

Lake Spokane Optical Brightener Study

Stevens County Conservation District

Why Optical Brighteners?

- Optical brightener monitoring is a method used to detect septic or sewage discharges to surface water
- Optical brighteners are compounds added to laundry detergents to make clothes appear brighter; a modern day replacement for bluing (adding small amounts of blue dye to make clothes appear whiter)

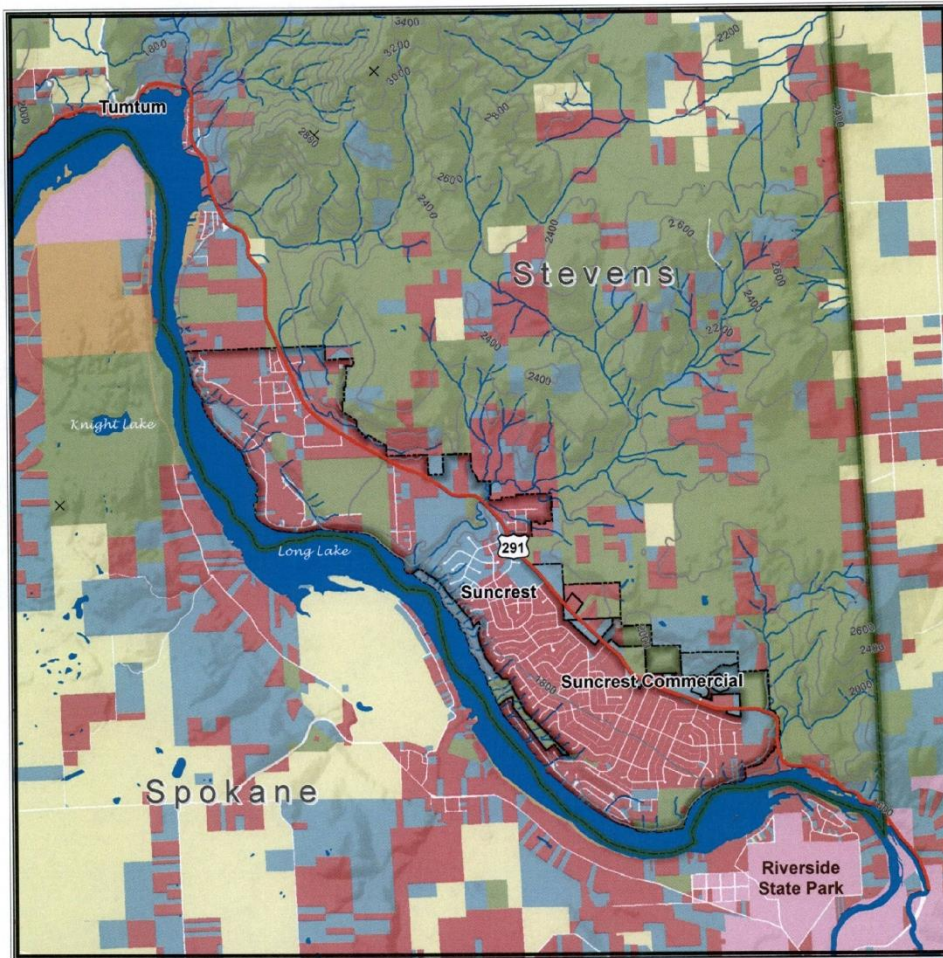
Why Optical Brighteners?

- Presence of optical brighteners in surface water a strong indication that household wastewater is reaching the stream or lake
- Optical brighteners are relatively slow to decay and are detectable far from the point source

Why Optical Brighteners?

- Optical brighteners are only produced by anthropogenic pollution as opposed to other indicators that could have an animal origin
- In 1969 over 29,000,000 pounds of U.S. optical brighteners went into laundry detergents

Land Use - Lake Spokane



0 0.5 1 2 Miles

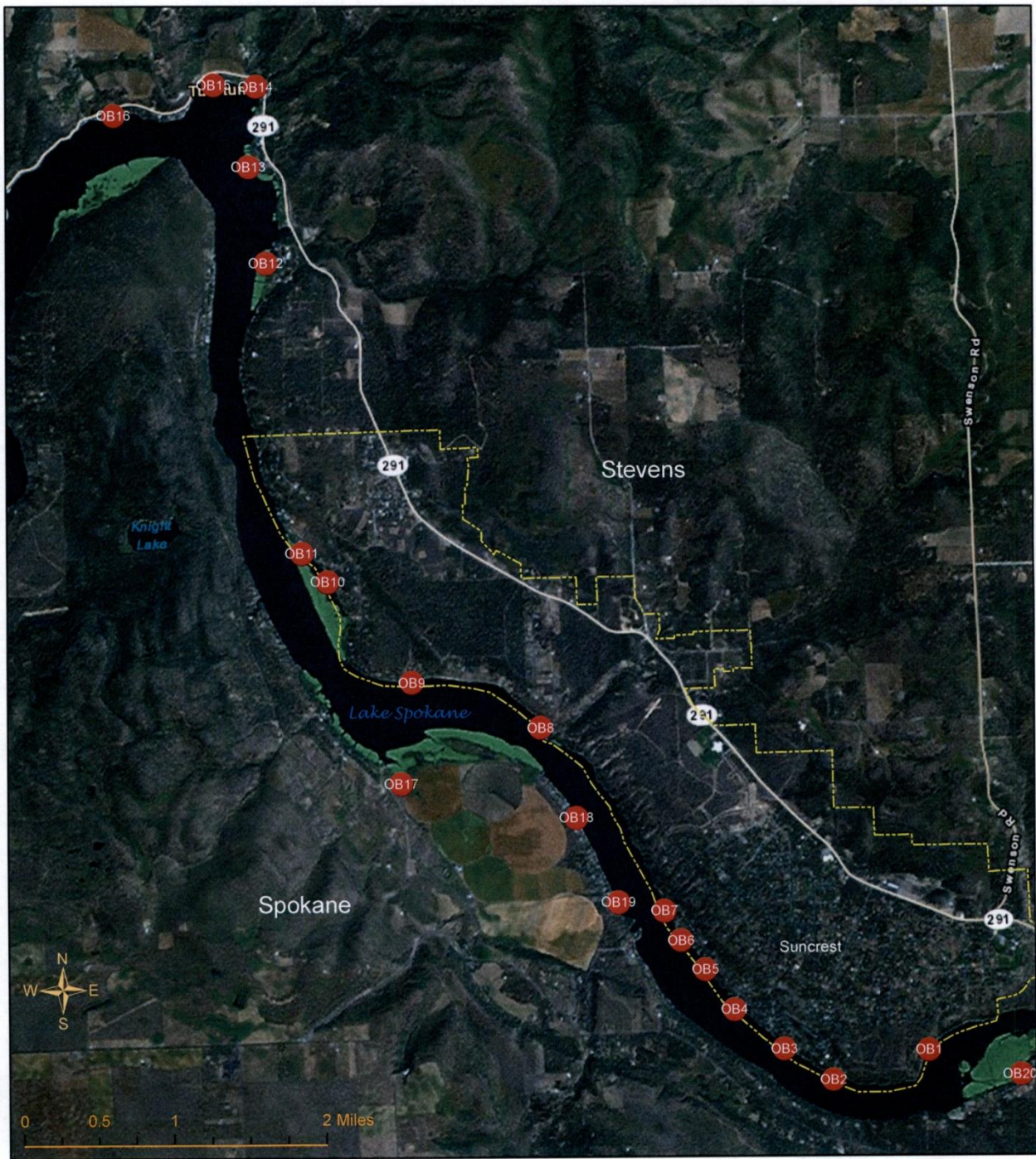


Land Use Categories

- | | |
|------------------|------------------|
| Agriculture | Forest/Timber |
| Housing/Business | Undeveloped Land |
| Open Space | |

Features

- | | |
|------------------------------|---------------|
| Summits | Major Streams |
| Contour Line Index | Lakes |
| Highway 291 | Parks |
| Urban Growth Area - Suncrest | County Line |



Sample Near Shore Area



Some Undeveloped Sites



Some Highly Developed Sites



LSA Support



Monitoring Parameters

- Optical brightener: ppb
- Fecal coliform bacteria: colonies / 100 ml

Added in August 2012

- Temperature: Degrees Celsius
- Dissolved oxygen: mg/L
- pH
- Specific conductance: microSiemens / cm

Turner Designs Fluorometer



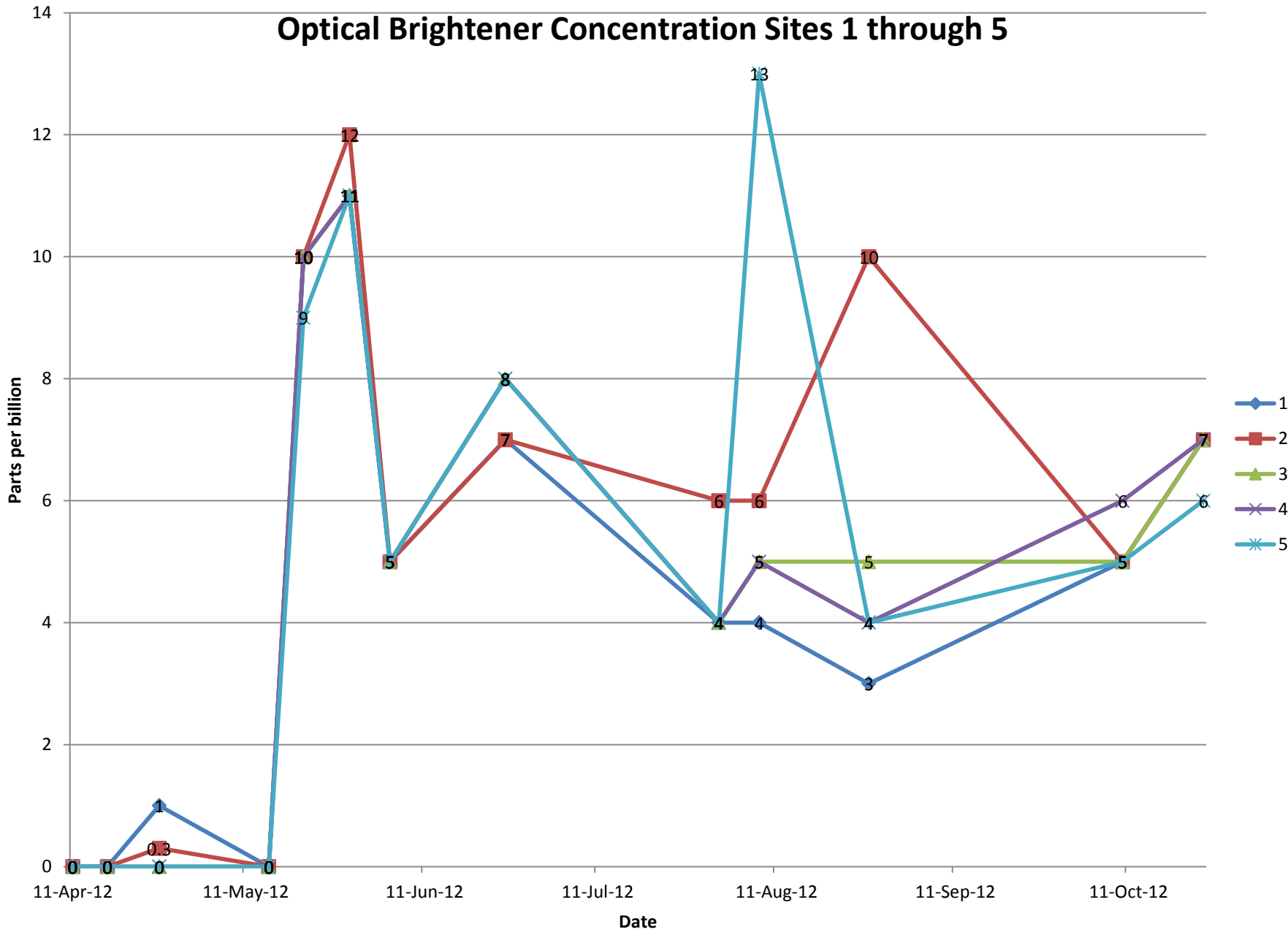
Fecal Coliform Grab Sample



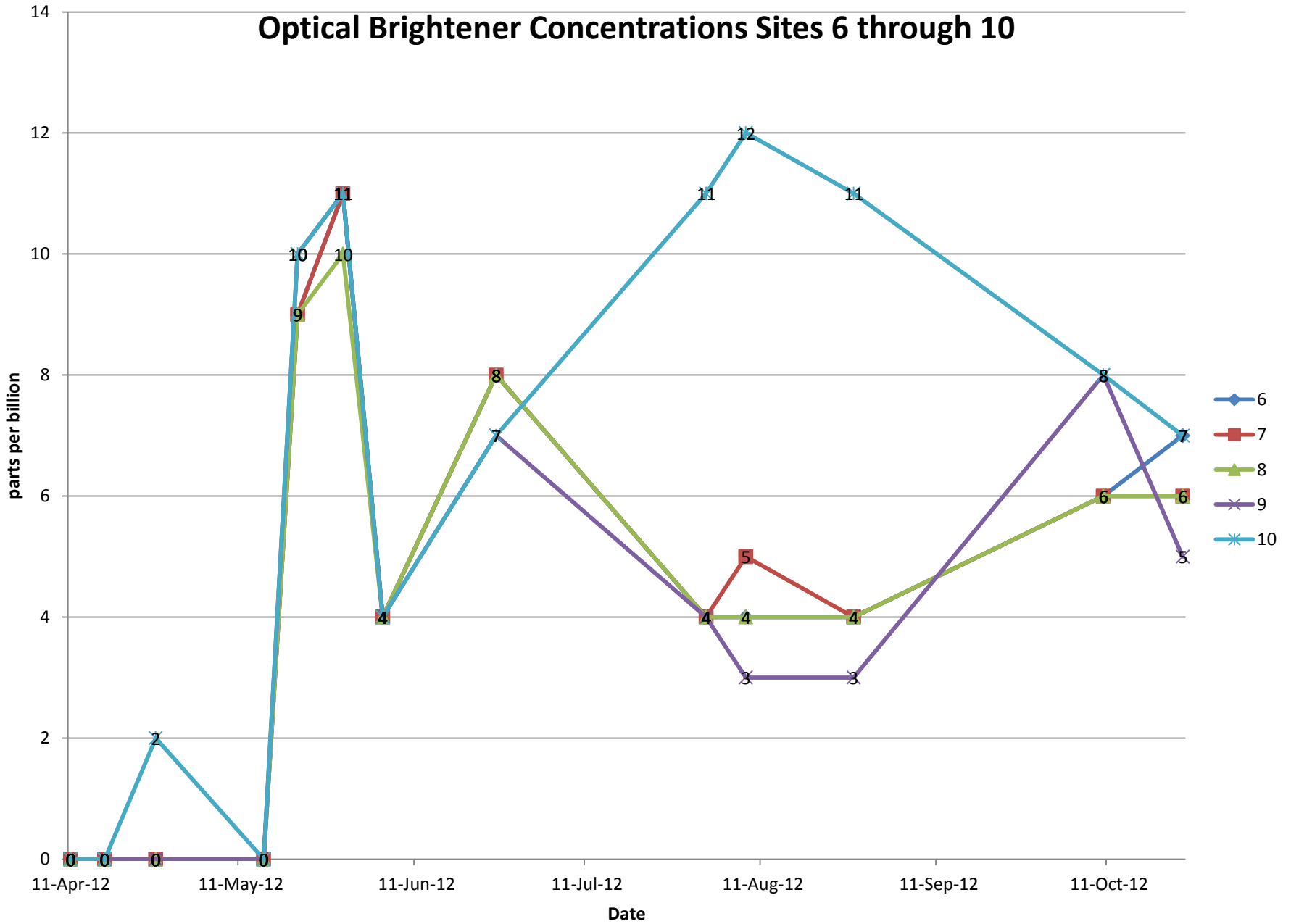
In-Situ Troll 9500



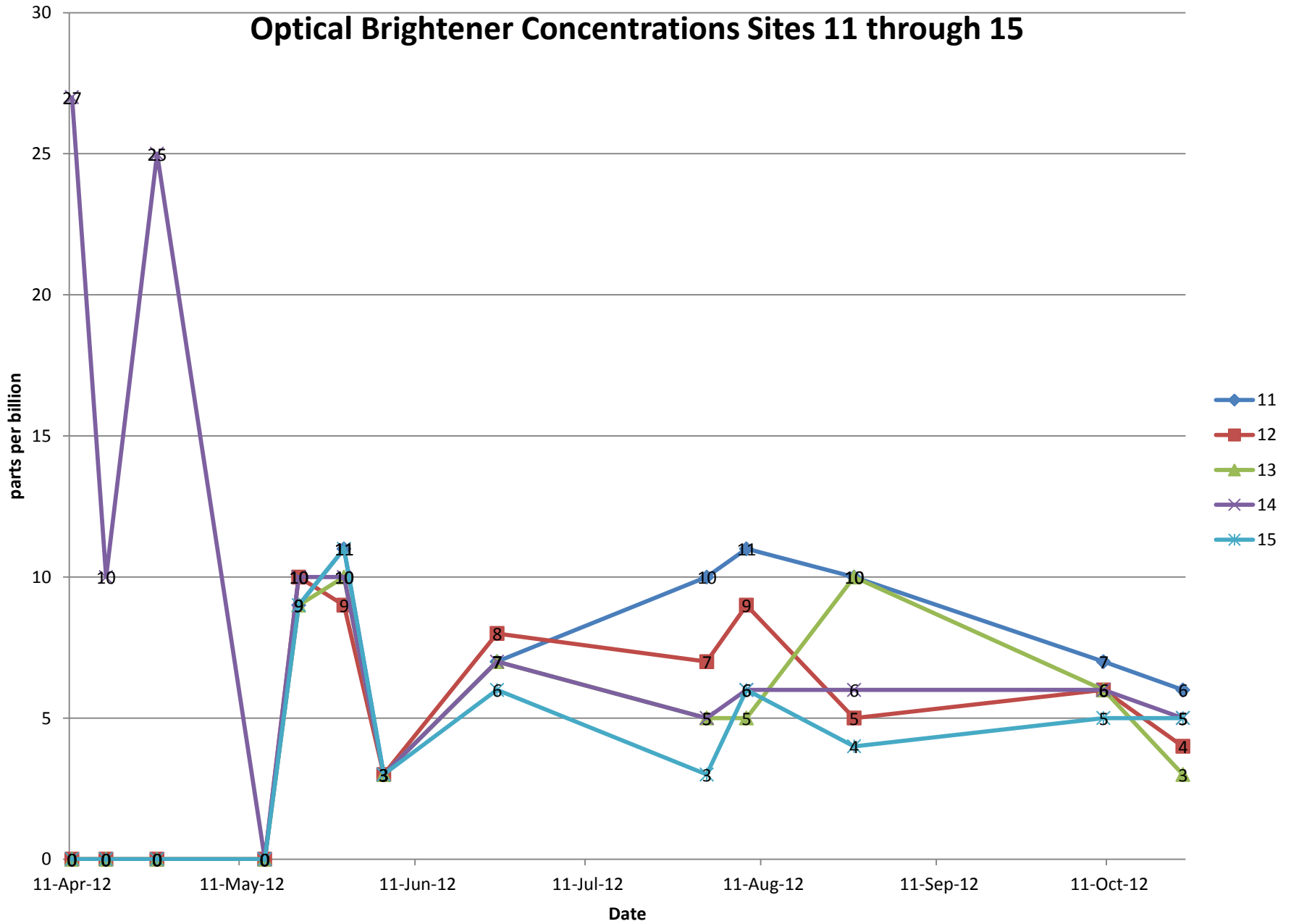
Optical Brightener Concentration Sites 1 through 5



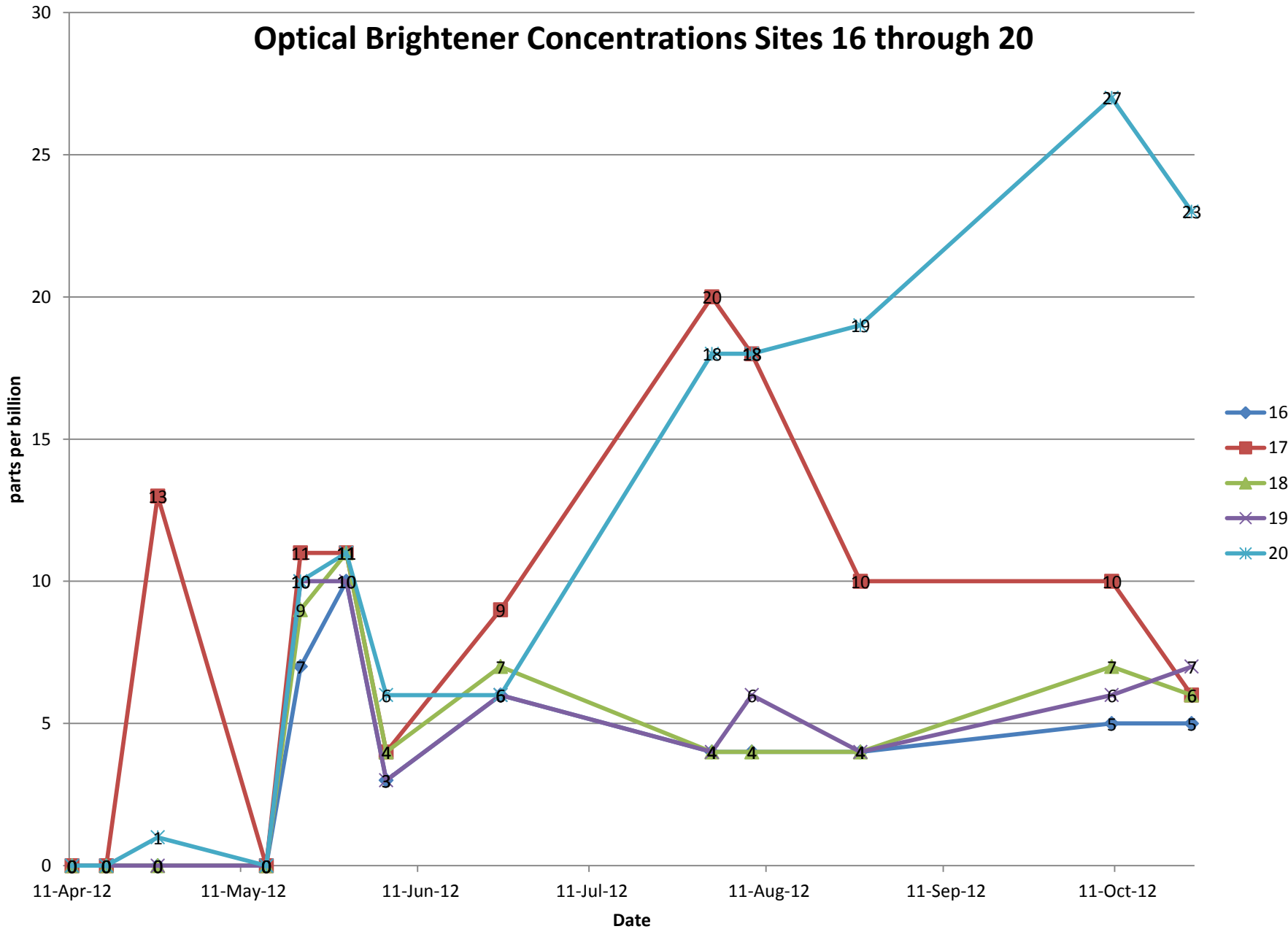
Optical Brightener Concentrations Sites 6 through 10



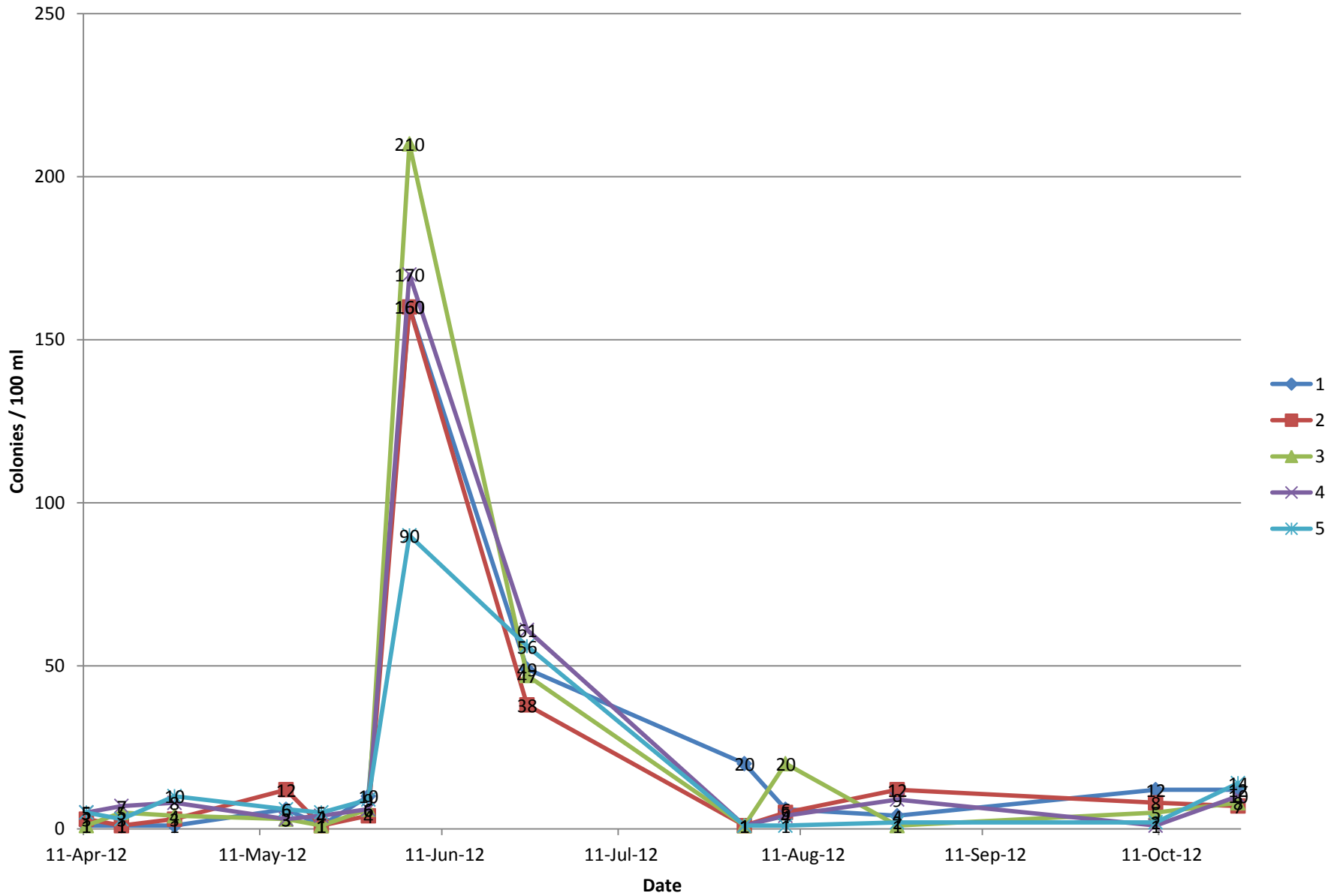
Optical Brightener Concentrations Sites 11 through 15



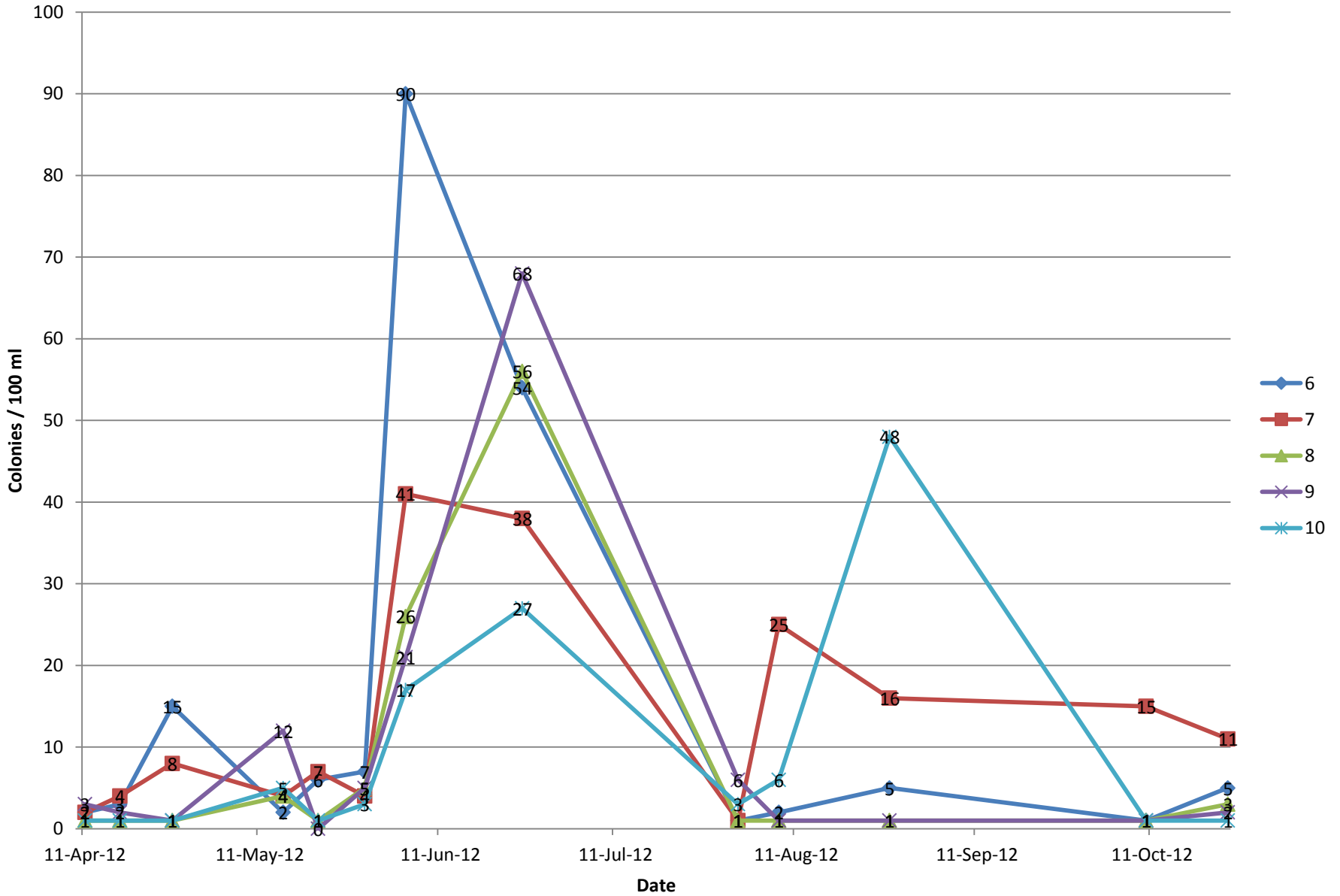
Optical Brightener Concentrations Sites 16 through 20



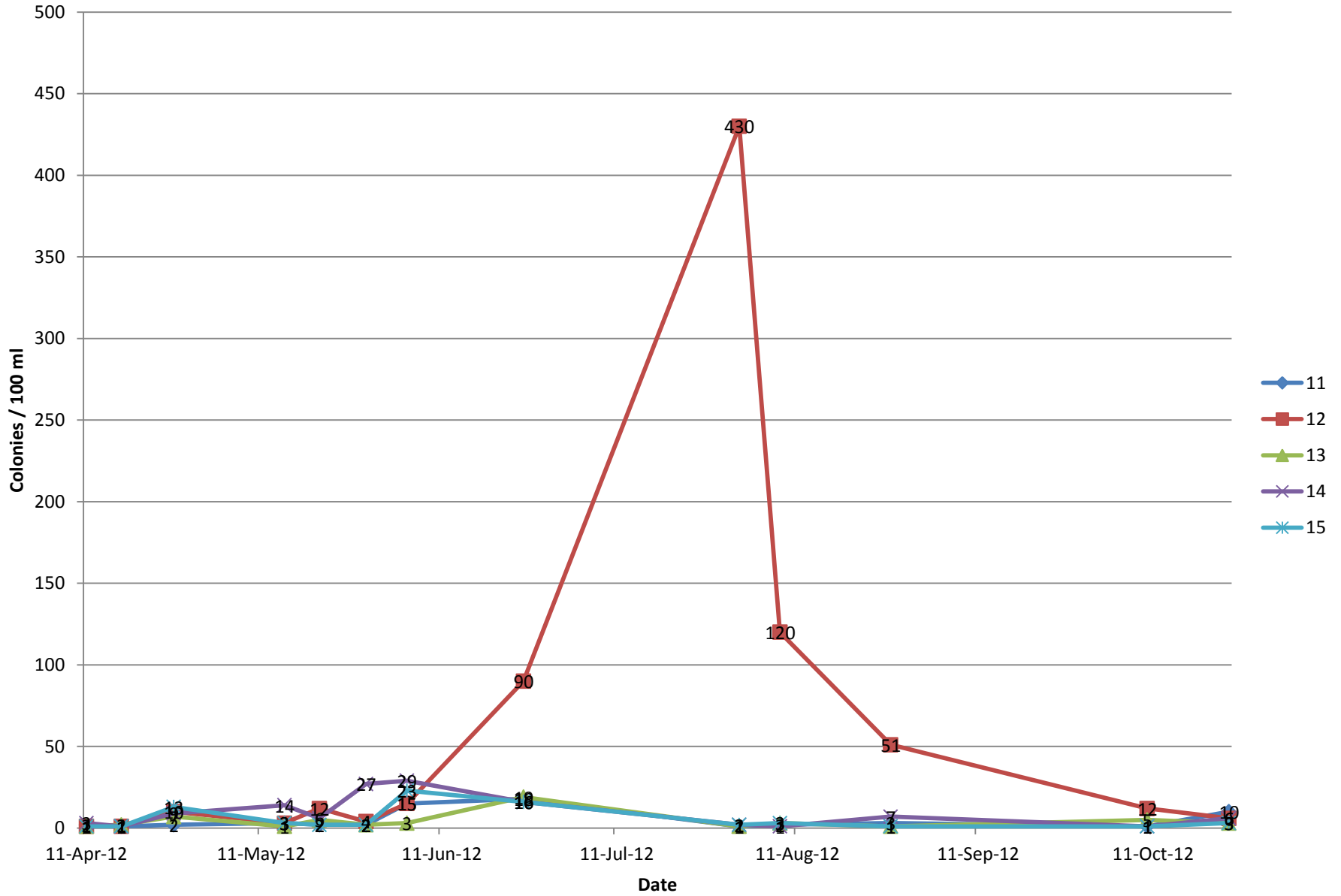
Fecal Colifom Bacteria Sites 1 through 5



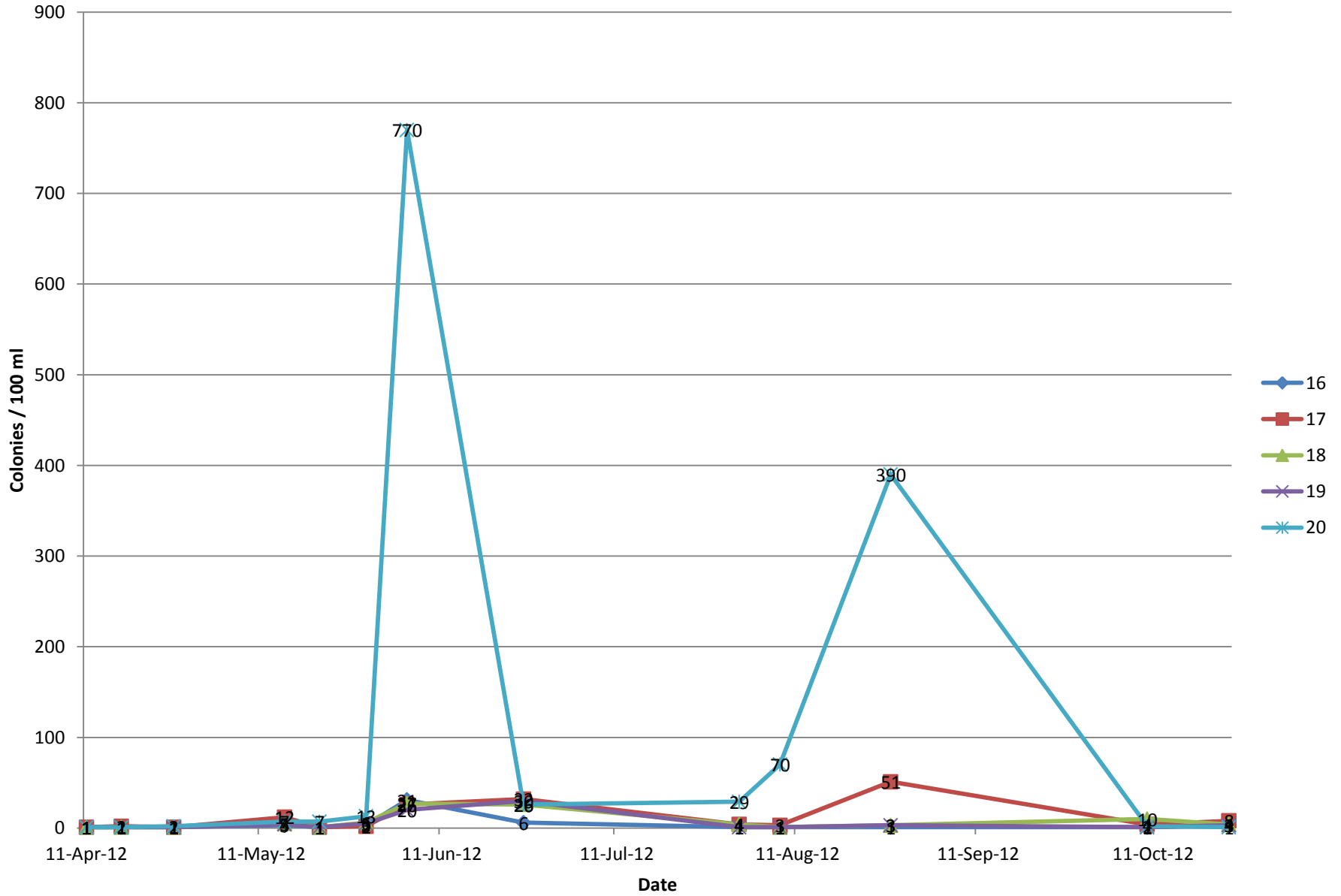
Fecal Coliform Bacteria Sites 6 through 10



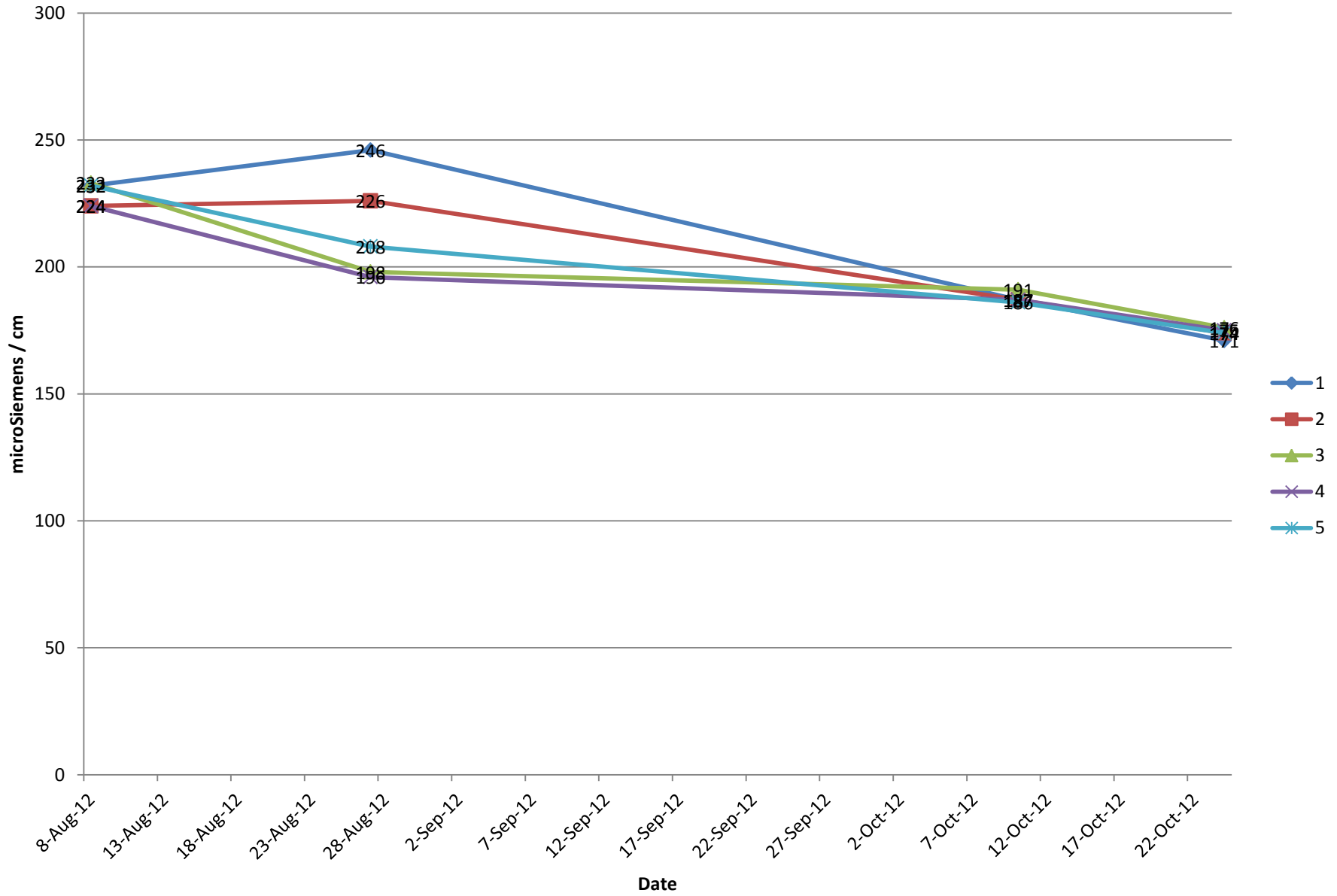
Fecal Coliform Bacteria Sites 11-15



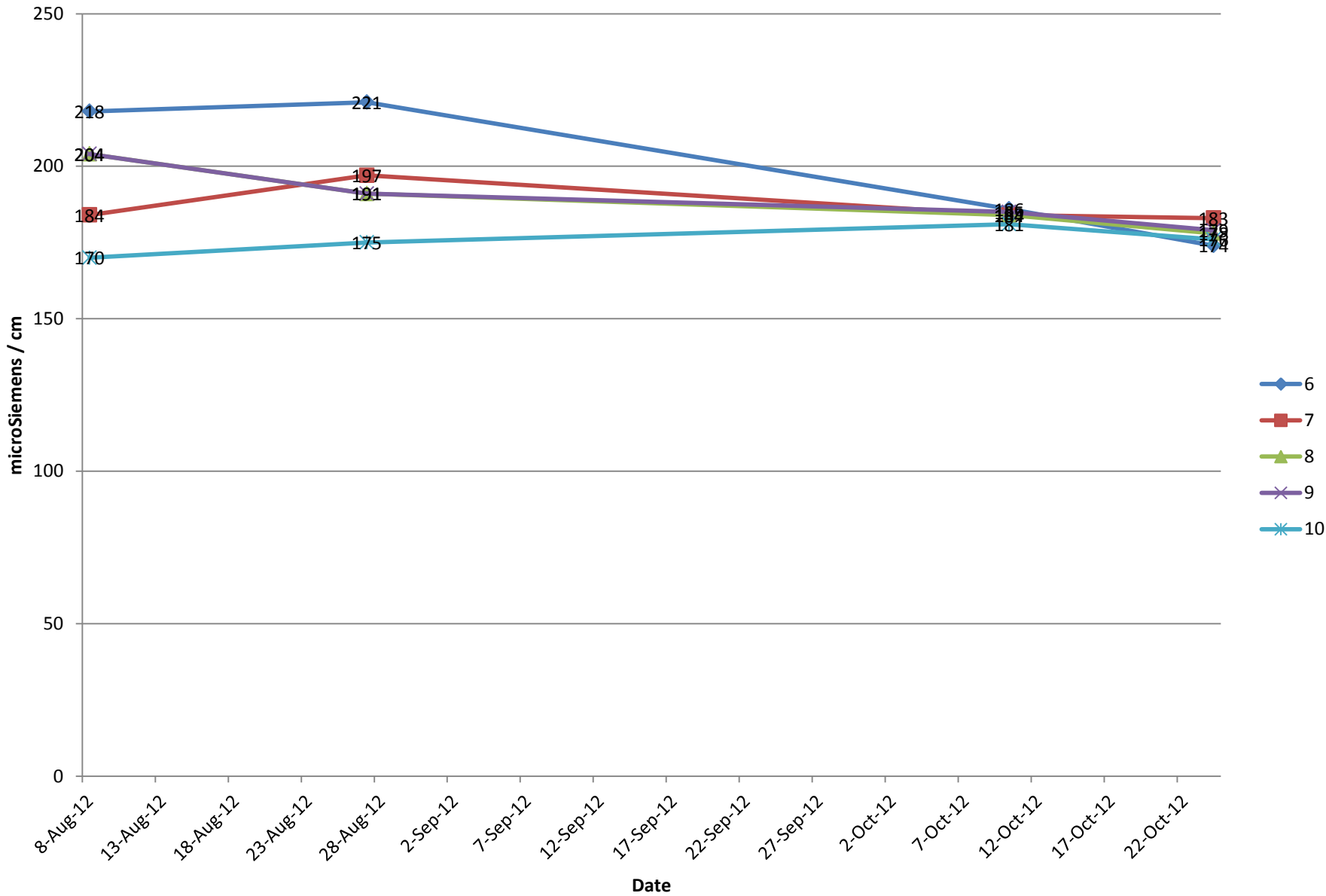
Fecal Coliform Bacteria Sites 16-20



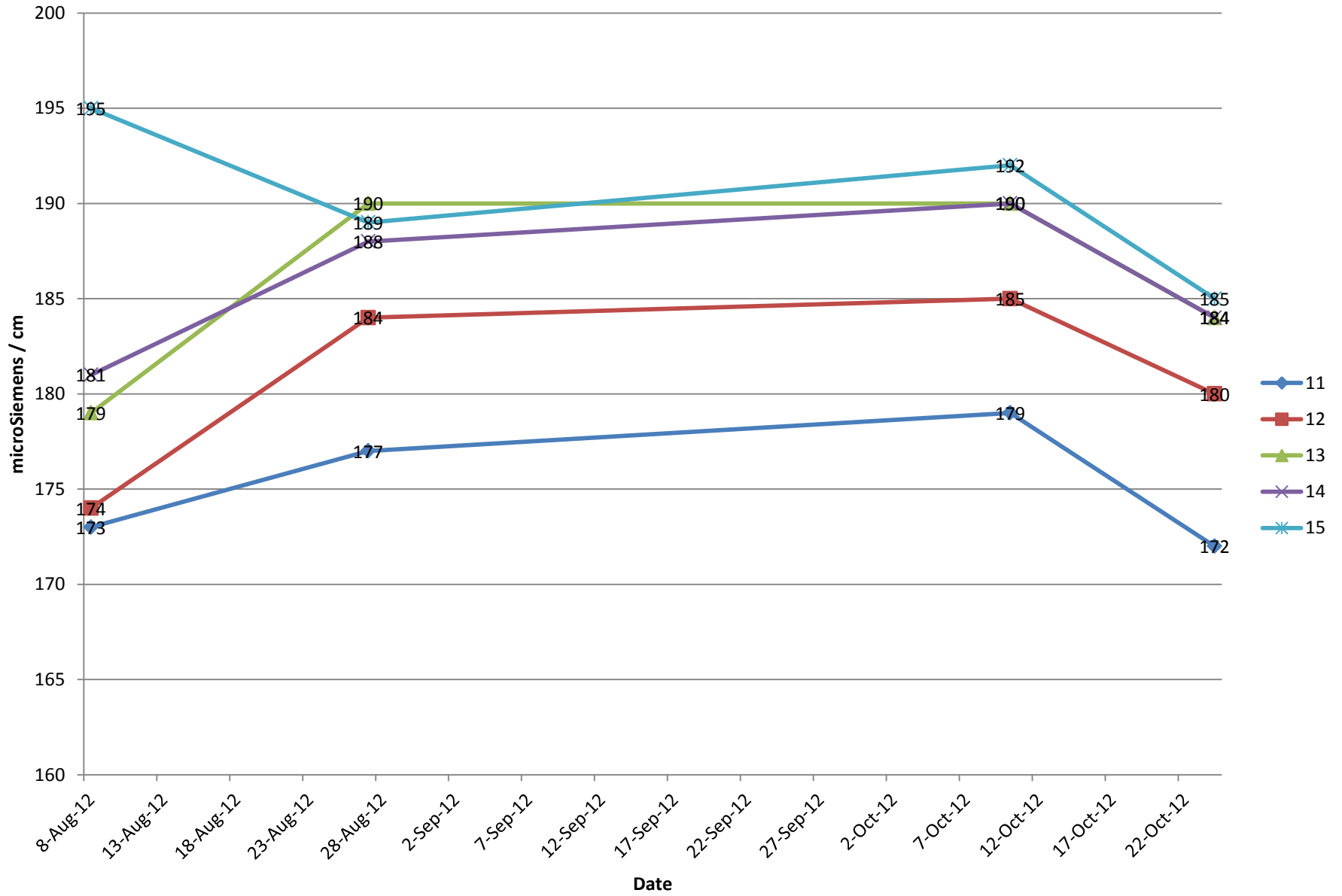
Specific Conductance near bottom Sites 1-5



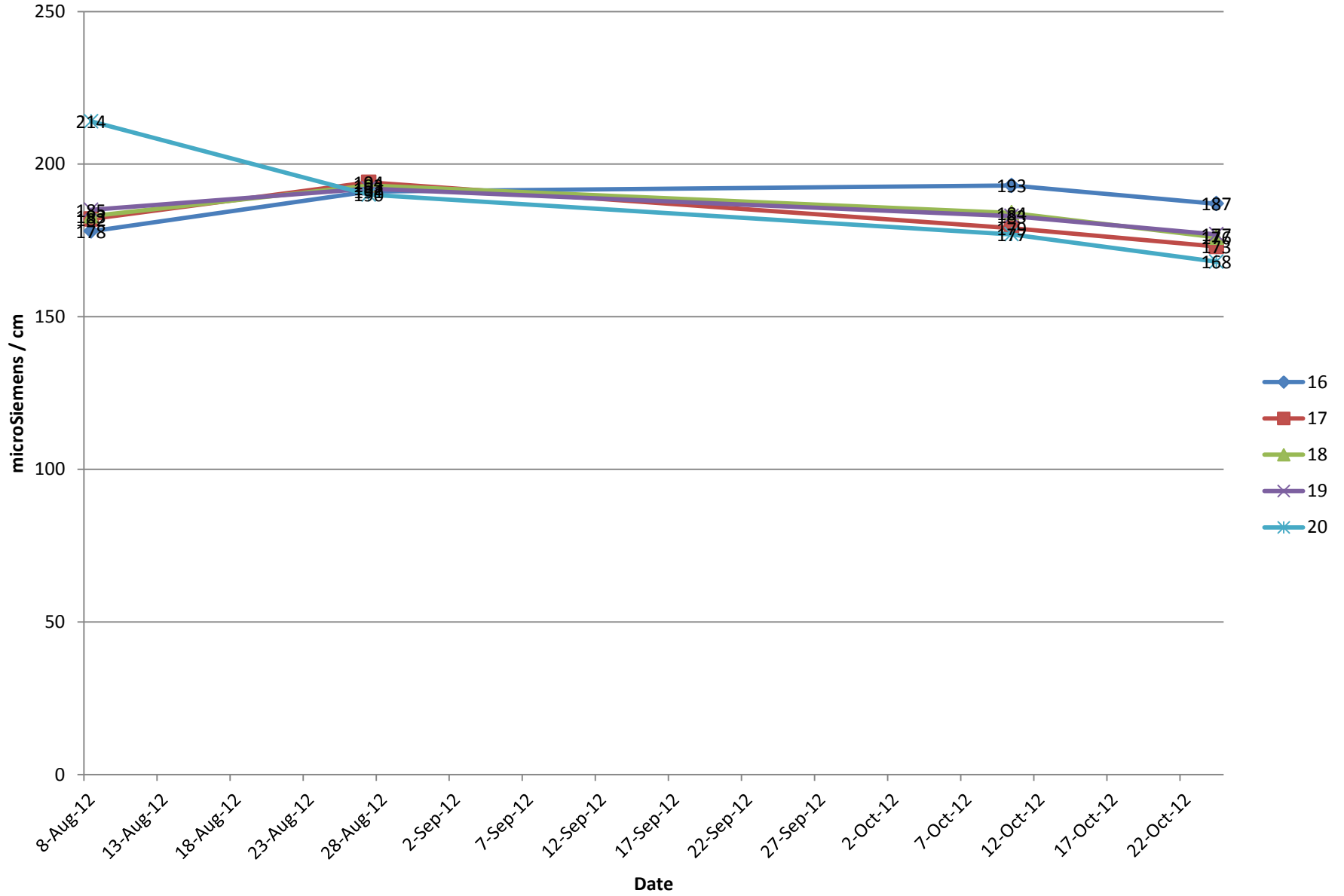
Specific Conductance near bottom Site 6-10



Specific Conductance near bottom Sites 11-15



Specific Conductance near bottom Sites 16-20



South Stevens Education Project



South Stevens Education Project



Presentation to 6th Graders



Horse manure & Composting



Managing Runoff



Pet Waste & Energy Production



Park Spark – Cambridge, MA

