Semi-Annual Technical Report **July 27, 2007**

Lower Olentangy River Ecosystem Restoration Project

City of Columbus Capital Improvements Project No. 650706

Ohio State University Research Foundation (OSURF) Project 60005536

Submitted by:
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352 W. Dodridge Street
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For period: January 1, 2007 – June 30, 2007

Project

1. Monitoring: Conduct pre-implementation chemical, biological, physical, and habitat monitoring to evaluate environmental results of project implementation

Detail 1 Develop Ohio EPA approved Quality Assurance Project Plan (QAPP)

Revised QAPP was submitted to OhioEPA via the City of Columbus on June 22, 2007. Still subject to final approval.

95% complete

Detail 2 Conduct periodic hydrology monitoring per approved QAPP

We have placed instruments at or near the ORWRP to facilitate determination of hydrology for the Olentangy River. An evaporation pan, precipitation gauges, and other instruments are in service to allow calculations of complete hydrologic budgets. A second weather station is maintained about 2 km from the ORWRP site by the university.

20% complete

Detail 3 Conduct physical (flow, discharge rates, geomorphology) monitoring per approved QAPP

Stage data for two stations in the river (Clinton weir and Dodridge bike bridge) are now installed and currently transmit on a 30-minute frequency by radio signal to our data control center located in the Heffner Wetland Research and Education Building at the ORWRP. In addition, we continue to monitor river stage manually twice per day at the Clinton weir at the northwestern corner of the Olentangy River Wetland Research Park.

25% complete

Detail 4 Conduct chemical water quality monitoring per approved QAPP

Weekly in-situ measurements of water temperature, pH, specific conductance, redox potential and dissolved oxygen were obtained using the YSI Monitor with measurements taken at the water's surface (approx. 0.25 m) and just off the bottom at six stations (please see attached table for sites). Accuracy of the YSI Monitor is checked weekly for all measured water parameters based on calibration protocols provided in the YSI Monitor Manual and adopted by the ORWRP (YSI Inc. 2002). Also weekly water nutrient concentrations were measured for total phosphorus, soluble reactive phosphorus, nitrates, TKN, and occasionally ammonia using the Lachat.

25% complete

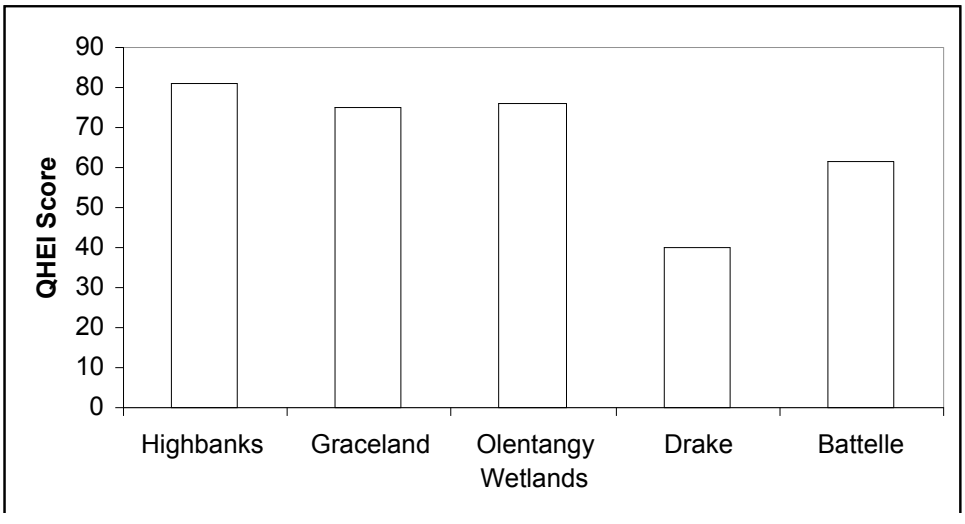
Detail 5 Conduct biological sampling per approved QAPP

A preliminary study of stream biota (fish and invertebrates) was done in April-May 2007 at 5 locations on the lower Olentangy River from Highbanks Metropark (RM 14.9) to Battelle (RM 1.8 immediately downstream of the 5th Avenue Dam)

15% complete

Detail 6 Conduct QHEI assessments per approved QAPP

QHEI was estimated from data in the above biological sampling from April-May 2007. Preliminary data are shown here.



15% complete

2. Education & Outreach

Detail 1Water quality and monitoring data web-site

The web site: http://swamp.osu.edu/OlentangyRiver has been established.

25% (% completed)

3. Reporting

Detail 1 Prepare Semi-Annual Progress Reports and submit to Ohio EPA within 30 days of the end of each semiannual period.

This report represents our first semi-annual progress report.

Appendices:

1) Table 1 Water quality sampling on the Olentangy River related to this study

Sampling site	Sample frequency	Equipment	Parameters measured
Clinton Park weir			
	continuous	YSI **6000®**	temperature dissolved oxygen pH conductivity turbidity chlorophyll
	weekly	YSI 600XL sonde	temperature dissolved oxygen pH conductivity turbidity
		Hach 2100N turbidimeter (Lab)	total phosphorus
		Lachat Quikchem FIA+ 8000 Series (Lab)	soluble reactive P
		Shimadzu 5050A TOC analyzer (Lab)	TKN TOC

			NO3 + NO2
Dodridge Bike Bridge	continuous	YSI **6000®**	temperature dissolved oxygen pH conductivity turbidity chlorophyll
	weekly	YSI 600XL	temperature dissolved oxygen pH conductivity turbidity
		Hach 2100N turbidimeter (Lab)	total phosphorus
		Lachat Quikchem FIA+ 8000 Series (Lab)	soluble reactive P
		Shimadzu 5050A TOC analyzer (Lab)	TKN TOC NO3 + NO2
Lane Ave. Bridge	weekly	YSI 600XL	temperature dissolved oxygen pH conductivity turbidity
		Hach 2100N turbidimeter (Lab)	total phosphorus
		Lachat Quikchem FIA+ 8000 Series (Lab)	soluble reactive P
		Shimadzu 5050A TOC analyzer (Lab)	TKN TOC NO3 + NO2
Woody Hayes Bridge	weekly	YSI 600XL	temperature dissolved oxygen pH conductivity turbidity
		Hach 2100N turbidimeter (Lab)	total phosphorus
		Lachat Quikchem FIA+ 8000 Series (Lab)	soluble reactive P
		Shimadzu 5050A TOC analyzer (Lab)	TKN TOC NO3 + NO2
Footbridge	weekly	YSI 600XL	temperature

			dissolved oxygen pH conductivity turbidity
		Hach 2100N turbidimeter (Lab)	total phosphorus
		Lachat Quikchem FIA+ 8000 Series (Lab)	soluble reactive P
		Shimadzu 5050A TOC analyzer (Lab)	TKN TOC NO3 + NO2
5th Ave Bridge	continuous	YSI **6000®**	temperature dissolved oxygen pH conductivity turbidity chlorophyll
	weekly	Lachat Quikchem FIA+ 8000 Series (Lab)	soluble reactive P
		Shimadzu 5050A TOC analyzer (Lab)	TKN TOC NO3 + NO2

2) Project Meetings:

May 4, 2007, in the Heffner Wetland Research and Education Building.

May 7, 2007, in the Heffner Wetland Research and Education Building.

3) The Ohio State University sub-contractor teams, with team leaders indicated, and progress report for Jan thru June 2007:

Remote Sensing
Carolyn Merry, Civil and Environmental Engineering Department
Prof. Merry and her graduate students attended project meetings associated with the Lower Olentangy River Ecosystem Restoration project over the past 6 months. Discussions on organizing the GIS and remote sensing database have occurred with project personnel.

Hydrology/Water Quality
Bill Mitsch, School of Environment and Natural Resources and Jay Martin, Food, Agricultural, and Biological Engineering Department
We have conducted manual weekly water quality sampling at 6 locations on the Olenatangy River both upstream (5 sites) and downstream (1 site) of the 5th Avenue

Dam for nutrient analyses (see Table 1 above on water quality network). We have also purchased and installed a YSI **6000®** water quality sonde at the Dodridge bikepath bridge about 3 km upstream of the 5th Avenue Dam for continuous monitoring of water quality. We have just installed and will be calibrating an ISCO water sampler to better sample before, during, and after flood pulses at the the same bridge. Undergraduate Honors Students: Kyle Chambers and Chris Cooley; Graduate Student: Chen Huang

Aquatic Ecology
Lance Williams (now David Johnson), School of Environment and Natural Resources
A preliminary study of stream biota (fish and invertebrates) was done in April-May 2007 at 5 locations on the lower Olentangy River from Highbanks Metropark (RM 14.9) to Battelle (RM 1.8 immediately downstream of the 5th Avenue Dam)

Microbiology/Sediments
Virginie Bouchard, School of Environment and Natural Resources
Sediment samples taken in June at different locations along the river. Denitrification analysis being conducted. We plan to collect additional samples in late August. Students: Gwen Dubelko (Honor student) and Lauren McGee (MS student).

Riparian Vegetation
Charles Goebel, School of Environment and Natural Resoures (Wooster)
No report provided for this period