANNYBERRY (VIBURNUM LENTAGO)
- BAREROOT PLANTS AND TREES**
1. BLACK CHOKEBERRY (ARONIA MELANOCARPA)
 2. ELDERBERRY (SAMBUCUS CANADENSIS)
 3. PUSSY WILLOW (SALIX DISCOLOR)
 4. RED MAPLE (ALER RUBRUM)
 5. PIN OAK (QUERCUS PALUSTRIS)

PLANT LIST

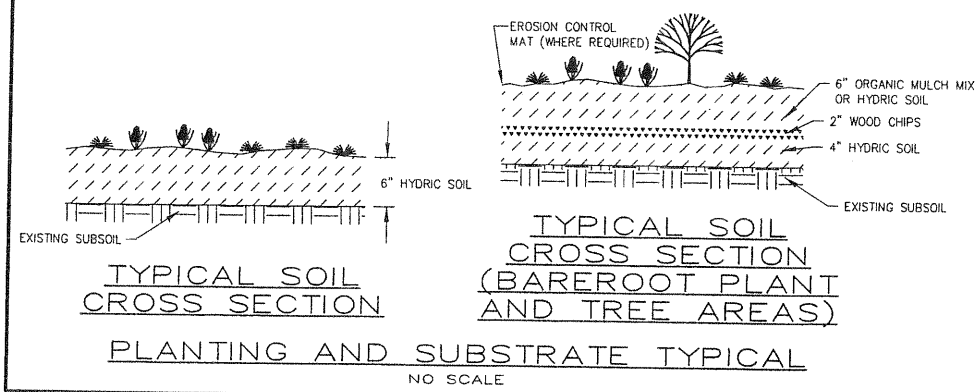
| SCIENTIFIC NAME | COMMON NAME | QUANTITY |
|---------------------|------------------|----------|
| ARONIA MELANOCARPA | BLACK CHOKEBERRY | 100 |
| SAMBUCUS CANADENSIS | ELDERBERRY | 100 |
| SALIX DISCOLOR | PUSSY WILLOW | 100 |
| ALER RUBRUM | RED MAPLE | 200 |
| QUERCUS PALUSTRIS | PIN OAK | 100 |

SEED MIX

| TYPE | MIX | COVERAGE AREA | QUANTITY |
|------------|-------------|----------------|----------|
| MIXED SEED | ERNMX - 120 | 21,373 SQ. FT. | 11 LB |
| SHRUB SEED | ERNMX - 138 | 17,240 SQ. FT. | 9 LB |

WETLAND SOIL

| TYPE | COVERAGE AREA | QUANTITY |
|-----------------------------------|----------------|-------------|
| A 6" MUSHROOM COMPOST/HYDRIC SOIL | 14,479 SQ. FT. | 269 CU. YD. |
| B 2" WOOD CHIPS | 14,479 SQ. FT. | 90 CU. YD. |
| C 4" HYDRIC SOIL | 14,479 SQ. FT. | 179 CU. YD. |
| D 6" HYDRIC SOIL | 6,894 SQ. FT. | 128 CU. YD. |



RECORD DRAWINGS

| NO. | DATE | DESCRIPTION |
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| 1 | 11/14/05 | REBID |
| 2 | 11/16/06 | RECORD DRAWINGS |

MITIGATION AREA 2 PLAN

CLARION COUNTY ECONOMIC DEVELOPMENT CORPORATION
BEAVER TOWNSHIP INDUSTRIAL PARK
PHASE II
INFRASTRUCTURE DEVELOPMENT
CONTRACT No. 1

BEAVER TOWNSHIP, CLARION COUNTY, PENNSYLVANIA

DATE: 11/14/05 JOB: 03038 SCALE: AS NOTED
FILE: 03038-020 DRAWN BY: DBA CHECKED BY: TEB/MRO

GD&F
GWIN DOBSON & FOREMAN Inc.
Consulting Engineers
303 Railway Drive
Allentown, PA 18602

SHEET NO: 20