# MEMORANDUM

GHA GEWALT HAMILTON ASSOCIATES, INC.
CONSULTING ENGINEERS

850 Forest Edge Drive, Vernon Hills, IL 60061
TEL 847.478.9700 ■ FAX 847.478.9701

820 Lakeside Drive, Suite 5, Gurnee, IL 60031
TEL 847.855.1100 ■ FAX 847.855.1115

www.gha-engineers.com

To: Michael Harrington, Insurance, Health, Environment, Buildings & Grounds Chair
Robert Kosin, Village Administrator

From: Daniel J. Strahan, P.E., CFM
Gewalt Hamilton Associates

Date: September 19, 2014

Re: Board of Health Meeting- September 9, 2014
Water Quality Monitoring Proposal

---

On Tuesday, September 9th, 2014 the Board of Health met to consider a water quality monitoring plan presented by Dr. Kurt Thomsen.

Currently annual surface water quality testing is completed at six locations in the Village, four on Flint Creek and two on Spring Creek, pursuant to the requirements of the Village's NPDES permit. Annual water quality reports have been completed since 2009 and submitted to the IEPA, with the most recent report posted on the Village website.

Dr. Thomsen proposed to implement a more detailed testing program coordinated among the various BACOG communities. This coordination would eliminate duplicate tests (tests taken in substantially the same locations as a creek leaves one community and enters another), while testing for a number of analytes that are not currently required. Dr. Thomsen noted that the program would establish a more complete baseline of water quality characteristics, allowing the Village to assess the current condition and evaluate how potential pollutant removal strategies may help improve water quality.

After consideration of the presentation by Dr. Thomsen, a motion was approved by the Board of Health to recommend that the Village Board support the concept of testing current water quality conditions in order to provide a baseline of current conditions and fulfill the Village's annual obligations under the NPDES permit, provided appropriate funding is available

cc: Board of Trustees

Flint Creek Watershed Partnership
flintcreekwatershed.org

To: Village of Barrington Hills Board of Health

From: Kurt Thomsen, Ph.D., PG
Flint Creek Watershed Partnership, Spring Creek Watershed Partnership

Date: September 3, 2014

Re: Water Quality Monitoring

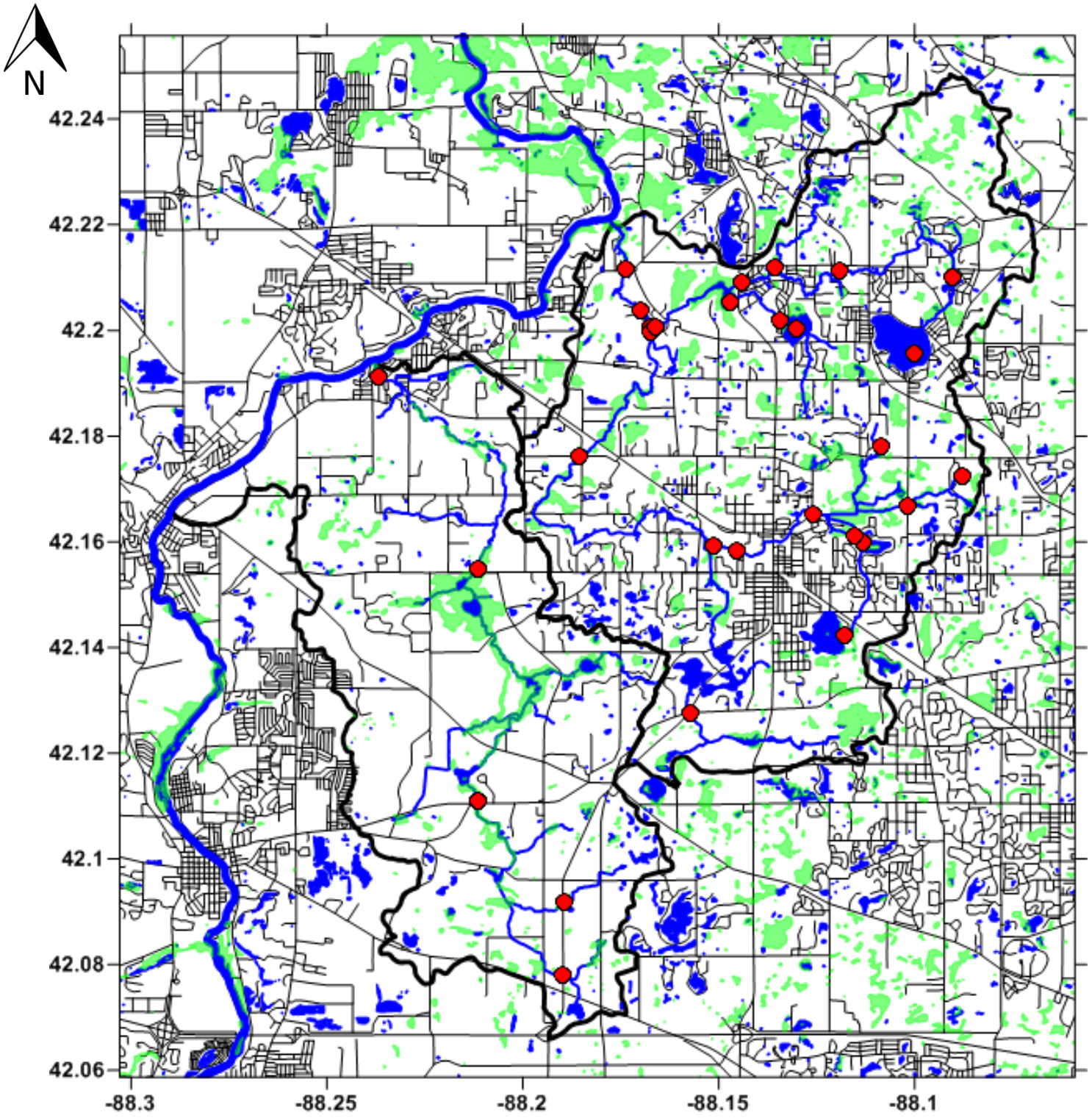
Flint Creek Watershed Partnership and Spring Creek Watershed Partnership through their not--for-profit fiscal agent, Citizens for Conservation, propose to implement the water quality monitoring plan that is currently being prepared for the Flint and Spring Creek watersheds (Figure 1) to establish baseline water quality characteristics. Implementation will take place in FY 15. The establishment of baseline water quality characteristics of the watersheds and continued monitoring will allow us to; 1) assess the current state of water quality resulting from non-point source pollution within streams and lakes; 2) assess changes in water quality to see how well implemented BMPs are working to remove pollutants for meeting water quality targets and ultimately milestones and project goals; and 3) assess the public social behavior related to water quality issues. Water quality monitoring will be performed by collecting physical, chemical, biological and social indicator data related to the watershed-based plans goals and objectives.

A significant amount of monitoring data has already been collected from the two watersheds. Most of these data have been collected by entities having ongoing established monitoring programs. These entities include: Lake County Health Department-Lakes Management Unit, IEPA Lake Monitoring Program, Citizens for Conservation, IEPA and IDNR Intensive Basin Survey Program, and River Watch Citizen Scientists. Additionally, the MS4 monitoring conducted by the jurisdictions within the watersheds has also provided a substantial amount of data and the sampling locations established as part of this effort will form the basis of the proposed monitoring network.

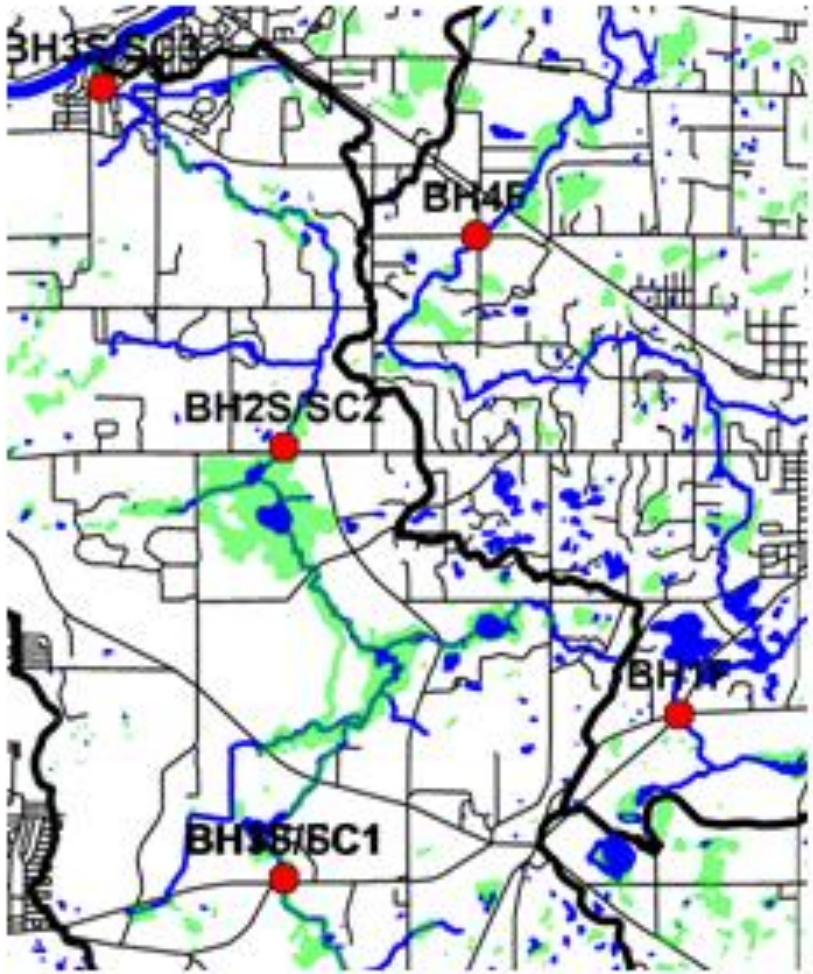
Data will be collected to establish baseline conditions for physical, chemical, and biological water quality indicators such as nutrients, suspended solids, water clarity, and dissolved oxygen. Also included, will be physical parameters such as habitat characteristics, temperature, oxygen concentration, specific conductance, and pH. These data will be collected annually. Additionally, geochemical characteristics will be established on a five-year basis to monitor the water source and changes in groundwater discharge areas. Habitat characteristics will be assessed by using the Index of Biotic Integrity and/or the Macroinvertebrate Biotic Index.

Hydraulic performance resulting from significant rain events and/or the implementation of a given BMP will be established. Water quality in streams is most often assessed at different locations following significant rain events to determine pollution loads resulting from human activities. Hydraulic conditions will be evaluated by assessing parameters such as peak discharge rate, reduction in total volume discharge, and time effects of discharge.

# Figure 1 Proposed Water Quality Sampling Locations




Original MS4 Sampling Locations




Proposed MS4 Sampling Locations

Barrington Hills

**Barrington Hills**

| ANALYTES/MEASUREMENTS | Cost | Original |
|---|---|---|
| **Field Analytes** | | |
| pH | | X |
| Conductivity | | |
| Dissolved Oxygen | | |
| Stream Discharge | | |
| Temperature | | |
| Turbidity | | |
| Oxidation Reduction Potential | | |
| | Labor | |
| **Standard Water Quality Analytes** | | |
| Total Suspended Solids | $10.00 | $ 10.00 |
| Total dissolved Solids | $10.00 | |
| Coliform | $12.00 | |
| E-Coli | $25.00 | |
| Biochemical Oxygen Demand | $20.00 | $ 20.00 |
| Total Kjeldahl Nitrogen | $35.00 | $ 35.00 |
| Nitrate Nitrogen | $13.00 | |
| Total Phosphorus | $25.00 | $ 25.00 |
| Disolved Phosphorus | $25.00 | |
| Phenolics | $20.00 | $ 20.00 |
| Cadmium | $9.00 | |
| Copper | $9.00 | |
| Lead | $9.00 | |
| Zinc | $9.00 | |
| Digestion | $10.00 | |
| Subtotal: | $241.00 | |
| **Geochemical Characterization Analytes** | | |
| Alkalinity | $10.00 | |
| Chloride | $13.00 | $ 13.00 |
| Fluoride | $13.00 | $ 13.00 |
| Orthophosphate | $25.00 | |
| Sulfate | $13.00 | |
| Aluminum | $9.00 | |
| Barium | $9.00 | |
| Calcium | $9.00 | |
| Iron | $9.00 | |
| Magnesium | $9.00 | |
| Manganese | $9.00 | |
| Potassium | $9.00 | $ 9.00 |
| Sodium | $9.00 | |
| Digestion | $10.00 | |

**ANALYTES/MEASUREMENTS**

| | Cost | Original |
|---|---|---|
| Subtotal: | $156.00 | |
| Total: | $397.00 | |

**Analytes Not Listed Above**

| | | |
|---|---|---|
| Ammonia | $35.00 | $ 35.00 |
| **Current Cost Per Sample:** | | $ 180.00 |

**Summary**

| | Original Annual Cost | Proposed Annual Cost | Proposed 5th Year Cost |
|---|---|---|---|
| **Number of Samples:** | **6** | **5** | 5 |
| **Cost of Analyses:** | $ 1,080.00 | $ 1,205.00 | $1,985.00 |

Cost of Labor to Collect Samples, Document Field Measurements, and Reporting are not Included.