

Draft Target Load Scenario Results

**Water Quality Goal Implementation Team
Conference Call
October 9, 2009**

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CBP Modeling Team





Decisions Made or Pending That Have or Will Influence the Nutrient Target Loads

- The new reference curves of Open Water (10%), Deep Water (refinements to curve), and Deep Channel (10%) have reduced the number of CB segments not achieving the DO WQS at the Target Scenario (175/14.1).
- Changes in the critical period.
- Confirmation that some Open Water designated uses have a pycnocline with an attendant need for development of a Deep Water DU.
- Changes in the ocean boundary condition.



Eight Reasons Why We're Looking At "Aiming Points, or "Targets" or "Objective Points" for Nutrient Reductions Needed to Achieve the DO Water Quality Standards

- Phase 5.3 needs to be completed in December 2009 for final TMDL allocation decisions.
- The WQSTM needs to be calibrated to the Phase 5.3 loads in January 2010.
- Movement toward achieving the shallow water standard of clarity/SAV.
- Trade-offs between N and P that achieve the same water quality response.



Eight Reasons Why We're Looking At "Aiming Points, or "Targets" or "Objective Points" for Nutrient Reductions Needed to Achieve the DO Water Quality Standards (*cont.*)

- Changes in the geographic distribution of the load reductions may change the absolute load.
- Changes in speciation of the TN or TP loads.
- Changes due to resolving problems in segments with persistent DO problems.
- Changes due to meeting water quality standards, other than DO, in basins for reasons of local water quality concerns.



Key Scenario Loads By Basin

Total Nitrogen Loads by Basin (millions of pounds/year)

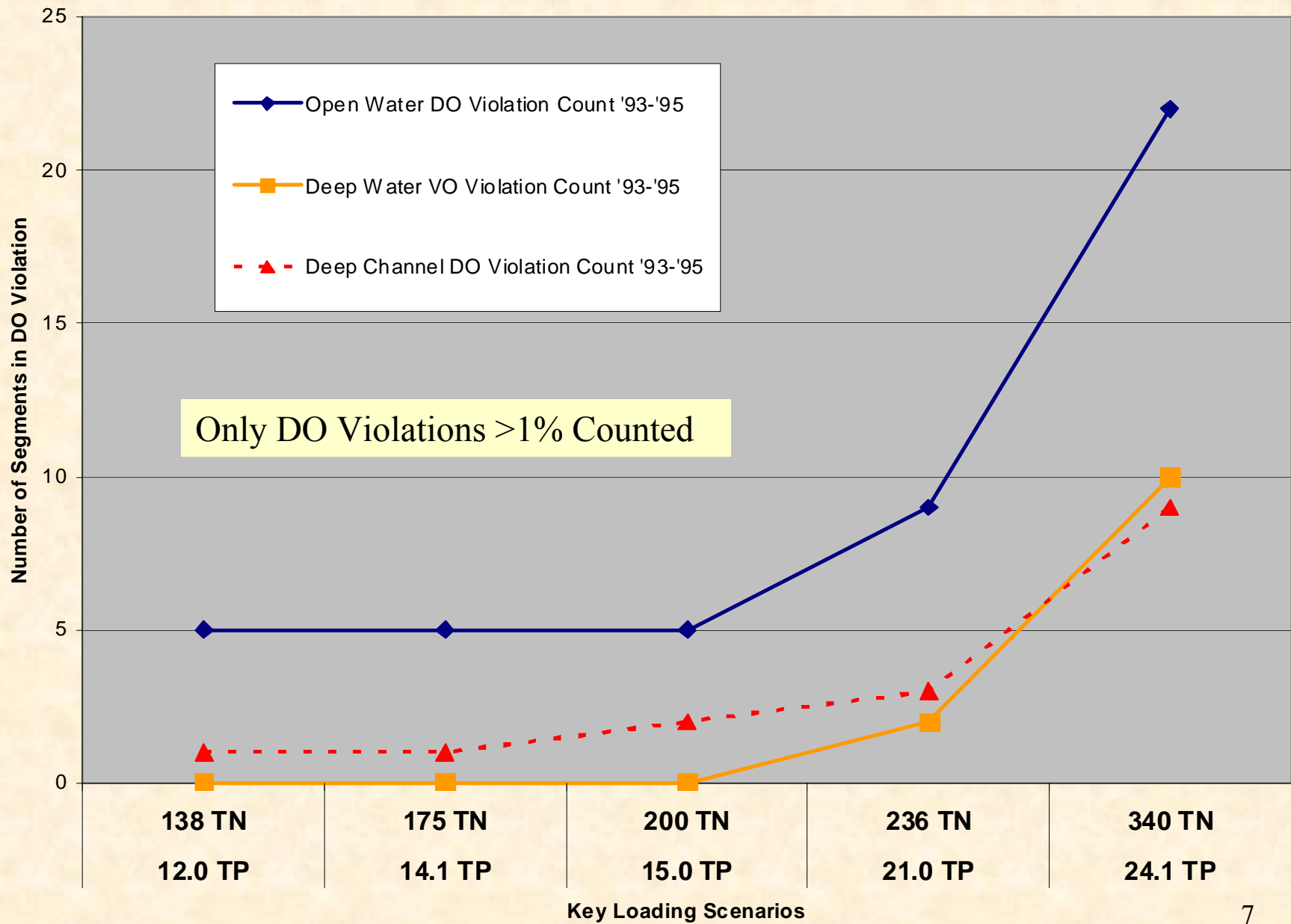
| Basin | 1985 Scenario | Intermediate C Scenario | 1991-2000 | | 2002 Scenario | Intermediate B Scenario | 2010 Tributary | | Intermediate A Scenario | Intermediate A Scenario | Target Load | | July 2009 Target Load Scenario | Intermediate D Scenario |
|---------------|------------------|----------------------------|------------------|--|------------------|----------------------------|----------------------|--|----------------------------|----------------------------|----------------------|------------------------------|---|----------------------------|
| | | | Base Scenario | | | | Strategy Scenario | | | | Scenario Option 3 | Intermediate A B Scenario | | |
| Susquehanna | 162.0 | 146.3 | 136.0 | | 136.1 | 109.5 | 88.0 | | 88.3 | 83.2 | 80.2 | 76.9 | 76.3 | 64.8 |
| Eastern Shore | 43.0 | 38.7 | 36.5 | | 34.4 | 28.7 | 26.3 | | 22.9 | 21.5 | 19.7 | 19.8 | 14.8 | 16.5 |
| Western Shore | 28.4 | 25.1 | 18.8 | | 16.0 | 17.5 | 10.9 | | 13.1 | 12.1 | 10.1 | 10.8 | 11.1 | 8.2 |
| Patuxent | 5.2 | 4.7 | 4.6 | | 4.5 | 3.7 | 3.9 | | 3.1 | 3.0 | 3.1 | 2.8 | 2.4 | 2.4 |
| Potomac | 111.1 | 99.2 | 84.7 | | 87.1 | 71.5 | 60.4 | | 55.5 | 51.7 | 43.1 | 46.9 | 34.3 | 37.8 |
| Rappahannock | 12.8 | 11.7 | 10.5 | | 10.5 | 9.0 | 8.1 | | 7.5 | 7.1 | 6.5 | 6.7 | 5.1 | 5.8 |
| York | 11.0 | 10.0 | 9.1 | | 9.1 | 7.7 | 7.2 | | 6.4 | 6.0 | 6.5 | 5.7 | 5.5 | 4.9 |
| James | 46.9 | 42.3 | 39.4 | | 36.1 | 31.8 | 30.9 | | 25.7 | 24.3 | 28.5 | 22.5 | 25.7 | 19.0 |
| Total | 420.4 | 378.1 | 339.6 | | 333.9 | 279.4 | 235.7 | | 222.5 | 208.8 | 197.8 | 192.0 | 175.1 | 159.5 |

Total Phosphorus Loads by Basin (millions of pounds/year)

| Basin | 1985 Scenario | Intermediate C Scenario | 1991-2000 | | 2002 Scenario | Intermediate B Scenario | 2010 Tributary | | Intermediate A Scenario | Intermediate A Scenario | Target Load | | July 2009 Target Load Scenario | Intermediate D Scenario |
|---------------|------------------|----------------------------|------------------|--|------------------|----------------------------|----------------------|--|----------------------------|----------------------------|----------------------|------------------------------|---|----------------------------|
| | | | Base Scenario | | | | Strategy Scenario | | | | Scenario Option 3 | Intermediate A B Scenario | | |
| Susquehanna | 6.27 | 5.32 | 5.32 | | 4.94 | 3.51 | 4.02 | | 3.37 | 2.62 | 3.29 | 2.66 | 2.76 | 2.27 |
| Eastern Shore | 4.03 | 3.40 | 3.66 | | 2.73 | 2.21 | 2.37 | | 2.11 | 1.63 | 1.68 | 1.65 | 1.72 | 1.40 |
| Western Shore | 1.82 | 1.48 | 1.07 | | 0.95 | 0.83 | 0.75 | | 0.69 | 0.52 | 0.62 | 0.50 | 0.57 | 0.39 |
| Patuxent | 0.54 | 0.45 | 0.45 | | 0.40 | 0.27 | 0.33 | | 0.24 | 0.18 | 0.24 | 0.18 | 0.20 | 0.15 |
| Potomac | 6.02 | 5.29 | 6.19 | | 5.29 | 3.92 | 4.71 | | 4.10 | 3.26 | 4.08 | 3.38 | 3.26 | 2.99 |
| Rappahannock | 1.36 | 1.24 | 1.29 | | 1.11 | 1.02 | 1.27 | | 1.13 | 0.91 | 0.82 | 0.96 | 0.92 | 0.86 |
| York | 1.07 | 0.91 | 0.83 | | 0.67 | 0.62 | 0.69 | | 0.60 | 0.47 | 0.61 | 0.48 | 0.49 | 0.41 |
| James | 7.25 | 6.43 | 5.27 | | 4.89 | 4.86 | 6.82 | | 5.15 | 4.10 | 3.50 | 4.28 | 4.22 | 3.80 |
| Total | 28.36 | 24.52 | 24.08 | | 20.97 | 17.24 | 20.96 | | 17.40 | 13.70 | 14.84 | 14.10 | 14.13 | 12.27 |

Monthly Deep Water and Deep Channel for the '93-'95 Critical Period

[illegible][illegible]





Conclusions:

- There are many reasons why these target loads are not TMDL loads. These target loads could change before the draft TMDL is established.
- A target load of 198 million pounds TN and 14.8 million pounds TP roughly achieves the DO water quality standard.



Decision Requested

WQGIT approval to present
200 million pounds TN and
15 million pounds TP as draft
basin-wide target loads to the
PSC at their October 23,
2009 meeting.