# Chesapeake Bay Program
# Water Quality Goal Implementation Team
# September 29th, 30th Meeting

# Attachment G1 – Review of Target Load Methodology Options Analysis

Rachel Streusand

Water Quality Goal Implementation Team Staff

rstreusand@chesapeakebay.net

# Decisions and Preferences from WQGIT 9/21 Call

**Number**: WQGIT approved considering only the **2 line** approach to target load methodology for the September face-to-face meeting.

**Shape**: WQGIT members agreed to an emphasis towards using a target load methodology with a **straight line or z curve** at the September face-to-face meeting.

**WWTP**: WQGIT overall preferred a line with a maximum of **90% e3 for N** and **96% e3 for P**

**Slope**: WQGIT overall preferred a slope of **10-20%**

# Q1-Q4: Number of Lines

| Question | Strongly agree | Can live with | Can't live with | Rank | Comments |
|---|---|---|---|---|---|
| **Q1**: Jurisdiction target loads should be based on a **single line** (either straight, 'z', or hockey stick) approach | DC, WV | PA | MD, VA, CBC, EPA, NY, DE | -7 | **MD** - When using 2010NA and E3 for the y-axis, the likelihood of failing to meet reductions in each source category is different. For example, CBP research reported that point sources are more likely to get further toward E3 than non-point sources so using a single line would be inappropriate. **WV** - Equity should be based on relative impact to Bay not what has been done or can be done by individual source sectors. The purpose of this is to define each jurisdictions' allocation, not how to cut it up. **PA** - Appears to be less slightly less equitable across the board than Q2. **EPA** - This approach penalizes the basins with minimal wastewater loads. |
| **Q2:** Jurisdiction target loads should be based on a **2 line** approach of wastewater as one line and all other sources as another line. | VA, CBC, EPA, PA | MD, DC, NY, DE | WV | 10 | **MD** - Two lines allows NPS and PS source sectors to be set independently based upon their potential achievability. **PA -** This approach appears to be the most equitable to the states **CBC** - Due to available technology and the current regulatory framework, target loads should be distinguished between at least waste water point sources and other sources. **EPA** - This approach recognizes the technologies the can be implemented to reduce wastewater loads significantly at levels much lower than other source sectors. **NY -** None of the options are feasible if basinwide cap is 175, 14.1 |
| **Q3:** Jurisdiction target loads should be based on a **3 line** approach of wastewater as one line, agriculture as another line and other sources as the third line. | | MD, VA, CBC, EPA, NY | DC, WV, PA, DE | -3 | **MD** - If the research suggests that there is a difference in achievability between "other" sources then this should be considered. States will eventually require the detailed information per category. **PA** - This method is too directed. **CBC** - If a third line is added, the lines should be: 1. waste water point sources; 2. non-waste water federally-regulated sources; 3. other sources. **EPA** - Three lines allows for additional factoring in of equity, but adds unnecessary complexities. **NY -** None of the options are feasible if basinwide cap is 175, 14.1 |
| **Q4:** Jurisdiction target loads should be based on a **4 line** approach of wastewater as one line, agriculture as another line urban as the third line and other sources as the fourth line. | | MD, EPA, DE | VA, DC, WV, CBC, PA, NY | -9 | **MD** - If the research suggests that there is a difference in achievability between "other" sources then this should be considered. States will eventually require the detailed information per category. **PA -** This method is too directed. **EPA** - More lines may mean a more equity set of allocations, but the complexity increases as well as the number of individual decisions required. **DE -** If nonpoint sources are going to be further broken down (which is different than how we are used to dealing with reductions and could prove a challenge), it should be between agriculture, development, and other sources. |

*These questions address how many sectors should be separated out in the target load methodology.*

# Q5-Q7: Shape of the Line

| Question | Strongly Agree | Can live with | Can't live with | Rank | Comments |
|---|---|---|---|---|---|
| **These questions address the shape of the lines to be used in the target load methodology.** | | | | | |
| **Q5**: Jurisdiction target loads based on any number of lines should be based on **straight lines** as opposed to a Z curve or a hockey stick curve | DC, WV PA | VA, CBC, EPA, DE | NY | 8 | **MD** - The shape of each line represents a the result of setting various objectives. For example, a straight line indicates all must contribute but with more efficient basin-jurisdictions contributing more. Z-curve pushes more on most efficient and less of least efficient and basically creates two tiers. Before making a decision on each line we should agree on the objective. Hockey stick creates a most efficient tier and then proportionally adjusts the remainder. These principles should be explained to the group and then a decision made. **VA** - VA can live with a straight line as long as it is sloped. **PA** - The Z-curve and hockey stick curves are not as uniformly equitable as a straight line. **EPA** - This is the most straightforward approach requiring a single decision--the slope of the line. However, this approach does not consider efficiency of reductions. |
| **Q6**: Jurisdiction target loads based on any number of lines should be based on a **Z curve** as opposed to a straight line or a hockey stick curve. | CBC | VA, EPA, NY | DC, WV, PA, DE | -3 | **PA -** The Z-curve is not as uniformly equitable as a straight line. **CBC -** All pounds of Nitrogen and Phosphorous are not created equal, and therefore their sources need not be treated the same. The geographic location within the Bay's watershed for each effluent discharge plays a significant factor in the amount of nutrient delivered to Bay or local impaired waters and must be accounted for in jurisdiction target loads. However, there are generalities among geographic distribution of effluent discharges (ie: once you get beyond a certain relative effectiveness, % reductions seem to have similar effects. This principle is best acknowledged by using the "Z-curve" approach. **EPA** - This approach fully factors in consideration of efficiency at both ends. **NY -** none of options are feasible if basinwide cap is 175, 14.1 |
| **Q7**: Jurisdiction target loads based on any number of lines should be based on a **hockey stick** curve as opposed to a Z curve or a straight line. | VA | CBC, EPA | DC, WV, PA, NY, DE | -6 | **WV -** WV would like to see the hockey stick with 1 line and a flat part at 95%. **PA** - The hockey stick curve is not as uniformly equitable as a straight line. **EPA** - This approach factors in consideration of efficiency at the upper end only. |

# Q8-Q10: Max of WWTP Line

| Question | Strongly Agree | Can live with | Can't live with | Rank | Comments |
|---|---|---|---|---|---|
| **These questions address how the WWTP line should be drawn.** | | | | | |
| **Q8**: If we have a separate WWTP line, a WWTP line should have a maximum of **100%** e3 (note that e3 for significants is N=3, P=.1 but for insignificants is N=8, P=2) | CBC, WV | DE | MD, VA, DC, PA, EPA | -5 | **MD** - No this is not consistent with Maryland's ENR strategy which requires and average TN of 4 mg/l. **WV** - Multi-line approach not desired. **PA -** May not be consistent with Pa's point-source policy. **DE** - The impact of all point sources in the Bay Watershed is not the same; however, requiring a single basin-wide nutrients limit for all WWTPs will simplify implementation of this requirement, may reduce legal challenges from both sides of why requirements for a specific facility is too stringent or too lenient, and may advance the efforts for establishing national nutrient limits for all WWTPs. **CBC** - Because technology is available, it makes sense for certain plants with significant impact to the Bay to treat to its limits.  However, it is not reasonable nor cost-effective for all plants in the watershed to be held to this standard.  In other words, we agree with 100% only if the line is not a straight flat line.  **EPA** - This approach could result in even higher allocations by the jurisdictions to their nonpoint sources. |
| **Q9**: A WWTP line should have a maximum of **95% e3 for N** and **98% E3 for P** (N=3.8, P=.22 but for insignificants is N=8.5, P=2.2) | VA, EPA | CBC | MD, DC, WV, PA, DE | -5 | **MD -** No this is not consistent with Maryland's ENR strategy which requires and average TN of 4 mg/l. **PA** - May not be consistent with Pa's point-source policy. **EPA** - This approach best reflects the existing permitted loads driving upgrades at many facilities. |
| **Q10**: A WWTP line should have a maximum of **90% e3 for N** and **96% e3 for P** (N=4.5, P=.34 but for insignificants is N=9.0, P=2.4) | DC | MD, VA, EPA, PA | WV, CBC, DE | 0 | **PA -** May not be consistent with Pa's point-source policy.  **EPA** - This approach reflects more of a basinwide average of existing permitted loads. **VA** - We question whether setting point source allocations at this level could allow non-point sources to meet Reasonable Assurance. |

| Question | Strongly Agree | Can live with | Can't live with | Rank | Comments |
|---|---|---|---|---|---|
| | | | | | # Q11-Q15: Slope |
| **These questions address the slope of the target load lines.** | | | | | |
| **Q11**: The slope of any target load line should be **zero** so that all basins have to do the same % of e3 | DC, PA | | MD, VA, CBC, EPA, NY, DE | -8 | **MD -** It is more effective for most efficient basins to do more, but when considering the likelihood of actually implementing we may want to consider point sources and non-point sources differently. **PA -** This approach appears to be the most uniformly fair to all states. **EPA** - This approach does not consider efficiencies and equity. |
| **Q12:** The slope of any target load line should be such that the highest % e3 basin is about **5%** (of e3) higher than the lowest % e3 basin | | CBC, EPA | VA, DC, WV, PA, NY, DE | -10 | **MD -** The target difference should be based how likely we are to achieve E3. For example, results indicate that required reductions are going to be more than the 60% NPS and 90% PS achievability reported by the CBP. If this is the case then we may have to at least set everyone at this point and move toward more reductions. **PA** - Not an equitable approach. Some states will have to do more while other will have to do less. **EPA** - This approach would not reflect the significant differences in the relative contributions to Bay water quality impairments. |
| **Q13:** The slope of any target load line should be such that the highest % e3 basin is about **10%** (of e3) higher than the lowest % e3 basin | CBC, EPA | MD, VA, DE | DC, WV, PA, NY | -1 | **MD -** As I recall, this would consistent with the 2003 allocation rules. **PA -** Not an equitable approach. Some states will have to do more while other will have to do less. **CBC** - According to the "Nitrogen Target Loads" chart, there are relatively minor changes in loads per basin between "90% flat," "5% difference," and "10% difference," and the total target load remains relatively close to our ultimate goal of 175 Million N lbs/year and 14.1 Million P lbs/year. It is when you move to the 20% slope scenario that you see a relatively significant jump in per-basin load targets and we begin to move further away from our desired reduction target goals (175, 14.1). Therefore, a 10% slope seems to be the optimum option. **EPA -** This approach fully reflects the significant differences in relative contributions to Bay water quality impairments. |
| **Q14:** The slope of any target load line should be such that the highest %e3 basin is about 20% (of e3) higher than the lowest %e3 basin | VA, EPA | CBC, NY, DE | DC, WV, PA | 1 | **PA -** Not an equitable approach. Some states will have to do more while other will have to do less. **DE** - Sloped approach accounts for differences in relative impact of nutrient loads from different tributary basins on water quality of the Bay. **EPA** - This approach fully reflects the significant differences in relative contributions to Bay water quality impairments and best approximates the slope seen in the combined riverine/estuarine effectiveness graphic of the 30+ jurisdiction-basins above and below fall line. **NY -** none of options are feasible if basinwide cap is 175, 14.1 |
| **Q15:** The slope of any target load line should be such that the highest %e3 basin is about 30% (of e3) higher than the lowest %e3 basin | | WV, EPA, NY | VA, DC, CBC, PA, DE | -7 | **WV -** Let the max go to 100% or greater for it to be equitable. Allows for state to state trading. **PA** - Not an equitable approach. Some states will have to do more while other will have to do less. **EPA** - This approach fully reflects the significant differences in relative contributions to Bay water quality impairments but the slope may force extremely high reductions from the highest contributing basins to levels not achievable. **NY -** none of options are feasible if basinwide cap is 175, 14.1 |