# Update on Chesapeake Bay Program Developments

Briefing to the
Water Resources Technical Committee
November 13, 2008

# Presentation Overview

- Water Quality Steering Committee
  - Nov. 6 & 7th Meeting
    - Key Findings
    - New Issues/Activities
- CBF's Proposed Lawsuit against EPA
- Bay Model Results

# WQSC Meeting (11/6-7/08)

- Background
  - Draft major basin/state load allocations – Still April 2009
  - Bay TMDL - Still Dec. 31, 2010
  - 78 ‘TMDLs’

# WQSC Meeting (11/6-7/08)

- Key Findings
  - WSM Updates (5.1/5.2) more realistic than previous (4.3) – but loads reallocated as a result
  - Changes to hydrologic period more realistic, though more wet weather
  - Total Loads (TN 175 & TP 12.8 Mlb) generally meet DO in Bay – uncertain in other reaches
  - More load off of 'Forest' & Airshed than previously identified
  - Current Tributary Strategies (with current WSM assumptions) NOT sufficient to meet DO
    - Roughly 147 Mlb TN cap vs. 182 (w/ CAIR) ???????

# WQSC Meeting (11/6-7/08)

- New Issues/Activities
  - New/longer Hydrologic Period
  - New Management Scenarios
  - Delivery factors – Riverine (new) & Esturine
  - Must evaluate chlorophyll a criteria
  - Need to revisit Tributary Strategies (i.e., feasibility)
  - Evaluate Water Withdrawals & Other Details
  - UAA (vs. Adaptive Mgmt.)
  - Revisit/potentially revise allocation Decision Criteria

# CBF's Proposed Lawsuit

- Notice of Intent to Sue EPA (10/29/08)
  - For 'Failure to Comply with Chesapeake 2000 Agreement'
  - Jointly with Bay Watermen associations
  - Outlines how poor water quality has destroyed fisheries, etc. (i.e., blue crabs, SAV, oysters, Bay fish)
  - Cites EPA's failure via a detailed history of missed deadlines (21 pgs. Total)
  - Focus on 'Reasonable Assurance' & Penalties for Failure to Meet Deadlines
- Feedback from WQSC conversations
  - CWA basis ?
  - Helpful or harmful?

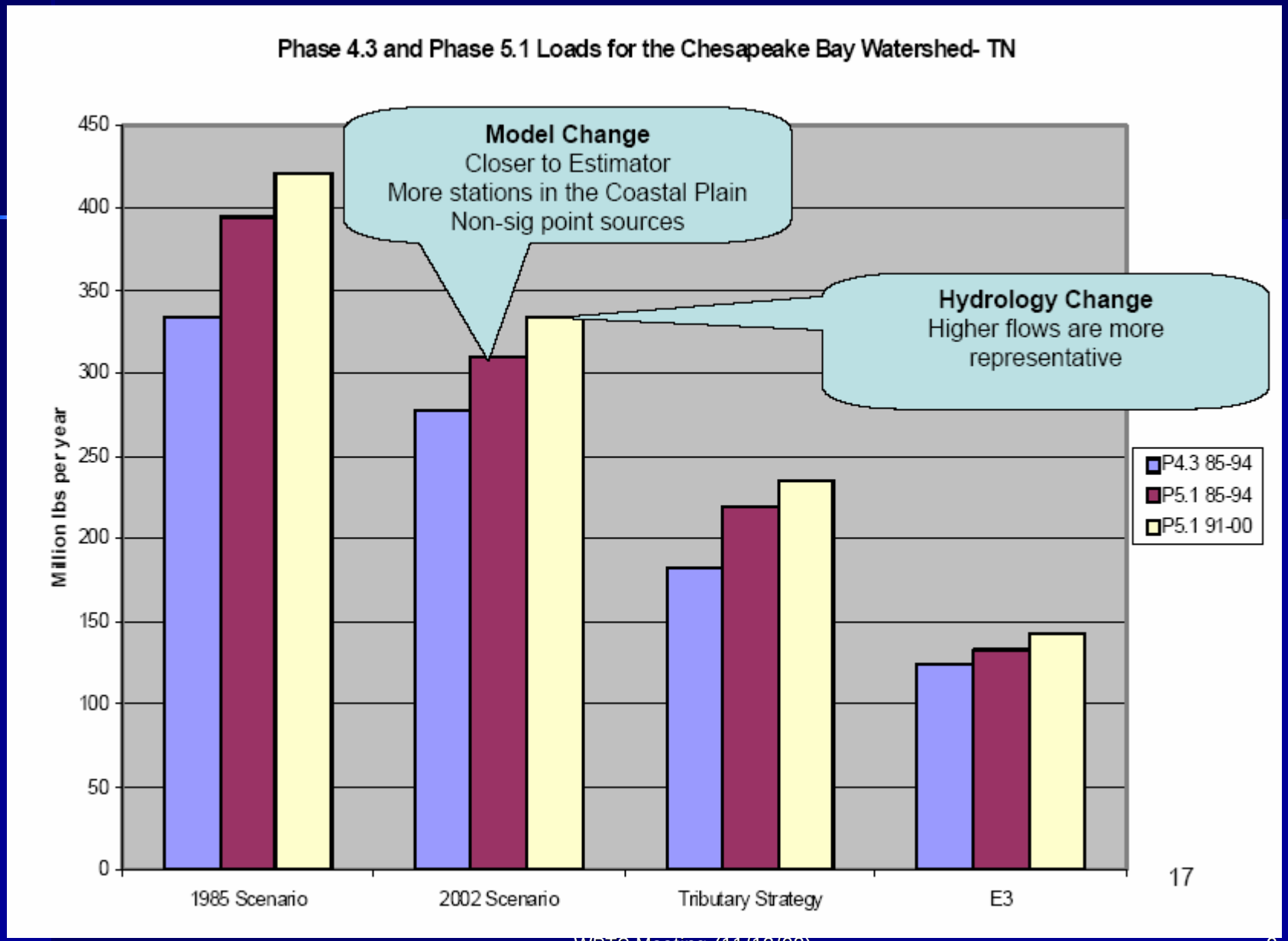
# Summary of Most Recent Bay Program Model Results

- The old load caps (175 million lbs. TN & 12.8 million lbs. TP) appear sufficient to meet water quality standards;
- However, according to the Phase 5.1 WSM, the existing Tributary Strategies do not come close to meeting those load caps.
  - Apparently it is going to take significantly more effort to achieve the existing load caps.
  - More representative hydrology is partly responsible for this difference.
  - It appears that loading caps by basin/state will need to be adjusted.
- The estimated Potomac loads appear to be substantially higher under the Phase 5.1 WSM.
  - This is due to changes (increases) in agricultural loads.
  - Point source, septic, and developed land loads are essentially unchanged.
- The loads that were added from “non-significant point sources” truly appear to be just that – non-significant.

## Total Nitrogen (TN)

**Basinwide nitrogen loads of initial key scenarios by major tributary basin (1991 - 2000) in million pounds per year**

| | 1985 Baseline Scenario | 2002 Progress Scenario | Tributary Strategy Scenario |
|---|---|---|---|
| Susquehanna | 162 | 136.1 | 90.7 |
| Eastern Shore MD & DE | 39.2 | 31.4 | 23.3 |
| Western Shore | 28.4 | 16 | 10.8 |
| Patuxent | 5.2 | 4.5 | 3.8 |
| Potomac | 111.1 | 87.1 | 67.6 |
| Rappahannock | 12.8 | 10.5 | 8.2 |
| York | 11 | 9.1 | 7.3 |
| James | 46.9 | 36.1 | 30.5 |
| Eastern Shore VA | 3.1 | 2.4 | 1.6 |
| **Total** | **419.8** | **333.3** | **243.9** |
| Phase 4.3 (1985-1994 hydrology) | 337.5 | 277.7 | 181.6 |
| Difference | 82.3 | 55.6 | 62.3 |


Phase 4.3 and Phase 5.1 Loads for the Chesapeake Bay Watershed- TN
Model Change
Closer to Estimator
More stations in the Coastal Plain
Non-sig point sources
Hydrology Change
Higher flows are more representative
Million lbs per year
450
400
350
300
250
200
150
100
50
0
P4.3 85-94
P5.1 85-94
P5.1 91-00
1985 Scenario
2002 Scenario
Tributary Strategy
E3
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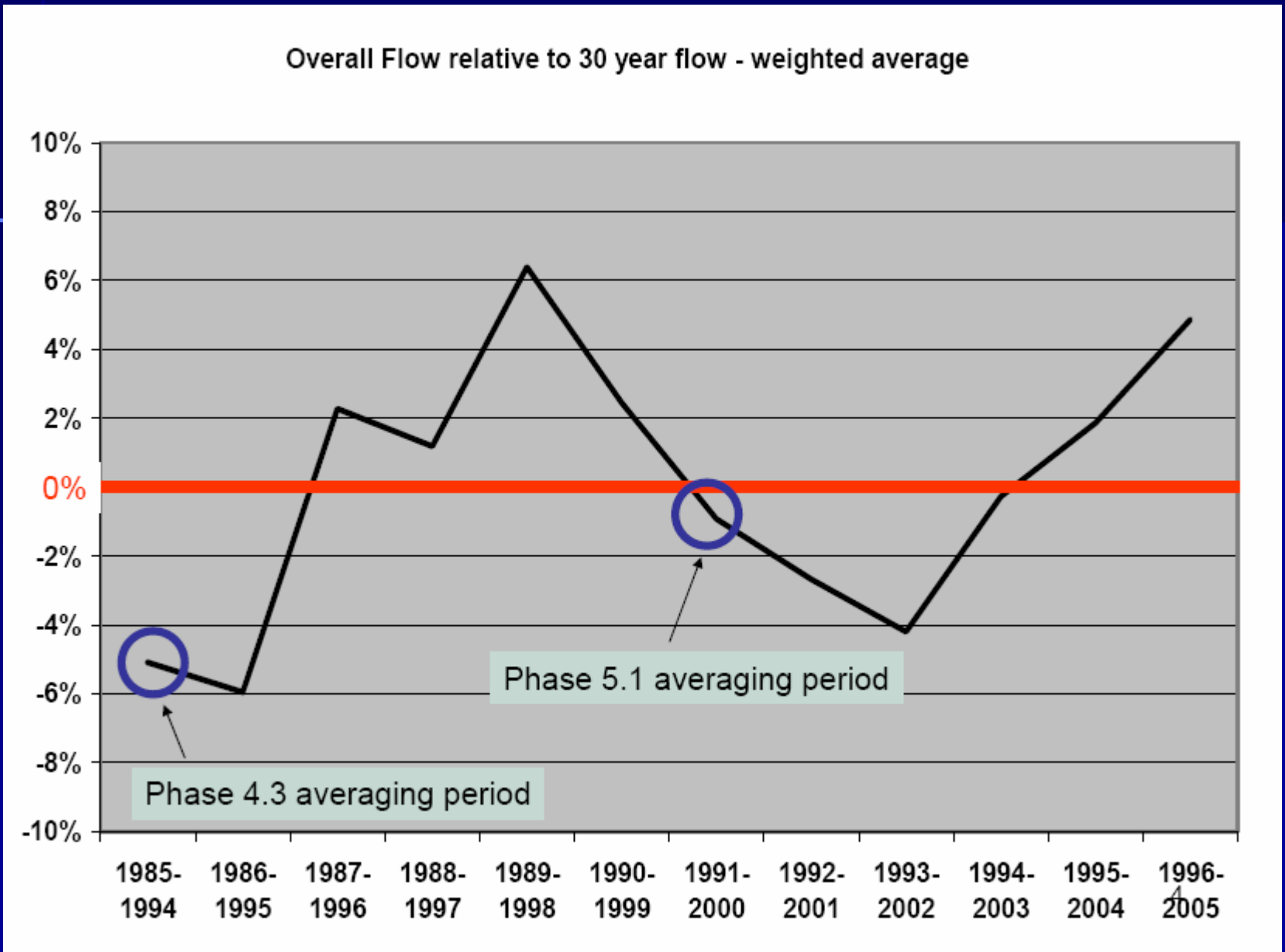
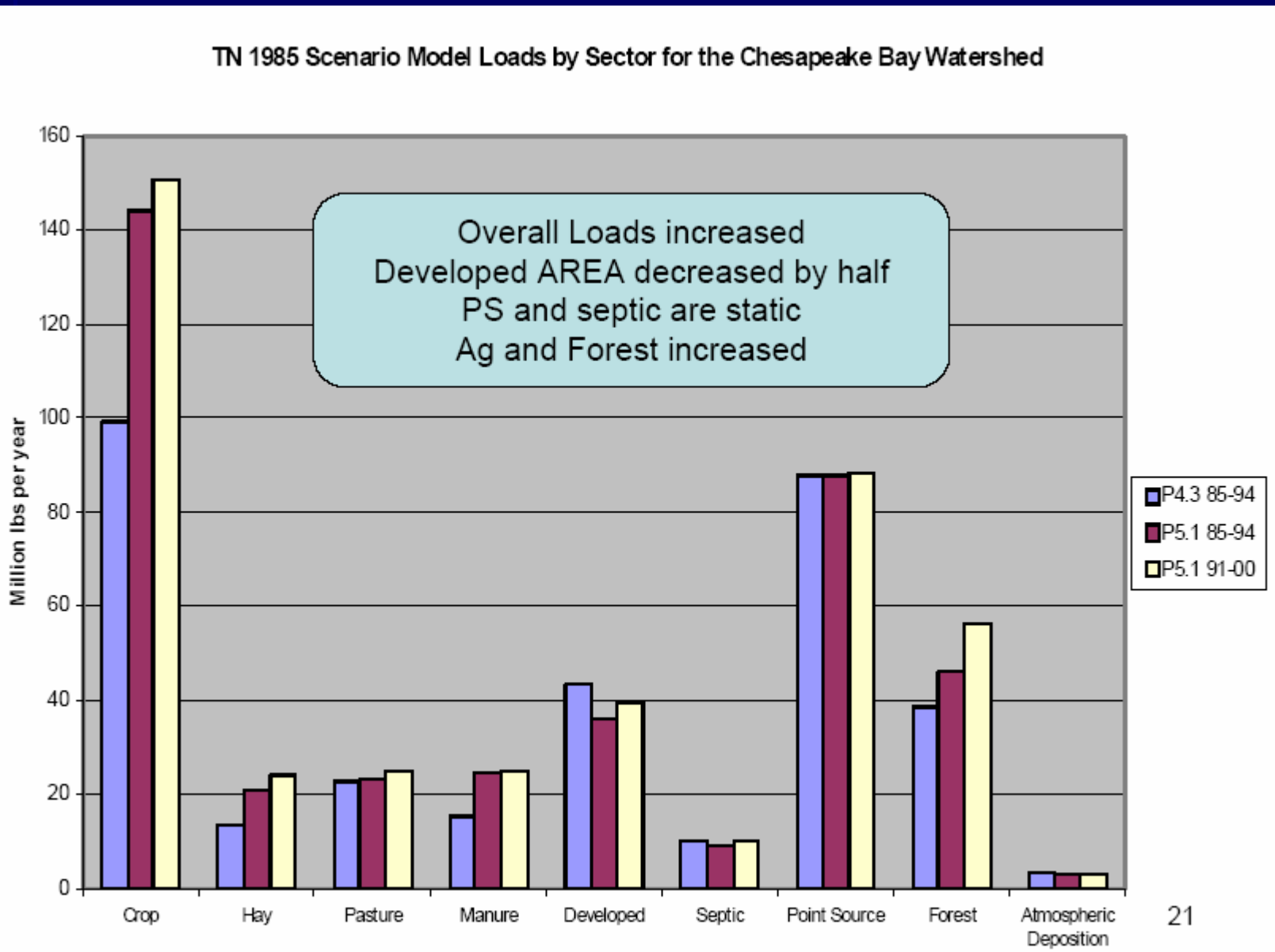
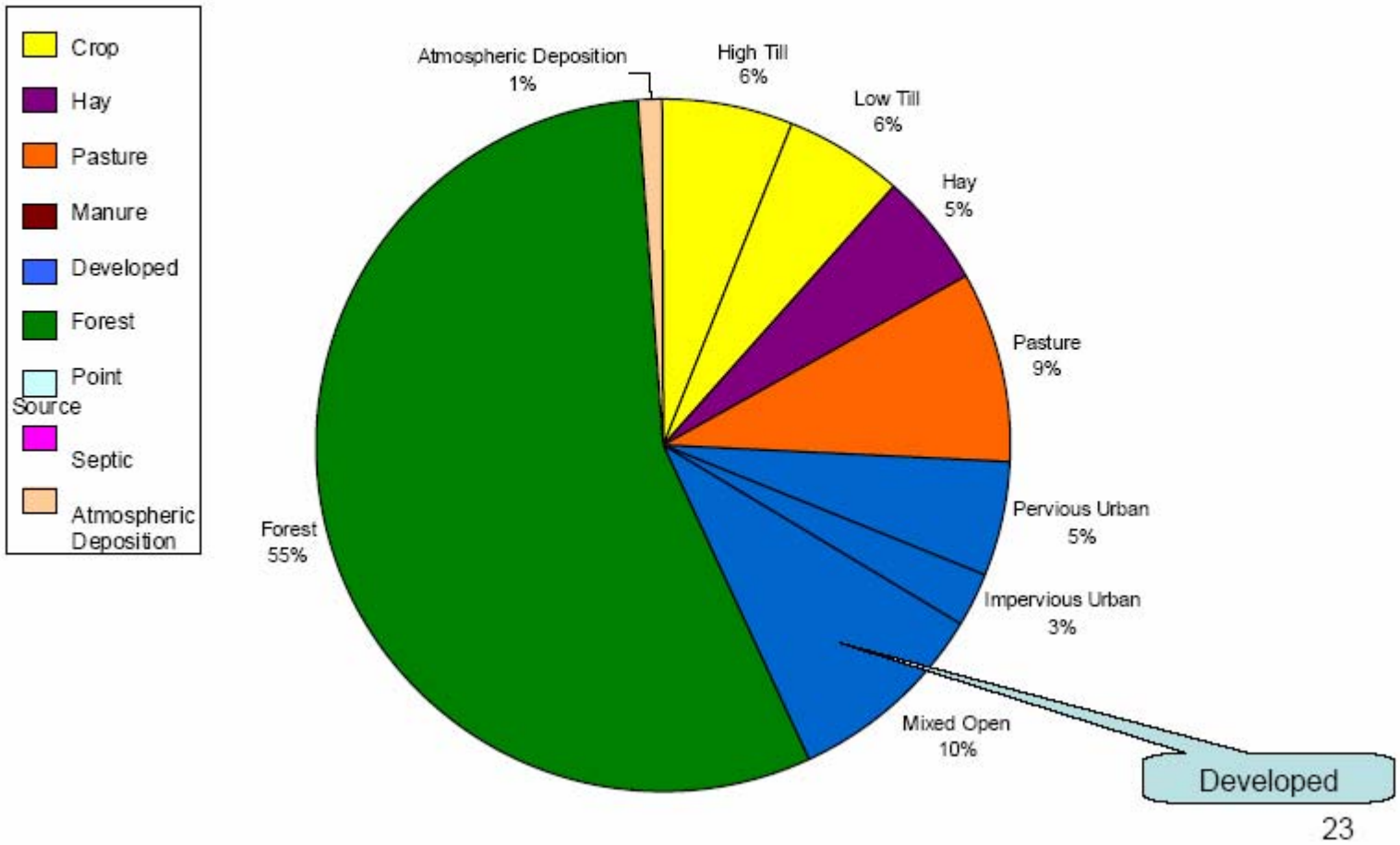

Overall Flow relative to 30 year flow - weighted average
10%
8%
6%
4%
2%
0%
-2%
-4%
-6%
-8%
-10%
Phase 5.1 averaging period
Phase 4.3 averaging period
1985-1994
1986-1995
1987-1996
1988-1997
1989-1998
1990-1999
1991-2000
1992-2001
1993-2002
1994-2003
1995-2004
1996-2005


TN 1985 Scenario Model Loads by Sector for the Chesapeake Bay Watershed
Overall Loads increased
Developed AREA decreased by half
PS and septic are static
Ag and Forest increased
Million lbs per year
160
140
120
100
80
60
40
20
0
Crop
Hay
Pasture
Manure
Developed
Septic
Point Source
Forest
Atmospheric Deposition
P4.3 85-94
P5.1 85-94
P5.1 91-00

## Phase 4.3 1985 Scenario Model Run, Acres by Sector for the Chesapeake Bay Watershed

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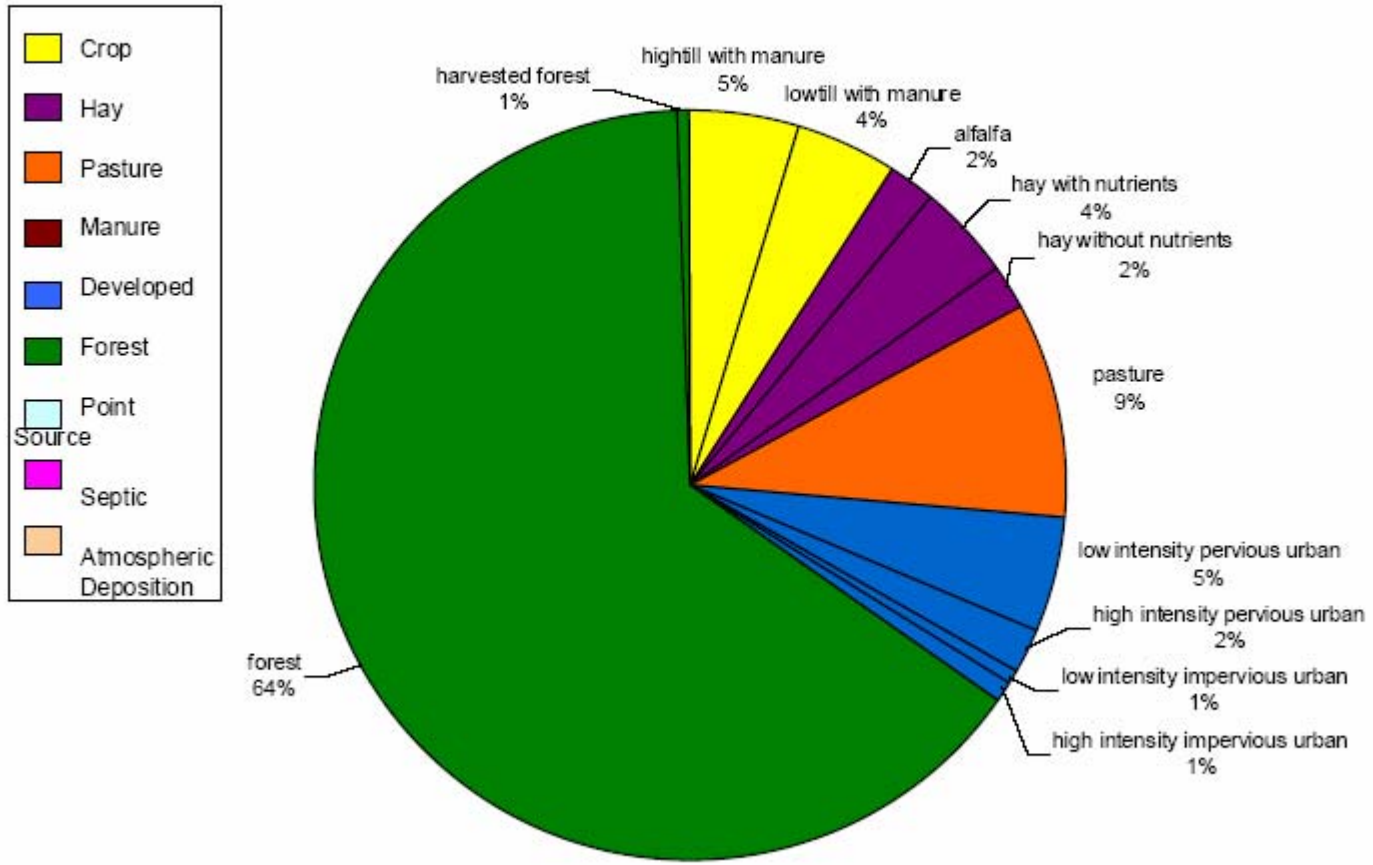
## Phase 5.1 1985 Scenario Model Run, Acres by Sector for the Chesapeake Bay Watershed

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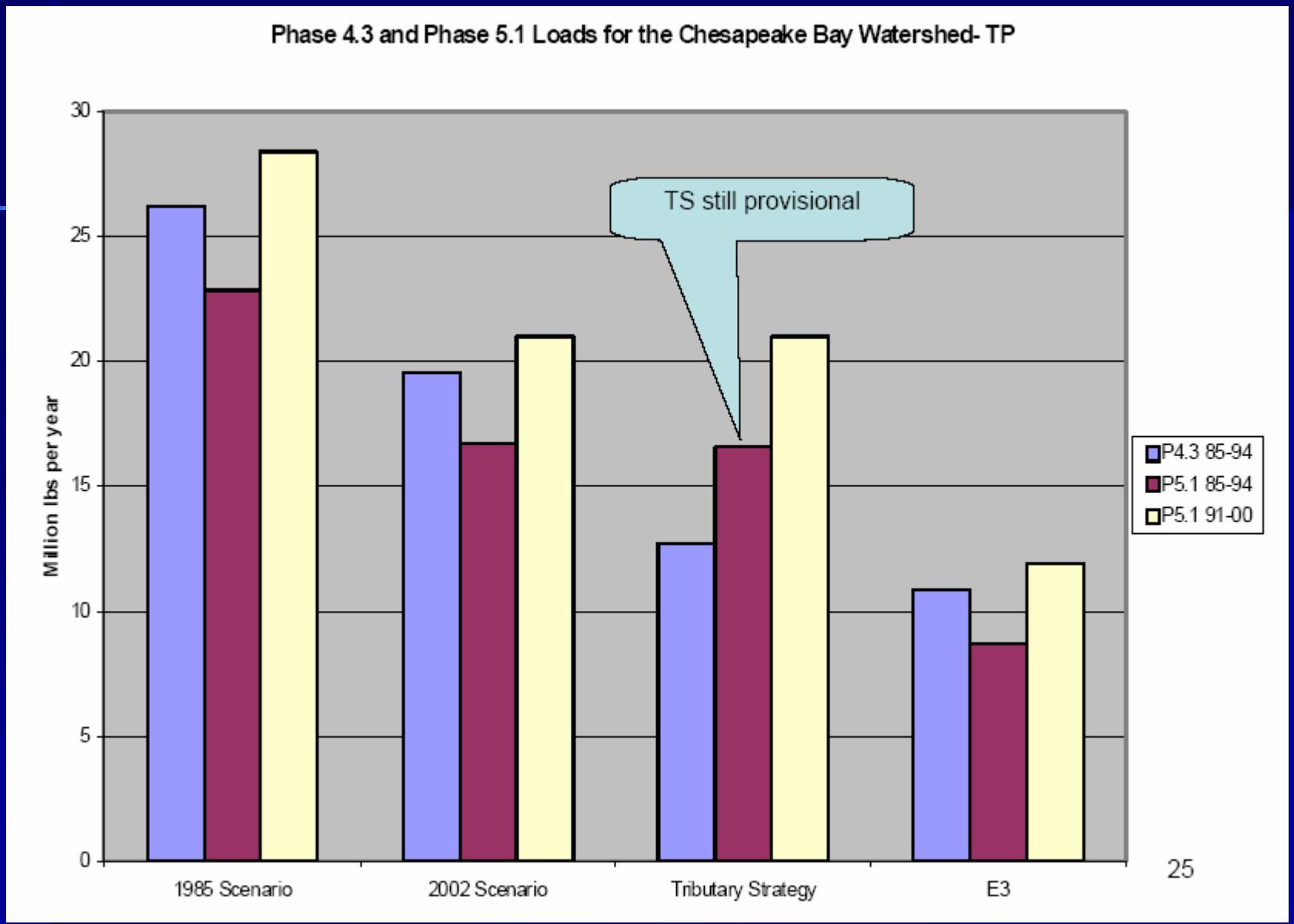
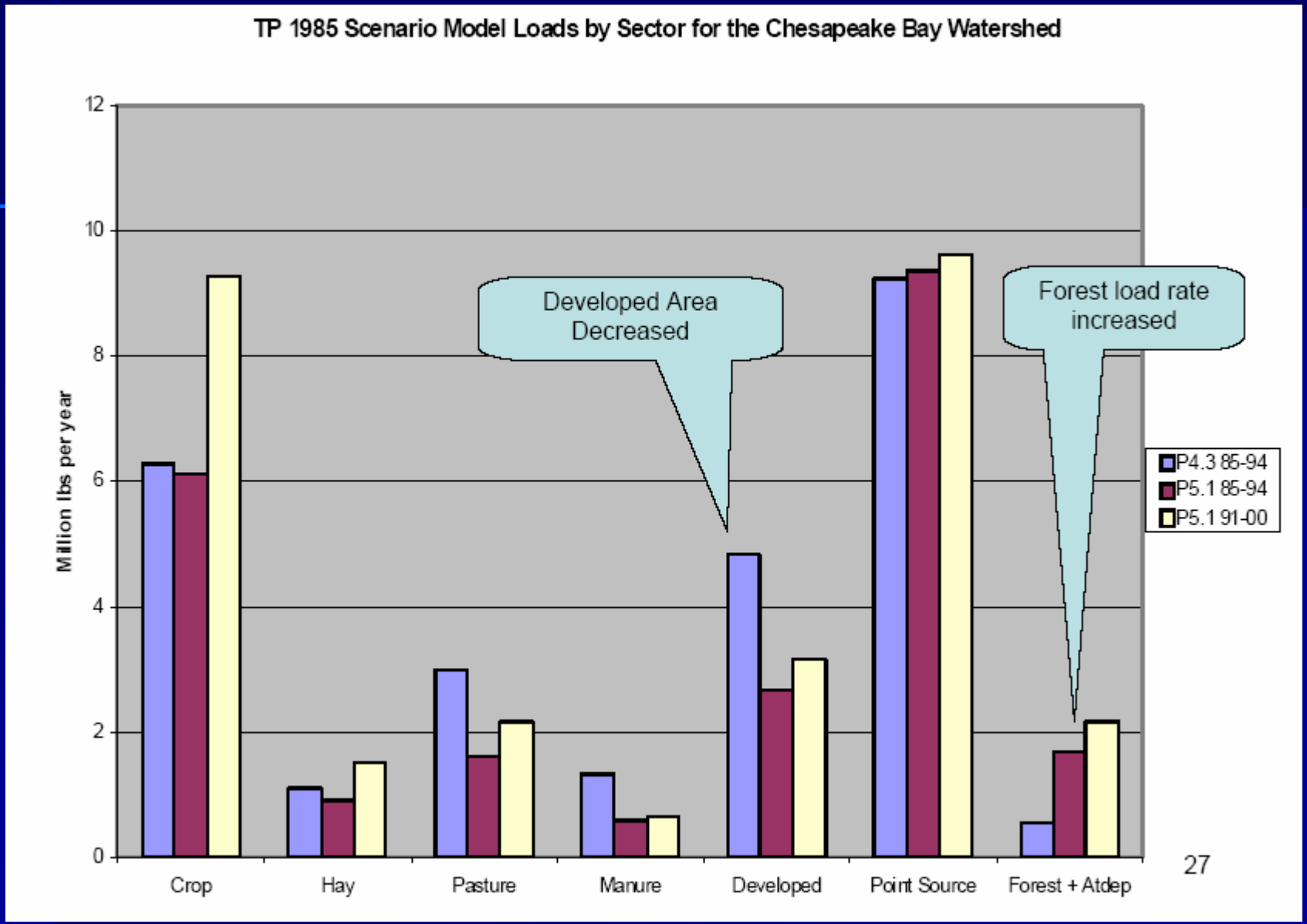
# Total Phosphorus (TP)

## Basinwide phosphorus loads of initial key scenarios by major tributary basin (1991 - 2000) in million pounds per year

| | 1985 Baseline Scenario | 2002 Progress Scenario | Tributary Strategy Scenario |
|---|---|---|---|
| Susquehanna | 6.27 | 4.94 | 3.98 |
| Eastern Shore MD & DE | 3.42 | 2.31 | 2.09 |
| Western Shore | 1.82 | 0.95 | 0.73 |
| Patuxent | 0.54 | 0.40 | 0.31 |
| Potomac | 6.02 | 5.29 | 6.25 |
| Rappahannock | 1.36 | 1.11 | 1.34 |
| York | 1.07 | 0.67 | 0.74 |
| James | 7.25 | 4.89 | 5.45 |
| Eastern Shore VA | 0.55 | 0.37 | 0.33 |
| **Total** | **28.30** | **20.93** | **21.22** |
| Phase 4.3 (1985-1994 hydrology) | 27.10 | 19.50 | 12.70 |
| Difference | 1.20 | 1.43 | 8.52 |


Phase 4.3 and Phase 5.1 Loads for the Chesapeake Bay Watershed- TP
Million lbs per year
30
25
20
15
10
5
0
TS still provisional
P4.3 85-94
P5.1 85-94
P5.1 91-00
1985 Scenario
2002 Scenario
Tributary Strategy
E3
25


TP 1985 Scenario Model Loads by Sector for the Chesapeake Bay Watershed
Million lbs per year
12
10
8
6
4
2
0
Crop
Hay
Pasture
Manure
Developed
Point Source
Forest + Atdep
Developed Area Decreased
Forest load rate increased
P4.3 85-94
P5.1 85-94
P5.1 91-00
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# To Summarize:

- DO standard attainment appears to be insufficient with the current Tributary Scenario.
  - The Phase 5.1 Tributary Strategy Scenario is a more realistic planning scenario and the load reductions are harder to make.
  - The level of phosphorus reductions we've seen in the previous Watershed Model appears to be unattainable with the more accurate Phase 5.1 Model.
- Nutrient load reductions similar to the existing Tributary Strategy nutrient reductions (175 million pounds nitrogen and 12.8 million pounds phosphorus) appear able to achieve the DO water quality standard.

# Additional Updates

- PSC/EC Updates
  - "Reasonable Assurance:" Look For:
    - Set a new 2020 "attainment" deadline
    - Set tangible 2-Year Milestones
    - Identify "self-imposed" sanctions
    - Invite NSF to be an "outside evaluator"
- EC Meeting (11/20/08)
  - At Union Station
  - Look to affirm the above (or some variation)
  - CBF's to stage a "rally"