



### Metro Health Hospital BMPS for Buck Creek Project

November 9, 2006 - June 30, 2010

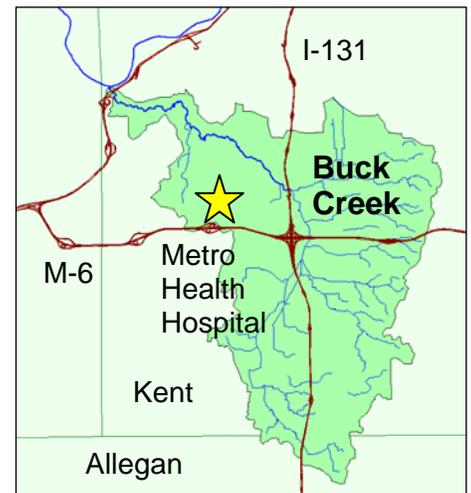
The Buck Creek Watershed (BCW) has a drainage area of approximately 51 square miles and includes Pine Hill Creek and Sharps Creek, which flow West through the city of Kentwood and enter Buck Creek at the City of Wyoming. The headwaters of Buck Creek are located in Byron Center and Gaines Townships, where agricultural land is becoming progressively more urbanized. From the City of Wyoming, Buck Creek flows through an urbanized area of the City of Grandville where it enters the Grand River. Land use in is 25% residential, 8.5% commercial and 0.5 % industrial, translating into roughly 13% of the watershed being impervious surfaces. Research completed by the Center for Watershed Protection recommends those watersheds greater than 10% impervious area will be impaired by excessive storm water runoff volume, velocity and pollution. Metro Health Hospital (Metro), which is part of a 170 acre Metro Village, was developed in Wyoming in 2007. Metro Hospital installed as part of this project the following low impact development Best Management Practices (BMPs): 12,950 square feet of bio-retention, 39,740 square feet of grassy swales, and a 48,500 square foot green roof. The infiltrated runoff from these BMPs is captured in an under drain system which goes to large Metro Village retention basins (not paid for by the grant) and re-used for irrigation. This results in a zero discharge of storm water to the BCW up to a 100 year storm event. Metro contributes to the continued vitality of the BCW by mitigating polluted rain water runoff before it enters the area's ground water system and the region's watershed.



Grant Amount: \$ 389,443

Match Funds: \$ 471,530

Total Amount: \$ 860,973



#### Best Management Practices:

- Vegetative Roof (48,000 square feet)
- Bio-Retention Swales (12,950 square feet)
- Grassy Swales (39,740 square feet)

#### Annual Load Reductions:

- Sediment - 2.87 tons
- Phosphorous - 3 pounds
- Nitrogen - 3 pounds
- Storage - 39,900 cubic feet



#### Partners involved:

- HDR
- WMEAC / Raingardens of West Michigan
- Katerberg Verhage
- E-Lab Analytical
- Michigan DNRE
- Sustainable Research Group

#### Spin offs:

- 183 educational tours with 1,835 attendees
- 30% recycle rate
- Greening cleaning
- Farmers Market and Employee Garden
- Improved the composting program
- Development of an Environmental Management System (EMS)
- Three green building education presentations with 168 attendees





**Metro Health Hospital Before: Rubber membrane roof and water drainage issues.**



**Metro Health Hospital After: 48,500 square foot Vegetative roof absorbs and stores water.**



**Metro Health Hospital Bio Retention/grassy Swales: Image immediately following installation of monitoring system in parking lot.**



**Metro Health Hospital Bio Retention/grassy Swales: Storm water runoff is reduced. Site is a zero-discharge site and will not impact Buck Creek.**