Table 1. Overview of all CAST scenarios, including geographic extent ("Geography"), BMP categories ("BMPs"), the total nitrogen reduction ("Total N Reduction (lbs/year)"), the total annualized cost ("Total Annualized Cost"), the cost effectiveness for nitrogen removal ("Cost Effectiveness ($/lbs)"), the name and affiliation of the person who ran the scenario ("Developer"), and additional notes for context and clarification ("Description & Notes").

Scenario	Attributes						
	Geography	**BMPs**	**Total N Reduction (lbs/year)**	**Total Annualized Cost ($/Year)**	**Cost Effectiveness ($/lbs)**	**Developer**	**Description & Notes**
1	Conowingo Shell > All counties in PA & MD > Drains to Chesapeake Bay > Excluded Phase I jurisdictions*	Agricultural + Urban	6.0 Million	$369 Million	$61	Mike Hickman (CWP)	This is the only scenario that is aggregated by county; everything else is by land-river segment (LRS). This scenario uses the WIP3 baseline.
2	Susquehanna watershed > Added Q1 N-effective[1] LRS outside of the Susquehanna	Agricultural + Urban	6.1 Million	$236 Million	$39	Deb Caraco (CWP)	This scenario uses the WIP3 baseline.
3	Only Q1 N-Effective[2] LRS within Bay Watershed	Agricultural	6.4 Million	$51 Million	$8	Jeff Sweeney (EPA CBP)	Uses Modified WIP 3 baseline; Scenario 10 is a modification of this scenario that uses the same BMPs, with a different focus geography
4	Only Q2 N-effective LRS within the Susquehanna watershed[3]	Agricultural	6.6 Million	$51 Million	$8	Jeff Sweeney (EPA CBP)	
5	Only Q2 N-effective LRS within the Susquehanna watershed	Agricultural + Urban	6.6 Million	$51 Million	$8	Deb Caraco (CWP)	The BMPs in this scenario are the same as Scenario 4, but it also includes urban forestry and urban buffer practices.
6	Conowingo Shell	Agricultural +Urban	6.2 Million	$124 Million	$20	Deb Caraco (CWP)	Cost-Effective Ag Practices plus Urban Forestry and Bioswales

Table 1. Overview of all CAST scenarios, including geographic extent ("Geography"), BMP categories ("BMPs"), the total nitrogen reduction ("Total N Reduction (lbs/year)"), the total annualized cost ("Total Annualized Cost"), the cost effectiveness for nitrogen removal ("Cost Effectiveness ($/lbs)"), the name and affiliation of the person who ran the scenario ("Developer"), and additional notes for context and clarification ("Description & Notes").

Scenario	Attributes						
	Geography	BMPs	Total N Reduction (lbs/year)	Total Annualized Cost ($/Year)	Cost Effectiveness ($/lbs)	Developer	Description & Notes
6.1	Conowingo Shell	Agricultural + Urban	6.2 Million	$90 Million	$14	Deb Caraco (CWP)	This is a modification to Scenario 6 that incorporates BMP implementation levels and Urban BMPS (bioswale and infiltration) consistent with other Final scenarios.
7	Conowingo Shell	Agricultural	6.0 Million	$65 Million	$11	Deb Caraco (CWP)	Same as Scenario 6.1 but without urban BMPs
8	Only Q2 N-effective LRS within the Conowingo Shell	Agricultural + Urban	6.3 Million	$96 Million	$15	Jeff Sweeney (EPA CBP)	Uses the same BMPs as Scenario 6.1 but focuses on the upper quartile LRSs. Uses modified WIP3 Baseline.
9	Only Q2 N-effective LRS within the Conowingo Shell	Agricultural	6.0 Million	$50 Million	$8	Jeff Sweeney (EPA CBP)	Same BMPs as Scenario 8, but without urban BMPs
10	Susquehanna watershed > Added Q1 N-effective[1] Bay-Wide LRS outside of the Susquehanna	Agricultural + Urban	6.2 Million	$135 Million	$22	Deb Caraco (CWP)	Same BMPs as Scenarios 7 and 9
11	Susquehanna watershed > Added Q1 N-effective[1] Bay-Wide LRS outside of the Susquehanna	Agricultural	6.1 Million	$120 Million	$20	Deb Caraco (CWP)	Same as Scenario 10 but without Urban BMPs

* If a county drains to the Chesapeake Bay and is partially within the Conowingo shell, then the whole county was included in the scenario output. Then, Phase I jurisdictions were removed (already heavily regulated and in less effective areas).

Table 1. Overview of all CAST scenarios, including geographic extent ("Geography"), BMP categories ("BMPs"), the total nitrogen reduction ("Total N Reduction (lbs/year)"), the total annualized cost ("Total Annualized Cost"), the cost effectiveness for nitrogen removal ("Cost Effectiveness ($/lbs)"), the name and affiliation of the person who ran the scenario ("Developer"), and additional notes for context and clarification ("Description & Notes").

Scenario	Attributes						
	Geography	**BMPs**	**Total N Reduction (lbs/year)**	**Total Annualized Cost ($/Year)**	**Cost Effectiveness ($/lbs)**	**Developer**	**Description & Notes**

[1]Q1 Nitrogen (N)-Effective: Most effective land-river segments (LRS) for nitrogen reduction delineated by the upper quartile.
[2]Q2 Nitrogen (N)-Effective: Most effective land-river segments (LRS) for nitrogen reduction delineated by the median.
[3]This scenario uses 1995 CAST data.
Red Font Indicates Scenarios recommended to present to the PSC. Includes three geographies and Urban/Ag or Ag BMP options.

Table 2. BMPs with respective durations and units within each CAST scenario.	
Scenario	**BMPs (Duration; Unit)**
1	Agricultural BMPs • Forest Buffers on Fenced Pasture Corridor (Cumulative; Acres in Buffers) • Forest Buffers (Cumulative; Acres in Buffers) • Wetland Restoration (Cumulative; Acres) • Non-Urban Stream Restoration (Cumulative Feet) • Non-Urban Shoreline Management (Cumulative; Feet) Urban BMPs • Urban Stream Restoration (Cumulative; Feet) • Bioswale (Cumulative; Feet)
2	Full Suite of BMPs implemented in the WIP 3 programs. Google drive shared with the Group includes the input files.
3,4,7,9,11	• Nutrient Application Management Core Nitrogen (Annual; Acres) • Nutrient Application Management Rate Nitrogen (Annual; Acres) • Nutrient Application Management Placement Nitrogen (Annual; Acres) • Nutrient Application Management Timing Nitrogen (Annual; Acres) • Conservation Tillage (Annual; Acres) • High Residue Tillage (Annual; Acres) • Low Residue Tillage (Annual; Acres) • Prescribed Grazing (Cumulative; Acres) • Forest Buffers (Cumulative; Acres in Buffers) • Wetland Restoration (Cumulative; Acres) • Grass Buffers (Cumulative; Acres in Buffers) • Soil and Water Conservation Plan (Cumulative; Acres) • Manure Incorporation (Annual; Acres) • Barnyard Runoff Control (Cumulative; Acres)
5	Agricultural BMPs • Nutrient Application Management Core Nitrogen (Annual; Acres) • Nutrient Application Management Rate Nitrogen (Annual; Acres) • Nutrient Application Management Placement Nitrogen (Annual; Acres) • Nutrient Application Management Timing Nitrogen (Annual; Acres) • Conservation Tillage (Annual; Acres) • High Residue Tillage (Annual; Acres) • Low Residue Tillage (Annual; Acres) • Prescribed Grazing (Cumulative; Acres) • Grass Buffers (Cumulative; Acres in Buffers) • Wetland Restoration (Cumulative; Acres) • Soil and Water Conservation Plan (Cumulative; Acres)

	• Manure Incorporation (Annual; Acres) • Barnyard Runoff Control (Cumulative; Acres) Urban BMPs • Urban Forest Buffers (Annual; Acres) • Urban Forest Planting (Annual; Acres)
6	Agricultural BMPs • Nutrient Application Management Core Nitrogen (Annual; Acres) • Nutrient Application Management Rate Nitrogen (Annual; Acres) • Nutrient Application Management Placement Nitrogen (Annual; Acres) • Nutrient Application Management Timing Nitrogen (Annual; Acres) • Conservation Tillage (Annual; Acres) • High Residue Tillage (Annual; Acres) • Low Residue Tillage (Annual; Acres) • Prescribed Grazing (Cumulative; Acres) • Grass Buffers (Cumulative; Acres in Buffers) • Wetland Restoration (Cumulative; Acres) • Soil and Water Conservation Plan (Cumulative; Acres) • Manure Incorporation (Annual; Acres) • Barnyard Runoff Control (Cumulative; Acres) Urban BMPs • Urban Forest Buffers (Annual; Acres) • Urban Forest Planting (Annual; Acres) • Urban Tree Planting • Bioswales
6.1, 8, 10	Same agricultural BMPs as Scenario 6 Urban BMPs include: • Urban Infiltration • Bioswales

Table 3. Counties within each CAST scenario.	
Scenario	**County, State**
1	•
2,10,11	•
3,3.1	•
4,5	•
6,6.1,7	•
8,9	•