



Metropolitan Water Reclamation District of Greater Chicago

2017 Illinois Nutrient Loss Reduction Strategy Workshop Overview

January 11, 2018

Lower Des Plaines Watershed Group Meeting

November 28-30, 2017



Urban Stormwater Takeaways

- Sierra Club and Center for Neighborhood Technology called for numeric nutrient standards in MS4 permits.
 - Urban stormwater is relatively small but important niche for nutrient loading, particularly locally.
 - Use MS4 program for outreach
 - Lauded DuPage and Lake Counties for Stormwater education
 - Only 22 stormwater fee municipalities
 - MS4 stormwater training requirement
 - Autumn street sweeping
 - Working on bill for volume control standards; county wide stormwater management



Point Source Takeaways from Updates

- The last point source sector survey sent out by IAWA was too complicated and intimidating
 - Will be streamlined in future
- Amy Dragovich (IEPA)
 - Enhancements for addressing point sources
 - Nutrient TMDLs, Effluent nutrient monitoring requirements, Reopener clause, Watershed workgroups, Operational feasibility studies
 - 0.5 mg/L annual geomenan to address “reasonable potential” of violating narrative water quality standard



Miscellaneous Takeaways from Updates

- Cindy Skrukruud (Sierra Club) expressed concern that there should be explicit timeline to meet the 2025 interim goal and 2035 deadline for the INLRS

Nutrient	Phase 1 Milestone	Target
Nitrate-nitrogen	15% by 2025	45%
TP	25% by 2025	45%



USGS Supergage Monitoring

- The baseline year for phosphorus reduction tracking is considered 2011- the last year included in the original nutrient science assessment
- Kelly Warner (USGS) reported on baseline and seasonal nutrient and sediment loading.
 - Statistically scientists need about 10 years of data to assess changes in nutrient loading.
 - Nine supergages monitoring about 75% of Illinois watersheds.
 - Gage in Joliet on Lower DesPlaines up and running. Data available at https://waterdata.usgs.gov/il/nwis/uv/?site_no=05537980&agency_cd=USGS
 - (Or search for it on USGS NWIS website)



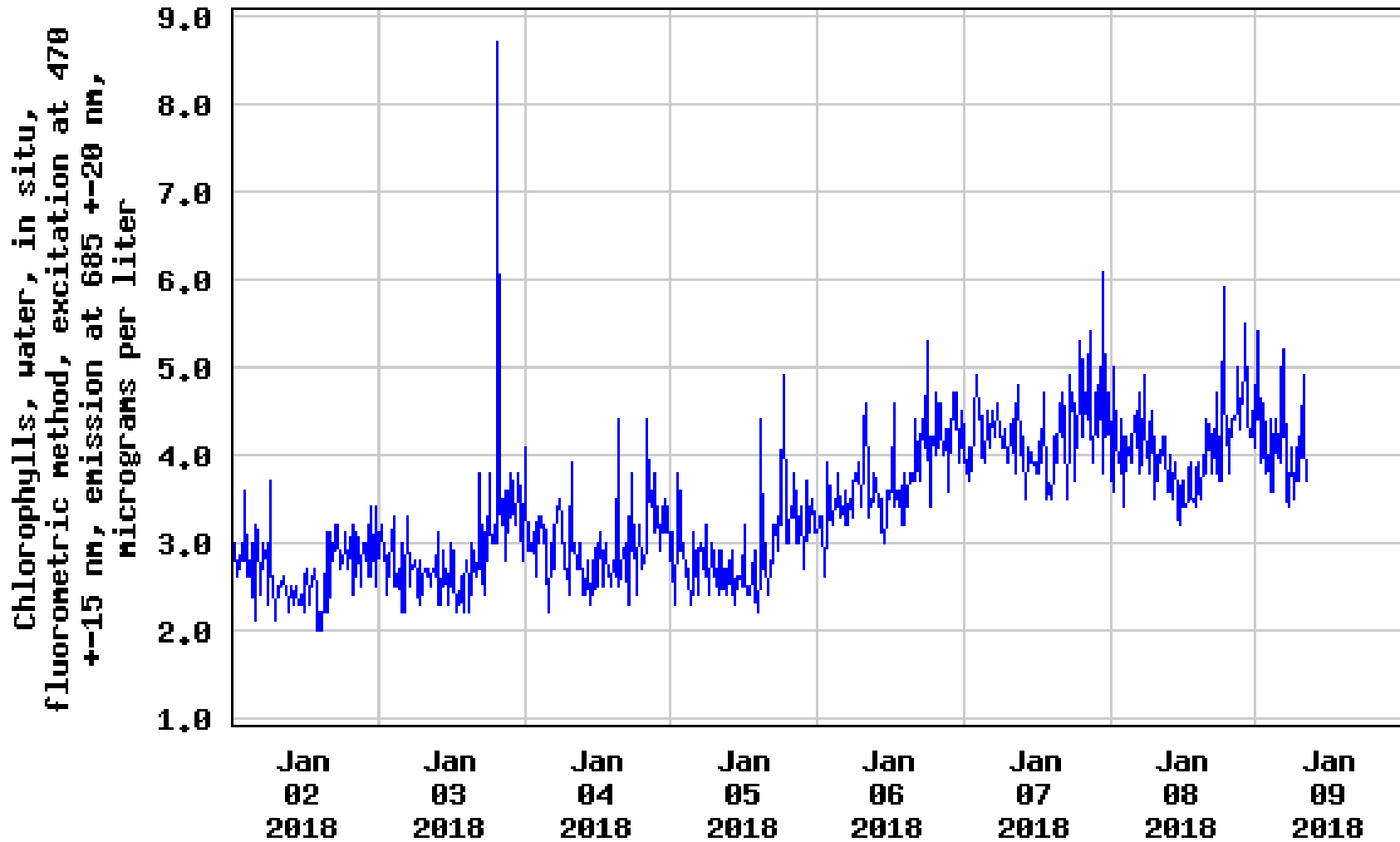
USGS Supergage monitoring

- Paul Terrio (USGS) described provisional results from the superstations.
 - High flow events have a huge influence on nutrient loading.
 - Chlorophyll *a* probes are only located at Florence and Joliet supergauge locations
 - Data would need to be adjusted based on relationships to lab results before it could be used with confidence.



Route 53 Supergage on Des Plaines

USGS 05537980 DES PLAINES RIVER AT ROUTE 53 AT JOLIET, IL

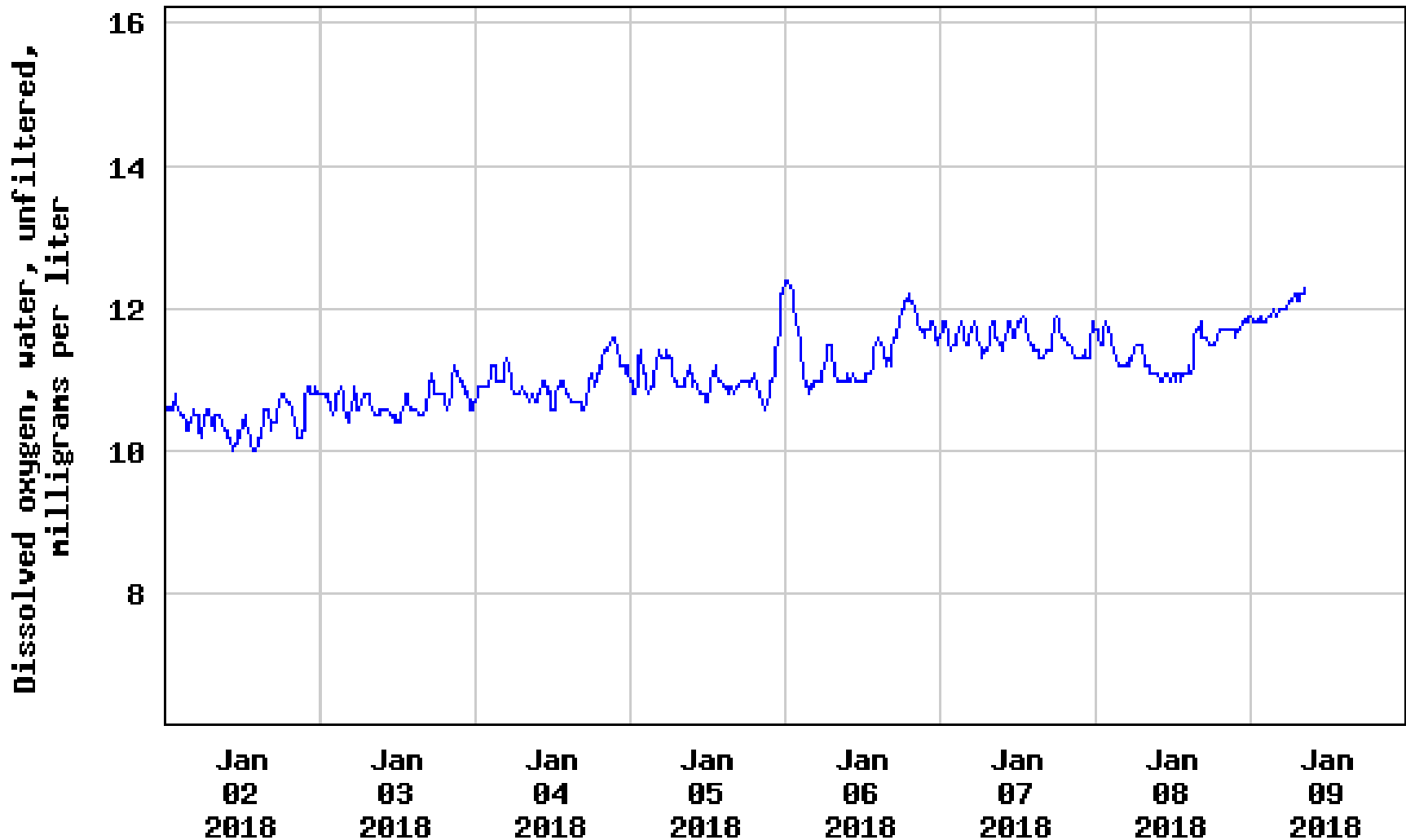


----- Provisional Data Subject to Revision -----



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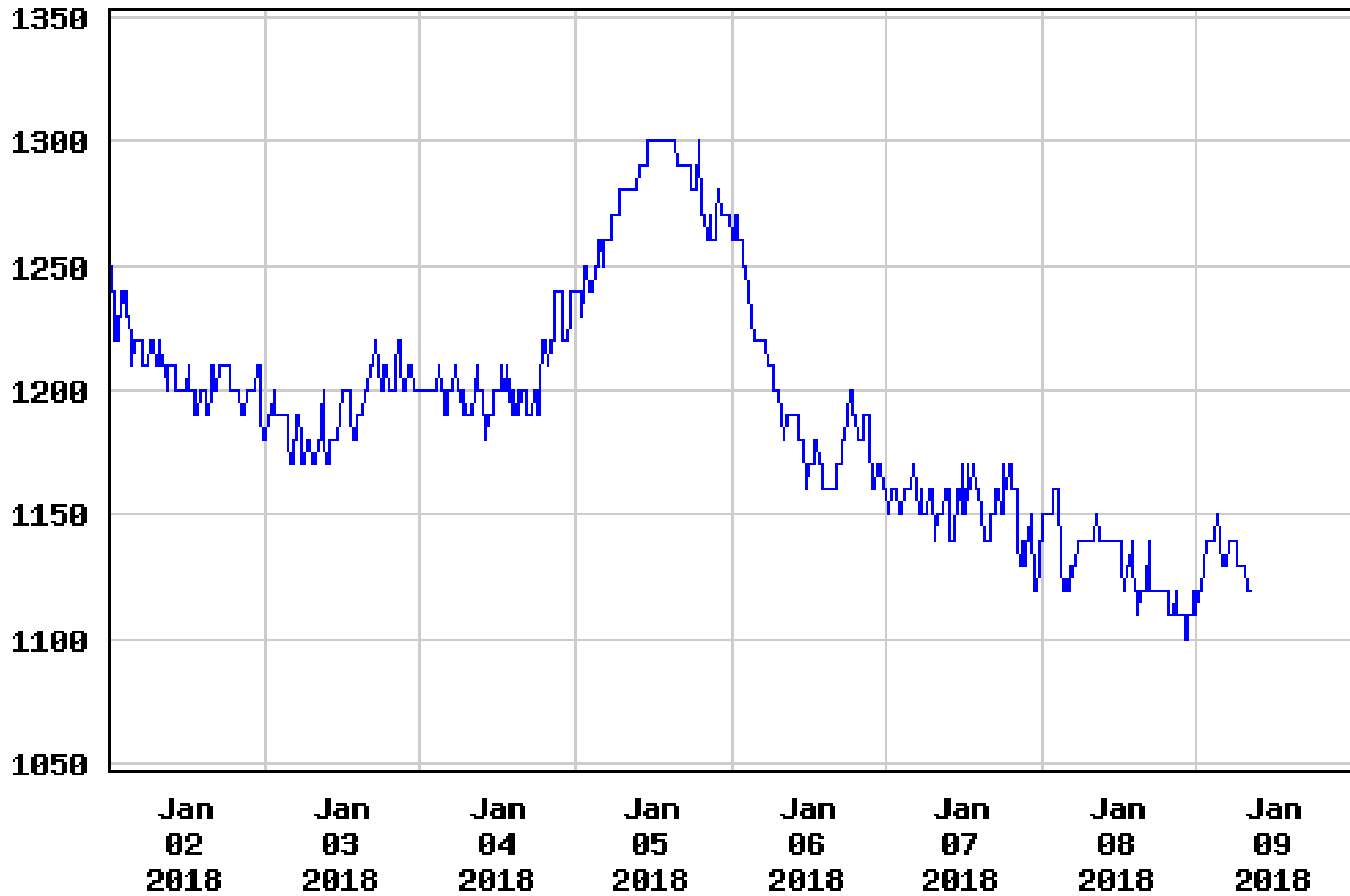
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Route 53 Supergage on Des Plaines

USGS 05537980 DES PLAINES RIVER AT ROUTE 53 AT JOLIET, IL

Specific conductance, water,
unfiltered, microsiemens per centimeter
at 25 degrees Celsius

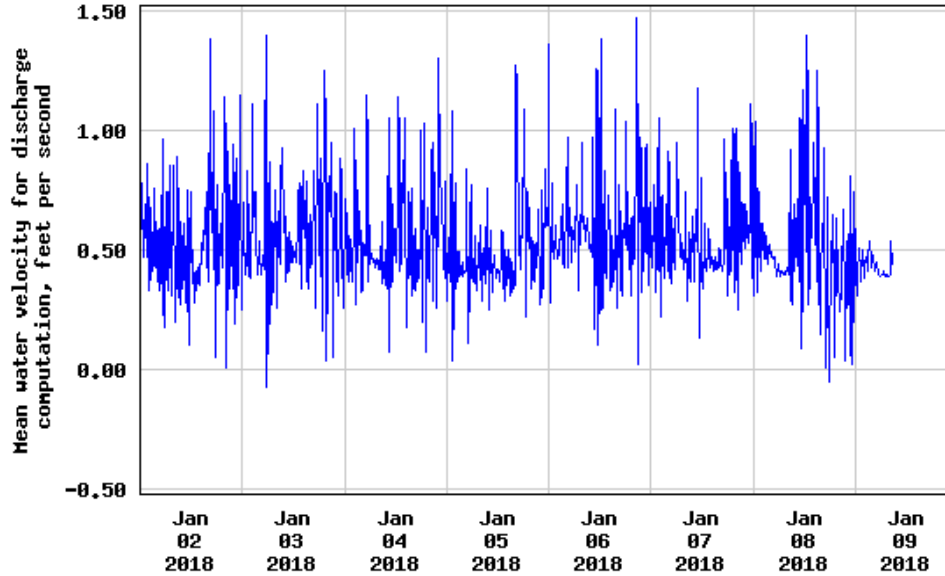


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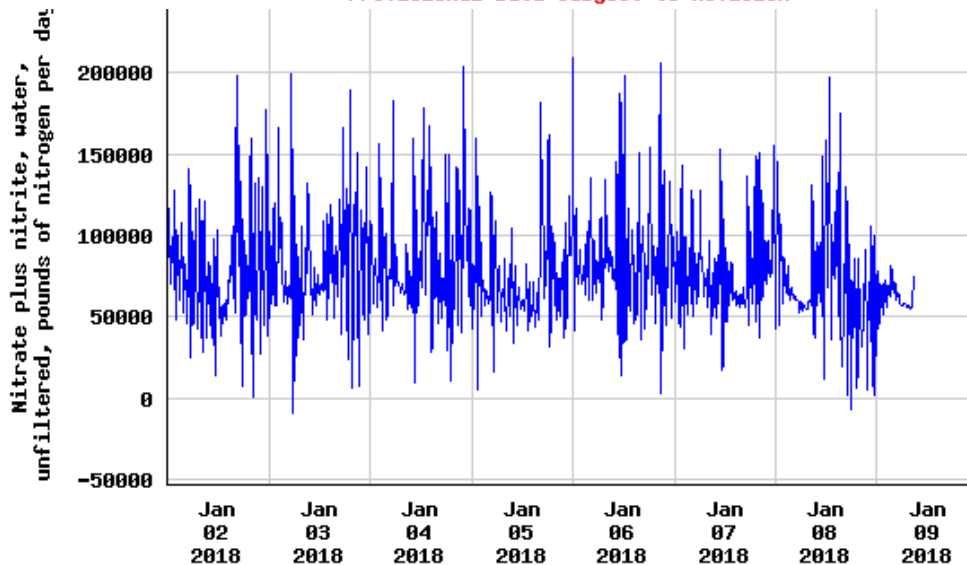


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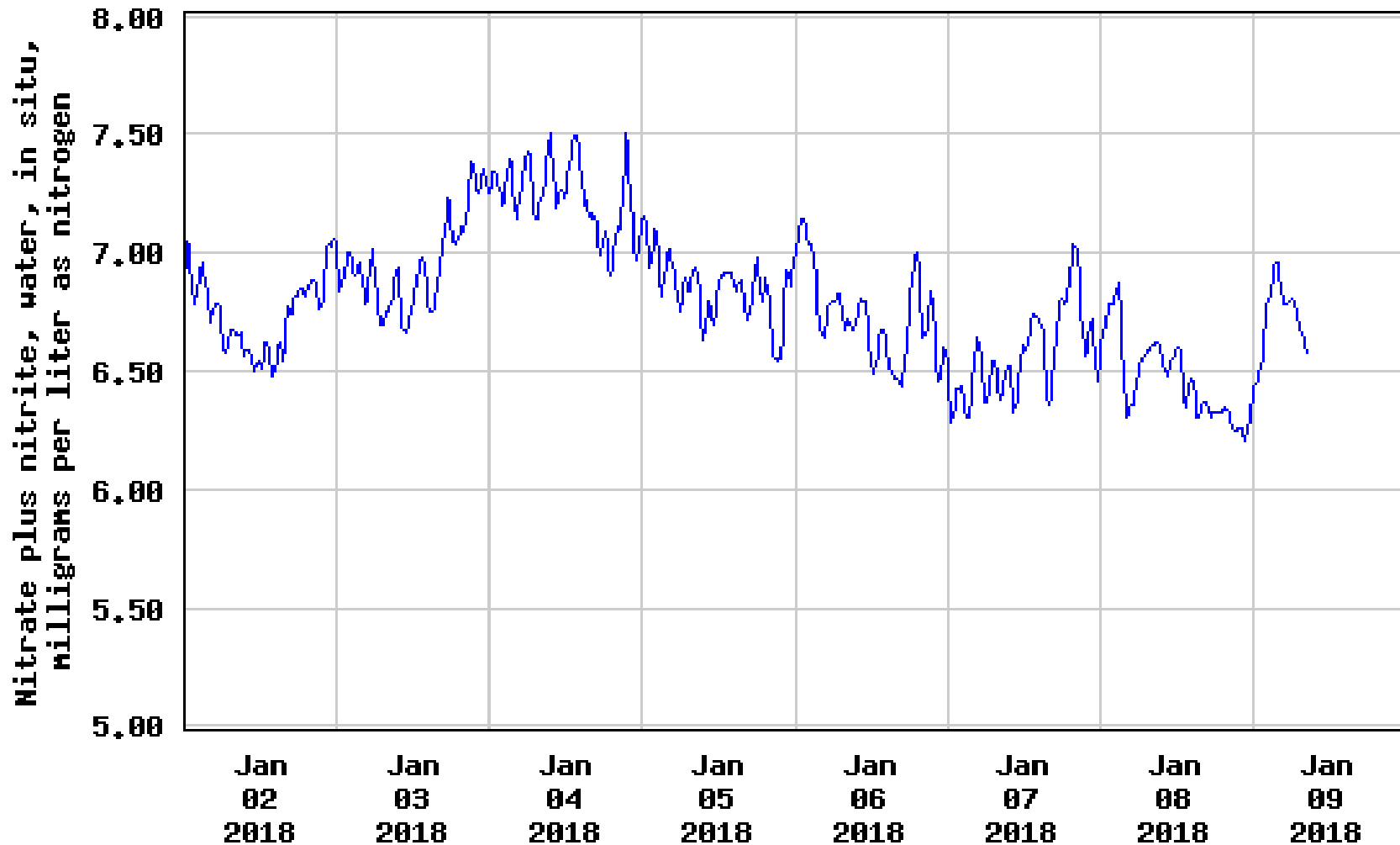
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Data Compilation and Analyses

- Greg McIssac (UIUC) recommended 5-year moving average nutrient loading for tracking trends to smooth out all of the annual variability due to rainfall and flow.
 - Urged stakeholders to pay attention to how load is calculated and ensure it remains consistent.
 - Increasing drift has been detected with the nitrate sensors at the supergages.
- Jong Lee (UIUC) showcased the nutrient data viewer tool they developed – Great Lakes to Gulf Virtual Observatory
 - **greatlakestogulf.org**
 - Useful for viewing available Illinois data sources.



Great Lakes to Gulf

VIRTUAL OBSERVATORY

WELCOME

EXPLORE

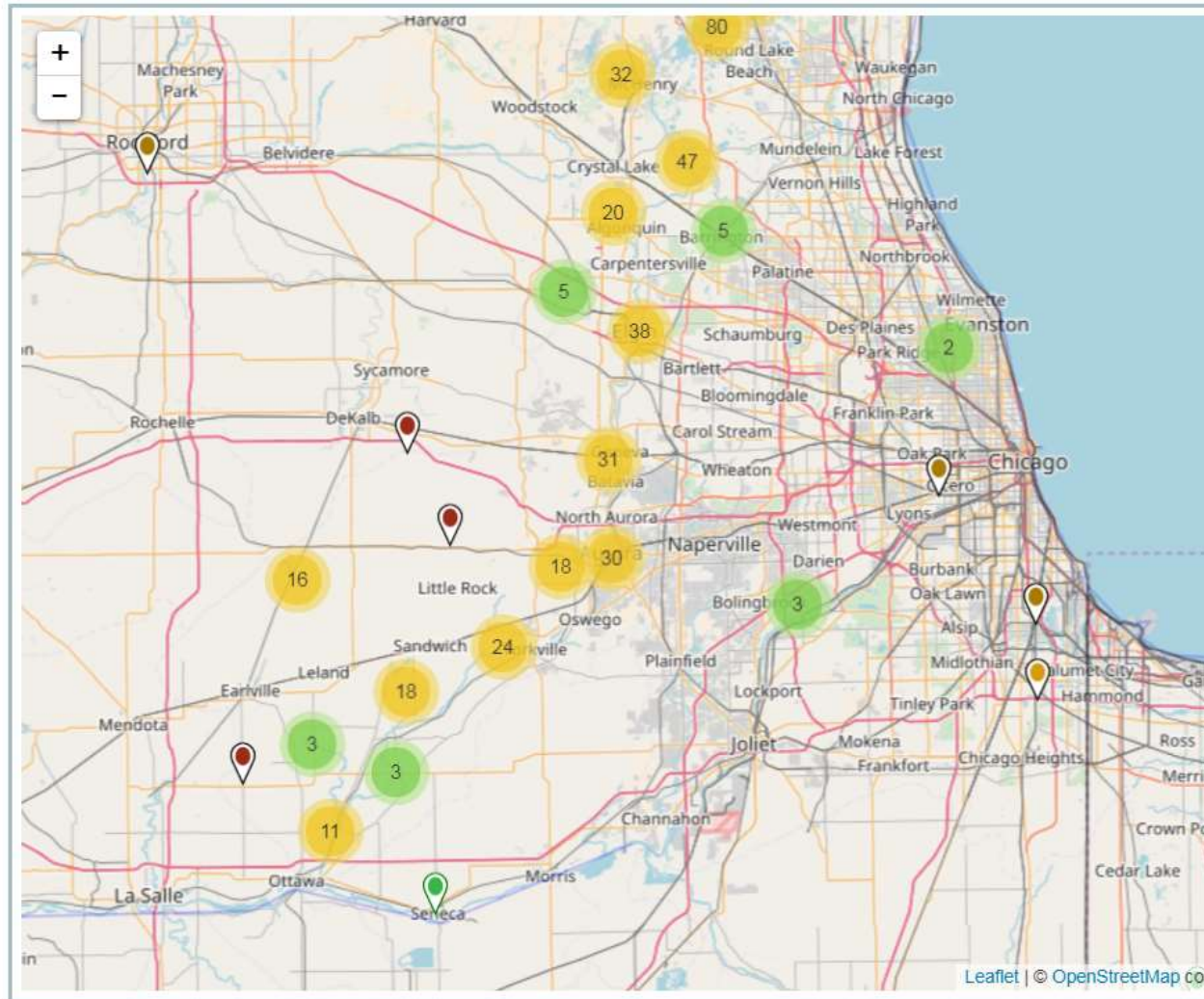
COMPARE

DOWNLOAD

ABOUT ▾

Explore Layers

- River Reaches
- Large Rivers
- HUC 8
- HUC 4
- HUC 2
- US States
- Total annual nitrogen from point sources by HUC8 watershed (avg. 2007-2014)





Nutrient Science Advisory Committee

- Paul Terrio (USGS) gave a status update on the activities of the Nutrient Science Advisory Committee (NSAC)
 - Tasked with recommending numeric nutrient water quality criteria for IL
 - Some states have proposed criteria that integrate causal and response variables, but these states needed robust biological monitoring program.



Nutrient Science Advisory Committee

- NSAC reviewed available IL data from 2006-2015 and Tetrattech performed updated statistical analyses of these data
 - Tetrattech is working on report, but initial results still fail to show strong stressor-response relationships in IL ($r^2 < 0.35$)
 - Using a covariance/reference method derived by Dodds and Oaks (2004 for regions with limited reference streams, the NSAC calculated potential limits of 190 ug/L TP and 1,600 ug/L TN with IL water quality dataset.
 - NSAC plans to derive a recommendation by March and issue a final report by fall, 2018.
 - If there is not adequate scientific support for state-wide numeric nutrient criteria, the NSAC may recommend a method to derive site specific nutrient criteria for streams.



Data Needs for Nutrient Science

- Gregg Good (IEPA) and Paul Terrio (USGS) said that the 8 IEPA funded USGS supergages cost \$2.5 million through 2022
 - Need funding for additional 5 years if possible.
 - Recommended that Illinois should develop a macroinvertebrate index of biotic integrity that separates the effect of nutrients on invertebrates.
 - Stated that Illinois needs more benthic chlorophyll *a* data collected in streams, as well as sediment oxygen demand assessments.



Gulf Hypoxia

- Charlie Crawford (USGS) reported trends on the Gulf of Mexico hypoxic zone.
 - May TN loading is the best indicator of size of the hypoxic zone the following year
 - May streamflow accounts for 77% of the variability in TN load data
 - Emphasizes the need for normalizing the data for flow in order to capture what is really happening with nitrogen reductions upstream.
 - In recent years, a smaller nitrate load is giving way to a larger hypoxic zone compared to earlier years due to sediment oxygen demand.



Obligatory Fish Picture





Or if birds are your thing...

