


**Small Watershed Conservation Committee (SWCC) – Annual Report Card**




One of the main goals of the SWCC is to understand the water quality of the streams within the GPCA area. Since the streams within our area feed into the larger Patapsco River and then ultimately into the Chesapeake Bay, what happens within each small stream and even on your property, affects the health and vitality of our water resources and this in turn affects our quality of life.

The SWCC developed a volunteer sampling program to establish a baseline for the water quality of our streams and to monitor for changes. Controlling new development has been a concern of the GPCA and one of the main benefits of the SWCC program would be the ability to identify problem streams, monitor and document the impact of development within the GPCA area, and be alert for changes.


The sampling program now has over 2 years of water quality data at 4 strategic locations that capture runoff from a large portion of the land area within the GPCA and represent a range of land-use, development, and watershed size characteristics.




**Water Temperature** – Exerts a major influence on biological activity and growth and will stress organisms at higher temperatures.



**Salinity** – Excess salts can be toxic to freshwater plants and animals and make water unsafe for drinking, irrigation, and watering livestock.



**pH** – Water extremely acidic or basic is deadly to aquatic organisms and changes in pH can alter the behavior of other chemicals in the water.



**Orthophosphate and Nitrate** – Are essential plant nutrients but high concentrations can result in the overgrowth of algae in streams.

At each site, teams of volunteers have collected and processed water samples roughly once a month and also recorded other environmental variables. From the water samples we determined temperature, salinity, pH, orthophosphate and nitrate values. We choose these variables because they are important indicators of water quality and together give a reasonable overall picture of stream health.

Average Water Temperature (Fahrenheit)					
Location	Year 1	Year 2	Change	Trend	Grade
Bens Run	49.8	52.2	+13%	⬆️	✓
Brice Run	50.5	52.9	+13%	⬆️	✓
Dogwood Run	50.2	52.7	+14%	⬆️	✓
Granite Run	50.0	52.5	+14%	⬆️	✓
Normal Range (0-68); High (>68)					

**Results** – Values measured were very good and some of the lowest for the area which is good for cold water species like trout. Future high-resolution sampling will provide information during the critical summer period where temperatures reach their maximum. There was an increase in average temperature across all the streams between years.

Average Salinity (ppt)					
Location	Year 1	Year 2	Change	Trend	Grade
Bens Run	0.18	0.20	+11%	⬆️	✓
Brice Run	0.16	0.17	+06%	↔️	✓
Dogwood Run	<b>0.34</b>	<b>0.39</b>	+15%	⬆️	Elevated
Granite Run	0.12	0.12	+0%	↔️	✓
Normal Range (0-0.25); Elevated (>0.25); High (>0.5)					

**Results** – Most of the values were in the good range except for periods of runoff during the winter months which caused high levels due to road salt. Dogwood Run also has elevated salinity values year-round and is twice that of the other sites and may be indicative of a chronic problem. Additional investigation will be necessary to determine potential impacts.

The data obtained so far indicates that the overall health of the streams is good. We'll need to compare our results to biological stream survey data and other state monitoring efforts to determine the overall health of the streams. Land-use, sediment, river discharge and watershed characteristics, may offer additional clues to the observed results. Detailed information will be provided in follow up newsletters for each sample location, so stay tuned.

Through the program, the GPCA now has a robust baseline for the 4 sample locations and associated watersheds. We can use this baseline to monitor for changes and to track the impacts of recent developments or future restoration efforts. Data from the program has already been used in testimony and documents related to variances on new development, in redefining the GPCA boundary line and identifying potential problem areas within our watersheds.

We are also using the results to secure additional grant funding to expand the program. An example includes the incorporation of high-resolution temperature probes to monitor temperature profiles of the locations over the summer period, a key determinant of habitat suitability for trout.

In the future we also hope to include bacterial sampling to monitor for water quality impairments and to conduct biological stream sampling to determine stream health and how this relates to what we are seeing in the water quality samples.

This sampling program is only possible through the dedication of my fellow SWCC members which include Austin Cohen, Laurie Donnelly, Andy Grosko, James Raistrick, Robert Reisdorf, Robert Teller, Carl Wolfson and Cathy Wolfson who together have put in over 500 volunteer hours since the start of the program.

Many thanks also go out to our partners at the Baltimore County Department of Environmental Protection and Sustainability for providing comparison water quality samples and equipment and to the GPCA, Patapsco Heritage Greenway and Keep Maryland Beautiful Citizen Stewardship who have provided funding to sustain the program through the purchase of equipment, reagents and testing materials.

*~David Scheurer, SWCC member*

Average pH (units)					
Location	Year 1	Year 2	Change	Trend	Grade
Bens Run	8.0	8.0	+0%	↔	✓
Brice Run	7.7	7.7	+0%	↔	✓
Dogwood Run	8.3	8.1	-2%	↔	✓
Granite Run	7.7	7.7	+0%	↔	✓
<b>Normal Range (6.5-8.5); High (&gt;8.5); Low (&lt;6.5)</b>					

**Results** – Values were in the normal range and were relatively consistent across all the stream locations. No year-to-year trends were evident.

Orthophosphate (mg/L)					
Location	Year 1	Year 2	Change	Trend	Grade
Bens Run	0.02	0.04	+100%	↑	✓
Brice Run	0.07	0.12	+71%	↑	High
Dogwood Run	0.05	0.05	+0%	↔	Elevated
Granite Run	0.07	0.05	-29%	↓	Elevated
<b>Normal Range (0-0.05); Elevated (&gt;0.05); High (&gt;0.1)</b>					

**Results** – Values for this parameter were elevated for a number of the sites and were increasing with time. Brice Run had over twice the concentration as the other locations and agricultural land-use is thought to be a contributor to the higher values.

Nitrate (mg/L)					
Location	Year 1	Year 2	Change	Trend	Grade
Bens Run	1.98	0.84	-58%	↓	✓
Brice Run	2.21	1.62	-27%	↓	✓
Dogwood Run	1.06	0.38	-64%	↓	✓
Granite Run	2.14	1.10	-49%	↓	✓
<b>Normal Range (0-2.5); Elevated (&gt;2.5); High (&gt;3.7)</b>					

**Results** – All values are in the normal range for the sample locations and are decreasing with time. As with orthophosphate, Brice Run had the highest overall values and is another indication of an agricultural source since both are components of fertilizer.