Test of Nutrient Species Response in the WQSTM

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Modeling Workgroup

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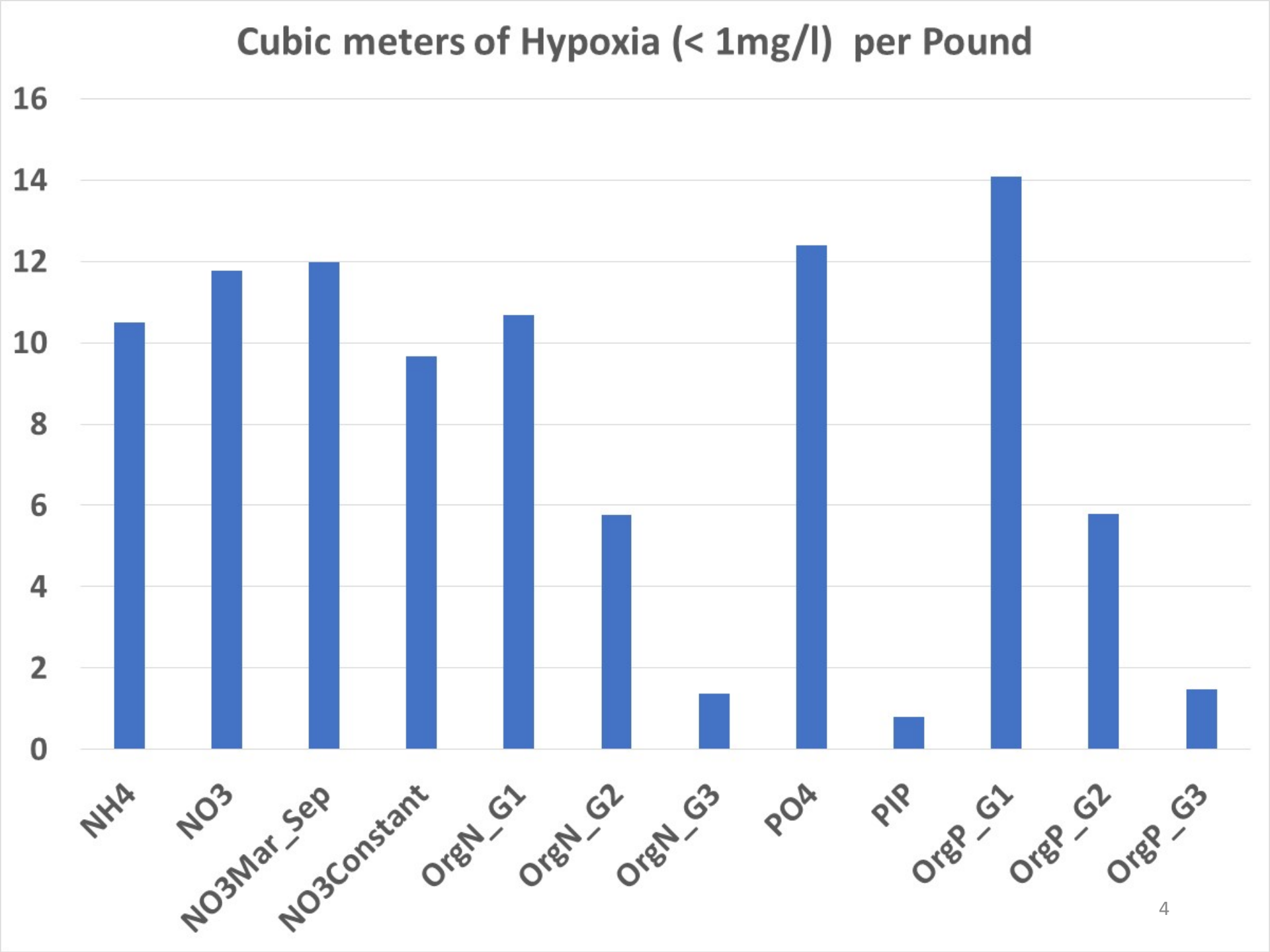
Motivation

- Lot of discussion at
  - WQGIT
  - STAC CC workshop
  - MWG
  - …
- STAC workshop: Assessing the Environment In Outcome Units
  - Selection of BMPs to address hypoxia
  - Spatial targeting of BMPs to address hypoxia
- Easy enough to test, at least in the WQSTM

Method

- Used current CBP WQSTM
- Added 200 Million pounds of NH3 over 10 years by applying a coefficient (average 20 Mlbs/year)
  - Repeated for NO3 and organics
- Added 20 million pounds (2 Mlbs/year) of P
- Assessed change in total bay summer hypoxia defined as less than 1 mg/l
- Special runs for NO3
  - Only added in March through September
  - Added as a daily constant rather than a coefficient

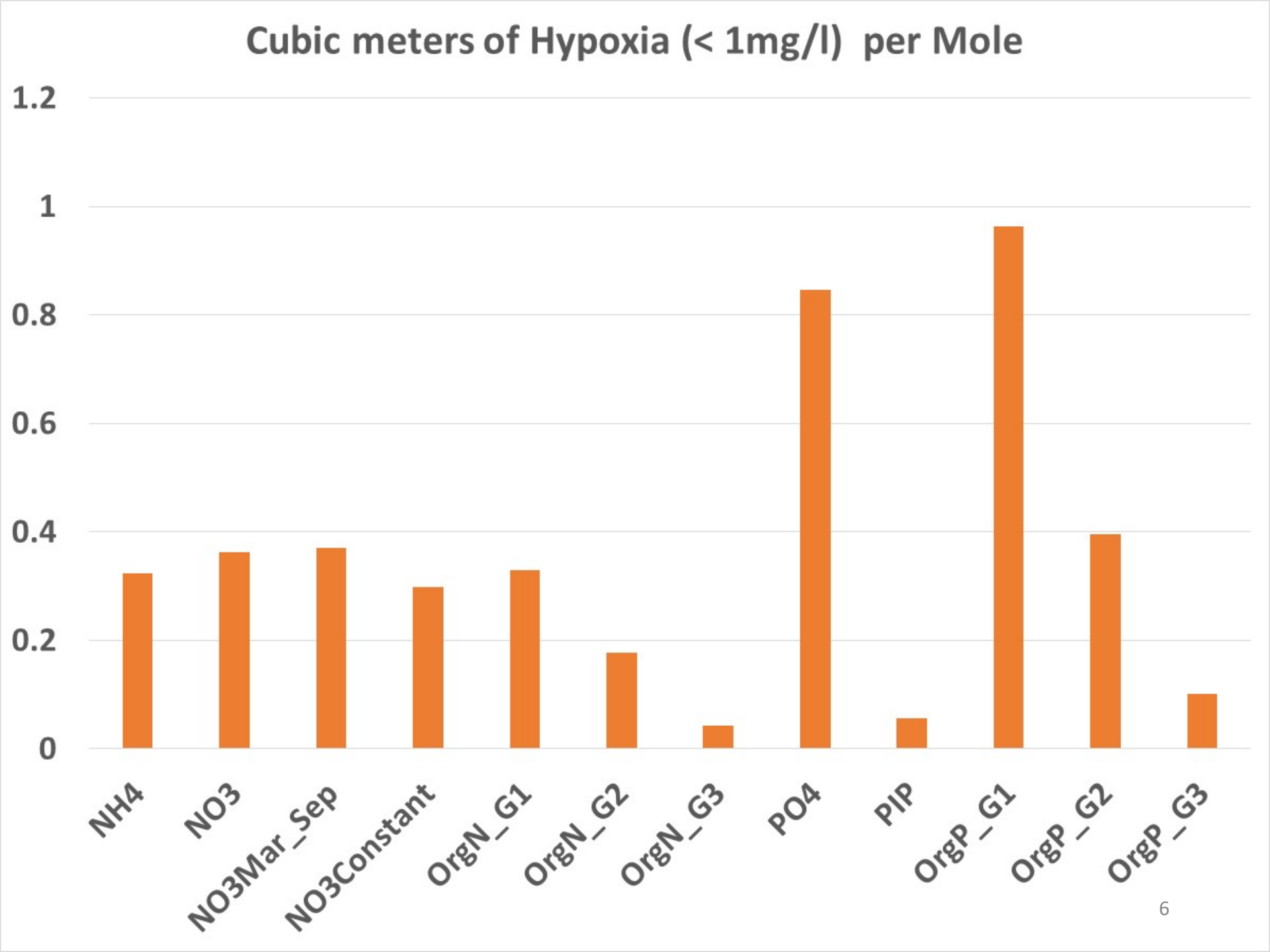

Cubic meters of Hypoxia (< 1mg/l) per Pound
16
14
12
10
8
6
4
2
0
NH4
NO3
NO3Mar_Sep
NO3Constant
OrgN_G1
OrgN_G2
OrgN_G3
PO4
PIP
OrgP_G1
OrgP_G2
OrgP_G3

Summary

- DIN ~= DIP ~= G1 organics with caveats
  - Seasonality and timing have a small effect
  - P a little higher
  - A 10% to 20% difference is still a difference
- G2 organics are half of G1 organics
- G3 organics and PIP are an order of magnitude less

- Just one metric

- Planning on running tests in the watershed as well


Cubic meters of Hypoxia (< 1mg/l) per Mole
1.2
1
0.8
0.6
0.4
0.2
0
NH4
NO3
NO3Mar_Sep
NO3Constant
OrgN_G1
OrgN_G2
OrgN_G3
PO4
PIP
OrgP_G1
OrgP_G2
OrgP_G3