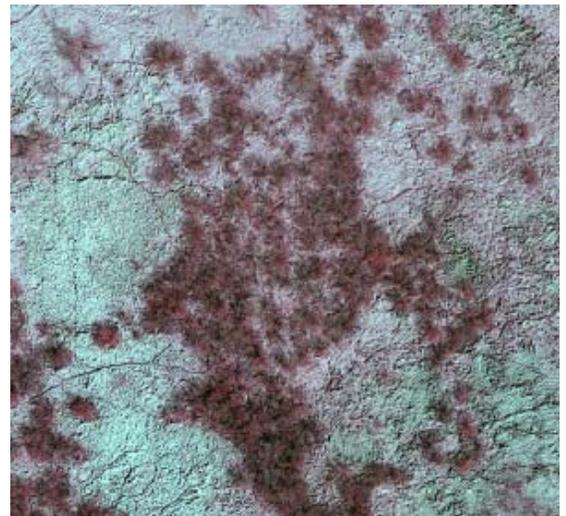


Brown County, Wisconsin
Wetland Identification
Using
Color Infrared Imagery

**Final Report Summary
And
Reimbursement Request
For
Project Grant Number 2P-00E73201**

An agreement between the
Wisconsin Department of Natural Resources
And the
Brown County Planning Commission

Date: December 15, 2010



2010 CIR Imagery photo of Suamico River and Bay of Green Bay (left) and wetland close-up (right).

Project Summary

The Color Infrared Imagery (CIR) Pilot Project was a proposal to obtain color infrared imagery (CIR) in order to expand Brown County, Wisconsin resources used when identifying wetlands within Brown County. The total budget for the grant was \$10,000.00 and a grant for that amount was received. Infrared technology was proposed to be used to highlight areas that are thought to be wetlands. Obtained CIR will also be utilized to increase efficiencies when Sewer Service Area (SSA) and Environmentally Sensitive Area (ESA) planning efforts are undertaken in Brown County.

- Because this was a pilot study, Brown County verified the accuracy of the CIR photography through on-site field visits at randomly selected wetland sites between September and November, 2010.

The project was needed for several reasons. First, the project served as an additional database that was, and continues to be used in conjunction with the recently updated Wisconsin Department of Natural Resources (WDNR) Wetland Inventory and soil type indicators map. CIR allows Brown County to complete projects, allows developers, local officials, and the general public to access more precise information regarding the location of wetland boundaries. The creation of a CIR layer in the Brown County GIS system will increase data sharing efficiencies between Brown County and the WDNR, with the most effective area being usage of the data when updating the Brown County Sewage Plan, among daily site reviews with local WDNR staff.

The project grant totaled \$10,000. A reimbursement breakdown and reimbursement request for \$10,000 is included in the “Project Expenses & Reimbursement Request” section of this report.



2010 CIR Imagery photo of Brown County Courthouse in downtown Green Bay.

Project Usage

In the first few months of product ownership, the CIR Imagery has been used for the following projects:

- Identification of wetlands with staff, surveyors, developers, and the public.
- Sewer Service Area Amendments (tested against past projects).
- Environmentally Sensitive Area Amendments (tested against current projects).
- Subdivision plat reviews.
- Certified survey map reviews.
- Brown County land use updates.
- Various discussions with the public regarding wet lands and vegetation changes.

Project Samples

The following are two common examples from dozens of sites where CIR Imagery was used on a daily basis by Brown County in the field and in the office to help determine wetlands.

A. Study Site: Town of Lawrence – Proposed land division with drainageway.

The subject site, Parcel L-275-C in the Town of Lawrence, was proposed to be divided into two lots. A significant amount of earth moving occurred at one end of the property prior to the proposal, but there was a drainageway between a storm pond and waterway that had some appearances of wetlands in black and white air photographs from 2005. At the time, the old WDNR wetland maps showed no wetlands, and the new data showed only the potential for scattered wetlands. The following represents the staff findings:

3. 2010 early fall Site Visit photos confirming wetland existence, with difficulty to navigate the site and create an approximate boundary, due to a small ridge/slope on the property and vegetation.



B. Study Site: Village of Suamico – ESA Amendment with a wooded wetland

The Suamico site, Parcel SU-270-9-1, was developed with a daycare center that was proposing an expansion. In 2000, it was assumed that there was very little wetland on the property. In 2005, the Army Corps of Engineers identified wetlands only on the north end of the property. In 2010, Brown County staff determined that the wooded area may all be wetland, and the use of CIR imagery was used to assist because the property owner was having a hard time justifying the need for a delineation to be performed.

1. Submitted site plan for ESA Amendment (red line outlining 50-foot distance from assumed wooded wetland)



2. 2010 Air Photo review representing WDNR potential linear wetlands



Project Expenses & Reimbursement Request

The subject request relates to the following reimbursables:

- A. Staff hours related to product purchase, computer setup for all staff, training, and product testing

| Staff | Hours | Hourly Rate | Total |
|-------------------|--------------|--------------------|-------------------|
| Planning Director | 8 | \$74.37 | \$ 594.96 |
| Senior Planners | 101 | \$50.11 | \$5,061.11 |
| LIO Coordinator | 60 | \$53.74 | \$3,224.40 |
| SUB-TOTAL | 169 | -- | \$8,880.47 |

- B. Product Purchases

| Product | Cost | Total |
|------------------|-------------------|-------------------|
| CIR Purchase | \$2,500.00 | \$2,500.00 |
| SUB-TOTAL | \$2,500.00 | \$2,500.00 |

NOTE: An additional \$98,000 was spent on the purchase of 2010 color air photographs which were used to create the CIR Imagery. The purchase price of the air photographs are not part of this reimbursement request, however, because all of the information was purchased as a package, the price of the CIR imagery set at \$2,500.

- C. Totals for Reimbursement

| Section | Total |
|------------------|--------------------|
| Section A | \$ 8,880.47 |
| Section B | \$ 2,500.00 |
| SUB-TOTAL | \$11,380.47 |

Reimbursable Amount: \$10,000.00

TOTAL GRANT REIMBURSEMENT REQUEST: \$10,000.00