Statewide Tributary Strategy Implementation Plan
Trib Team/Public Comment Tracking Matrix

General Comments on Plan and comments related to Foreword, Background, and Plan and Its Purpose sections

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Middle Potomac Team	DNR	It is difficult to tell from the IP where Maryland stands in terms of meeting its load caps. On p. 9, the IP notes that the baywide caps are 175 M# for TN and 12.8 M# for TP. Maryland's share is 37.25 M# for TN and 2.92 M# for TP. The IP does not indicate where Maryland is now or where it expects to be in 2010 or anywhere else in the future. The IP clearly shows that there will be a shortfall in terms of management actions, but, except in the case of point sources, this is not translated into load estimates. Accordingly, it is difficult for the Tributary Teams to understand how much effort is needed to close gaps and where priority should be given ***Recommendation: Maryland provide the Tributary Teams with an annual progress report that quantifies the loads associated with various sources, spe actions taken to reduce those loads and quantifies the resulting load reductio sector, by tributary and by jurisdiction as appropriate***	
Middle Potomac Team	DNR	With the exception of ENR, the success of the IP appears to be vulnerable to availability of funds. Under Stormwater, for example, the IP qualifies implementation with the phrase, "as funding is available." There are also various practices in the Agriculture section, e.g., the Cover Crop Program, where success appears to depend on additional funding. ***Recommendation: Maryland provide the Tributary Teams with an annual progress report that identifies where the IP has been adversely affected by funding shortfall, what the significance is in terms of loads, what has been done over the previous 12 months to reduce or eliminate those shortfalls and what this means in terms of load reductions.***	
Lower Eastern Shore Tributary Team	DNR	It's great to see an implementation plan and the current efforts listed. This is a great framework to build upon. Listing the barriers and possible solutions is a very important part of the plan.	

		Consider including photos of watermen, sailboats, fish, shellfish, and living resources.	
Patapsco/Back Creek Team	DNR	There is no way of telling what nutrient reductions will occur if the 2 yr and 5 yr strategies are implemented.	
Upper Western Shore Team	DNR	Things not mentioned: planning by watershed, green infrastructure, flood plans, Protection, restoration, and wise use should be added language, MBSS data should be added to Bay Program data to publish as well.	
Upper Western Shore Team	DNR	All BMPs are not tied well together in the Plan (impervious %, etc)	
Upper Western Shore Team	DNR	Pictures: Many pictures do not have captions … what in the world is the one on page 30 supposed to be illustrating?	
Upper Western Shore Team	DNR	Throughout the document (e.g., page 8), reference is made to a host of important reference documents (the Tributary Strategy, the Bay Agreements, etc.); not all readers have these or are sure where to go look for them. It would be helpful for this document to identify a one-stop location (perhaps DNR's website) where links could be made to the various locations of these documents. Also, minutes of meetings for the many committees (e.g., the BRF Advisory Committee, page 39) should be posted or linked from one central area, so that all stakeholders can stay reasonably informed of developments and how they fit into the Tributary Strategy.	
Upper Western Shore Team	DNR	The SIP could benefit from a robust glossary of terms and references for the uninitiated in a given field. For example, the Agriculture Implementation Schedule (page 48) includes many terms not familiar to me as an engineer, as I am sure there are terms elsewhere that are unfamiliar to planners, farmers, general residents, etc. and better understanding a process like commodity cover crops would enhance my understanding of the goals and strategies of the SIP.	
Upper Western Shore Team	DNR	Require each county in Maryland to submit a Green Infrastructure master plan, as many of them did with Critical Areas Plans in the early 1990s. A Green Infrastructure master plan can be defined as a plan that identifies a contiguous network of waterways, wetlands, woodlands, wildlife habitats and other natural areas of countywide significance that supports native species, maintains natural ecological processes, sustains air and water	

		resources, and contributes to health and quality of life. It's purpose is to: -Provide a policy guide for development and zoning decisions. -Provide a base for making development review recommendations. -Provide important information and guidance in support of smart growth, transportation, and park -Provide a guide for development proposals and mitigation options. -Inform the general public of the goals and objectives for preservation and enhancement of identified environmentally sensitive elements, and provide recommendations for implementation.	
Upper Western Shore Team	DNR	Require that natural capital in the Sate of Maryland be identified, and its loss due to public and private activities be accounted for through an economic valuation. This requires that an inventory of natural capital be performed and made publicly available. Natural capital is defined as the mineral, plant, and animal formations that provide the State of Maryland with natural services such as oxygen production, water filtration, pollution attenuation, erosion prevention and flood control, storm buffers, recreation locations, food production, and tourist attractions.	
Upper Western Shore Team	DNR	Use a watershed approach as the means by which to integrate what is, at present, a document consisting of disparate chapters and concepts. A watershed approach is a coordinating framework for environmental management that focuses public and private sector efforts to address the highest priority problems within hydrologically-defined geographic areas, taking into consideration both ground and surface water flow.	
Upper Western Shore Team	DNR	Planning by watershed i.e. developing a baseline of water quality for each sub watershed, a stream corridor assessment and a small watershed action plan—enables planners to get a handle on both problems and solutions on a scale that's not beyond the comprehension of a non-scientist Education—aimed at and on the level that policy makers and/or political types can assimilate is a must, especially regarding TMDL's and their political implication i.e. growth management. Additional policy maker education involves the view that the highest and best land use of portions of watersheds is for aquifer recharge and air-water filtration	
Upper Western Shore Team	DNR	There is an overall lack of emphasis on "Natural Resources", as evidenced by a Key Word Count of the document.	

Trib Strat Statewide Implem Plan - Key Word Count

		Count	Organization	Total
	Water Quality	127		
	Nutrient	114		
	Watershed	67		
	Nitrogen	66		
	Sediment	50		
	Phosphorus	32		
NR	Stream	31		
	TMDL	30		
NR	Wetland	27		
	Runoff	21		
NR	Buffer	13		
NR	Ecosystem	13		
	NPDES	12		
NR	Fish	11	2	13
NR	Forest	11		
NR	Natural	11	11	22
	Infrastructure (Roads, schools, etc)	10		
NR	Habitat	10		
NR	Tree	9		
	Developer	7		
NR	Vegetation	7		
NR	Natural Resources	6	8	14
NR	Living Resources	5		
	Subwatershed	5		
NR	Wildlife	4		
NR	Critical Area	3		
NR	Marsh	3		
	Watershed Planning	2		
NR	Green	2		
	Water Quantity	1		
NR	Resource protection	~1		

		NR	Resource conservation	0	2	2	
		NR	Green Infrastructure	0			
Upper Western Shore Team	DNR	1. Reading Part I, I'm left with the general impression that what we're dealing with is mainly remediation of existing deficiencies – aside from the section on Growth Management. I would suggest the following: • Re-organize Part I as follows: o Point Source o Urban Sources (this really is a lot more than urban isn't it?) § Stormwater § Septic o Agriculture o Air Deposition • Move Growth Management to Part II and leverage the type of approach taken by Worcester County to illustrate how conservation of remaining natural resources and restoration of needed ones should be incorporated into Comprehensive Plans, etc. We need to stress the need for proactive approaches to water quality and flood prevention/control. o In this section, we need to recognize the variation that is created by the various Physiographic Provinces, their underlying geology, and the impact of earlier human activities (per the F&M study on mill pond sedimentation) o Ideally, we should be urging full water budget analyses at the watershed level, and do the same thing on a net basis at the State level. i.e. How much water is coming into the "system"? what is its quality? How / where is it used? How much is leaving? What is its quality? What excess capacity do we have to allow growth? Where is it? How do we create more net capacity? o How does the current strategy accommodate a Category 3 hurricane storm surge at the top of the Bay?					

		There are too many “cans” & “coulds” and not enough “wills” & “musts”, especially in the Barriers and Solutions. I know this is wishful thinking, but are we planning to restore the Bay or are we just offering suggestions on how it might be done. Where are the teeth? My impression is that our local government is becoming open to prescriptive solutions to the looming threat of TMDLs.What we offer is way too vague.	
Upper Western Shore Team	MDE	p. 10 first paragraph – Water quantity is not mentioned and recent research has shown that stream bed and bank erosion due to increased flow is a major source of nutrient input.	
Upper Western Shore Team	DNR	p. 13 last paragraph – Water quantity monitoring is not mentioned. Why not at least monitor flow in some streams in watersheds or sub watersheds especially those that have been evaluated as part of the WRAS Projects?	
Upper Western Shore Team	DNR	Standardize the format of the Implementation Schedules. E.g. contrast the Urban on p. 29 with the Stormwater on p. 31	
Upper Western Shore Team	DNR	p. 9 last paragraph – As such this plan will be updated as.....add “as new improved regulations are developed or as enforcement of current regulations is improved”	
Upper Western Shore Team	DNR	Normalize/combine/summarize the Implementation Schedules, where appropriate, so that the entire amount of “forest buffering”, “wetlands restoration”, etc. can be viewed in one table. Start with this, and then show the contribution from each of the various strategies.	
Upper Western Shore Team	DNR	Per the Worcester County presentation, it would be great to show the “unit cost” in terms of “pollution reduction” of each strategy. It would be even more important, for the healthy watersheds, to show the value of “pollution avoidance” by staying clean!	
Upper Western Shore Team	DNR	Emphasize the importance of the “Natural Resources” aspects of Bay Restoration. Recently, I floated the term “Green Infrastructure” at a meeting with four of our five County Commissioners. Only one of them had a clue what I was talking about.	
Patuxent River Commission	DNR	This plan certainly is a step forward by the state by putting down in black and white an action plan on how state agencies are to proceed, hopefully with assistance from other levels of government, individuals, farmers, industry, special interest groups and all, in using available and projected funds to achieve maximum benefits to our waters in the next 2 and 5 year timeframes to reach longer term goals. That being said, the Implementation Plan needs to be flexible for modification as implementation proceeds and more is learned.	

Patuxent River Commission	MDE DNR	As water quality issues increase in importance in local planning, and as local governments move to implement the Tributary Strategies and deal with TMDLs, local governments need 303d List information in a usable form more than ever. It is difficult for local governments to extract from the printed report the location and extent of the impairments within their jurisdiction. Local jurisdictions should be provided with 303d information in a GIS format, along with the specific geographic basin areas or stream segments (at whatever mapping scale is being used) that are formally listed, and all metadata to go with it.	
Patuxent River Commission	MDE	How will the long-term process described in this Plan be made to work with the regulatory approach embodied in the 2010 deadline?	
Patuxent River Commission	MDE	How will counties that have been at the forefront of environmental planning, monitoring, and management receive credit for all the work and investment they have already done over the years?	
Lower Western Shore Team	DNR	It is stated within the Purpose of the Plan that "It is hoped that the stakeholder groups and organizations will use this plan to develop priorities for policy, program, and regulatory changes so that local activities become a solid foundation for meeting local water quality standards and Chesapeake Bay restoration goals". It is also acknowledged throughout the Plan that Tributary Strategy Initiatives "will require the cooperation and coordination of several State agencies, local governments and other stakeholders". Text throughout the Plan speaks to the level of cooperation and coordination required within and between State agencies, local governments and other stakeholders. The level of communication required will be a significant challenge as we move toward implementation of the tributary strategies. The issues that contribute to these challenges and the actions needed to effect change far exceed the abilities of the Tributary Teams. They require strong leadership, management, and teamwork within and between the State agencies involved (DNR, MDE, MDP, MDA) and a clear State strategy for earning or regulating the required cooperation and full engagement of local governments. There are many competing interests and legislated responsibilities that must be balanced and addressed between Local and State governments. The State strategy should set forth a coordinated framework to be followed by the respective State agencies to communicate and partner with local and quasi state-local government agencies as well as private	

		stakeholders. Once the stakeholders are committed to action, the Tributary Teams can serve as a meaningful resource to assist with establishing stronger partnerships between citizens, business and government at all levels.	
Lower Western Shore Team	DNR	A key objective of the State's Implementation Plan should be to present the Strategy in a manor that clearly delineates respective roles of responsibility between the various government agencies while outlining the hard work and difficult decisions that confront all stakeholders. This will help to educate all stakeholders regarding these respective roles and who to depend upon to get the job done. It should clearly delineate for local elected officials who to look to for regulatory compliance and required action. The Plan includes a significant amount of relevant information and important details. However, the Implementation Plan could provide a much clearer picture of respective roles. We recommend that the outline of the Implementation Plan and format be revised as noted on the attachment to this letter. Whether or not you choose to revise the plan to be consistent with this recommended outline and format, we recommend that the Forward and Background sections be rewritten to provide a big picture perspective related to water quality standards and programs necessary to achieve them. We have a background document that may assist you with this if you are interested. We will be happy to provide you with a copy. This big picture perspective should help all those who read the document to better understand the programs, policies and responsibilities related to achievement of the Tributary Strategies. We suggest that the Plan and Purpose section be revised to be consistent with the new recommended sections for the State and Local Government Leadership and Management Plans. The Point Source Stormwater, Septic, Agriculture, and Air Deposition Strategies in the Draft Implementation Plan should be incorporated into the proposed State section. **Tributary Strategy** **Statewide** **Implementation Plan** Ø Table of Contents Ø Background • Strategies to Achieve, Maintain, and Monitor Water Quality Goals	

		• Priority Places • Comprehensive Plans • Cap Management Strategy • The Role of Planning and Growth Management • The Role of Regulation • The Role of Offsets and Nutrient Trading Ø The Plan and Its Purpose Ø Part 1: State Government Leadership and Management Plan • Urban Source Implementation Schedule • Point Source Strategy • Storm Water Strategy - Storm Water NPDES Permit - Storm Water Management Regulation - Sediment and Erosion Control Regulation • Septic Strategy • Agriculture Strategy • Air Deposition Strategy • Growth Management Strategy - Maryland's Economic Growth, Resource Protection & Planning 1992 - Smart Growth Initiatives 1997 • Focus Areas to Target Additional Research, Demonstrations and Outreach • Tracking and Monitoring Progress	
Middle Potomac Tributary	DNR	**I. Introduction & Summary** The members of the Middle Potomac Tributary Team (MPTT) appreciate the opportu comment on Maryland's Statewide Implementation Plan (IP). Overall the IP is an im step forward in the efforts to meet the water quality goals of the C2K agreement. Aft	

Team		reading the IP, it is clear that the nutrient goal set by the Water Quality Steering Comr is not realistically achievable by 2010. This underscores the difficulty in meeting the quality standards of the Chesapeake Bay. As progress continues, however, it is critical that: ● The nutrient goal be maintained; ● A realistic, yet aggressive schedule be defined and adhered to; and ● Specific implementation goals allocated by County be included ● To improve accountability, State annual reports to the trib teams which re specific actions taken to reduce loads ● That progress not be lost despite continued growth.(anti-backsliding) These comments are designed to address each of these elements and are set forth in th following broad categories: ● Engaging Implementing Agencies – Assigning Responsibility and Accountability; ● Funding – Ensuring Incentive-Based Programs Work; and ● Cap Management – Preventing Backsliding Despite Continued Growth. It is difficult to tell from the IP where Maryland stands in terms of meeting its load ca On p. 9, the IP notes that the baywide caps are 175 M# for TN and 12.8 M# for TP. Maryland's share is 37.25 M# for TN and 2.92 M# for TP. The IP does not indicate w Maryland is now or where it expects to be in 2010 or in for example 2020. The IP sho indicate this. The IP clearly shows that there will be a shortfall in terms of managem actions, but, except in the case of point sources, this is not translated into load estimat Like the point source strategy the projected shortfall for each of the other strategies (li Section II below) and suggested solutions for each should be indicated. Accordingly, i difficult for the Tributary Teams to understand within each of the other strategies how effort is needed to close gaps and where priority should be given. As suggested above, the Plan needs to specify much more clearly how it might fill in the "gaps" that existing programs (such as the: incentives for controlling farming impacts, NPDES programs in place for point sources AND nonpoint sources, the TMDL program, the Bay Programs Nutrient reduction Initiatives, the current advanced State SWM Manual criteria, the Ag Reserve restrictions, Program Open Space, the looming Greenways Infrastructure Plan, the Forest Conservation Act and its many resulting buffer setbacks, Smart Growth and the wetlands and waterways permitting	

		requirements) do not. Each section concludes with one or more specific recommendations intended to be supportive of implementation and enhance the role of the Tributary Teams. ***Recommendation: Maryland provide the Tributary Teams with an annual progress report that quantifies the loads associated with various sources, spe actions taken to reduce those loads and quantifies the resulting load reductio sector, by tributary and by jurisdiction as appropriate.***	
Middle Potomac Tributary Team	DNR	**II. Engaging Implementing Agencies – Assigning Responsibility and Accountability** Part I of the IP identifies six distinct sectors that contribute to nutrient loading: ● Point Sources ● Stormwater ● Septic Systems ● Growth Management ● Agriculture; and ● Air Deposition. for each sector, the Water Resources Technical Committee should establish specific goals for each County and for the larger incorporated municipalities, for example Rockville, Gaithersburg or Takoma Park for instance. Ramping up an incentive based approach is also recommended.	
Chesapeake Bay Foundation	DNR	**Overarching Comments** 1) **The State must take ultimate responsibility for implementation success or failure.** The State of Maryland signed C2K with the full authority of the Governor and the General Assembly and committed to reducing close to 20 million pounds of nitrogen loading to the Bay each year. Therefore, it is ultimately the State that must bear the lion's share of the responsibility for either achieving the commitments set forth in the C2K Agreement and the Tributary Strategies or failing to take meaningful action to this end. Throughout the Draft Implementation plan, there is an almost stubborn attachment to current funding levels which has proven inadequate to make meaningful progress on most fronts, and severely limits implementation of	

		the Tributary Strategies. All States, including Maryland, knew that meeting these rigorous nutrient reductions by 2010 would be difficult and costly, yet states still united together to make the commitment to improve water quality. Maryland's initial implementation effort – creation of the Bay Restoration Fund, from the collection of a $2.50 per household "user fee" to upgrade major wastewater treatment facilities and fund reductions from two specific non-point sources of nitrogen to the Bay – was innovative and precedent-setting. CBF believed that this effort signified recognition of the State's C2K commitments and looked forward to advancing other opportunities to be equally bold in meeting and funding Maryland's Tributary Strategy commitments. Instead of capitalizing on the tremendous success of the Bay Restoration Fund, the State appears to resign itself to the status quo. Nowhere in this Draft Plan are there similarly innovative ideas for generating much-needed revenues for implementing elements of the Strategy. The Draft Plan does not include a call for the prioritization of State funds for nutrient-reduction commitments, nor does it identify revenue-raising opportunities to dedicate to specific Plan elements. The State MUST devise funding methods for Tributary Strategy implementation. No county or local jurisdiction will recognize the importance of funding elements of the Strategies if they do not see the State living up to its commitments and leading by example. 2) **Implementation success requires new approaches.** While the Tributary Strategies were being developed, there was an overall recognition that some elements called for within the final Strategy were going to be difficult to reach. For example, the septics strategy calls for 100% of all new systems installed as of 2006 to include denitrification technology and 100% of existing systems will require treatment or upgrade (p. 38). The only way to make even modest progress on such a lofty goal would be to pursue a statutory or regulatory requirement related to septic systems allowed in Maryland. Instead, the Draft Implementation Strategy looks only to projected funds generated from the Bay Restoration fee to	

		replace or upgrade approximately 600 systems a year and public education. If this Draft Implementation Plan moves forward as written, it will take 600 – 700 years to upgrade existing septic systems, and new systems will never be addressed. The Septic Strategy is, by no means, the only example of an element that needs more meaningful commitment. Many elements within the Tributary Strategies were included in an effort to address all sources of nutrient pollution and close a significant "gap" in calculated loads and nutrient caps. CBF generally agrees that all sources contributing to the nutrient pollution problem must be included in the solution. But we believe it is time that the State admit that meeting the commitment of reducing 20 millions pounds of nitrogen loading to the bay each year will require a much different approach. Significant changes must be made to the current programmatic environment – including prioritizing and focusing on the most cost-effective practices, otherwise, potentially tough statutory or regulatory changes will be required. Spending the next 4 years relying on the same voluntary programs and policies, funded at the same levels, will yield exactly the same level of progress we have seen to date. In the case of upgrading existing traditional septic systems, progress through 2004 represents about 0.12% of the Strategy target. Without significant action – akin to the legislatively mandated Bay Restoration Fee – few, if any, of the Tributary Strategy targets will be met. 3) **This level of nutrient reduction requires new resources.** Maryland will never meet all its nutrient reduction commitments, nor effectively maintain nutrient reduction successes under the pressures of increased population and rapid development without committing more resources to this area. We commend inclusion of potential solutions to existing barriers for Tributary Strategy action implementation within each major section of the Draft Plan. For agricultural barriers, the State recognizes the need for more funding resources to advance development of alternative crops and related infrastructure for such crops, as well as additional funding for commodity cover crops and to increase staff resources to meet animal waste management and innovative practice commitments (pp 54-55). However, the reality is that significant resources are necessary to implement	

		all segments of the Implementation Plan. Prioritizing more readily achievable nutrient reductions can be a sound approach to initiating such a tremendous undertaking. Eventually, though, the “low-hanging fruit” will be addressed and tough decisions will remain. Further prioritization must incorporate relative cost-effectiveness of practices, as well as long-term benefits of specific actions. For example, while cover crops represent one of the most cost-effective nitrogen removing tools the State has, planting riparian buffers and restoring wetlands yield long-term nutrient reductions without an annual planting effort and expense. The point is that one should not be relied on over the other, especially where leveraging opportunities can be tapped or other innovative incentives can be paired to increase implementation. For example, based on the 2006 Healthy Air Act passed by the Maryland General Assembly, Maryland will be seeking ways to reduce or offset carbon dioxide emissions by 10 percent. The planting of riparian buffers could “hit two birds with one stone” – providing necessary nitrogen and sediment runoff reductions, as well as serving to sequester, long-term, carbon emissions. Increasing the incentives for such plantings could make such an option increasingly attractive to a landowner.	
Chesapeake Bay Foundation	DNR	Within each section there is a listing and brief description of every program currently available for Tributary Strategy Implementation. Instead of a general programmatic overview, this section should more explicitly spell out how each program is actually being used for Tributary Strategy Implementation. For example, highlight the successes associated with the State Agricultural Cost-Share (MACS) and Federal incentive programs like EQIP, WRP and CREP by quantifying either the dollars targeted to Tributary Strategy Implementation practices and/or the numbers of practices/acres that have been implemented due to spending from these programs since 2000. Since success is being measured in such numbers, the Implementation Plan should describe how efficiently, and to what ends, these kinds of programs have been used. Another advantage of this approach is that under-utilized programs that are currently available may be identified as areas to target, for example, the Low Interest Loans for Agricultural Conservation (LILAC) is not often tapped for	

		meeting non-federal/state cost-share. Focused outreach on the availability and use of such funds may encourage greater conservation practice implementation.	
Chesapeake Bay Foundation	DNR	In conclusion, CBF values the efforts of citizens who have worked for years to develop the Tributary Strategies and educate the public on their necessity. Unfortunately, the State-developed Draft Implementation Plan falls far short of what Maryland, its rivers and the Bay need to significantly improve water quality and remove the mainstem from the EPA's "dirty waters" list. Equally important, at a time when Maryland is poised to take leadership of the Chesapeake Bay Executive Council, the State's own strategy for meeting nutrient reduction commitments show no leadership at all. If Maryland were to accept and follow this implementation plan, it would take decades - even centuries - to achieve Maryland's commitments. In the face of ever-increasing population growth, we could even loose ground. This is simply unacceptable. An Implementation Plan is no more than a series of actions threaded together. What Maryland needs most is several more significant actions – like creation of the Bay Restoration Fund and passage of the Healthy Air Act – in order to improve water quality in the Bay and its rivers. The Tributary Strategy Implementation Plan should spell out these meaningful actions, not simply extend the status quo.	
Lower Potomac Team	DNR	In general, the plan is weak. There does not seem to be sufficient detail to implement or to follow up and enforce the strategy points and BMP's enumerated.	
Choptank Team	DNR	The plan should contain an appendix, with tables that show the plan for achieving each sector in each tributary is it is clear specifically what the estimated starting point was, (the 1985 loads), what is the estimated current progress, what the 2010 goal is, and what is the amount of each practice that is going to be used in each basin to reach that goal. This is done for point sources but should be done as well for the other sources.	
Lower Eastern Shore Tributary Team	MDE	p.26 – Throughout the document, at the beginning of the "State Initiatives to Address the Implementation Gaps" section, include "these initiatives are organized by the agency that will be responsible for implementing them. Many of these initiatives, however, will require the cooperation and coordination of several State agencies, local governments, and other stakeholders" right at the beginning of the section instead of repeating at the	

		beginning of the 2-year, 5-year, and long-term action plan sections. This will make the document easier to read and will save a page or two.	
Lower Eastern Shore Tributary Team	DNR	p.27 – throughout the document, in the "Stakeholder Roles" section, use "local citizens" instead of "private landowners". We should expect all citizens, not just landowners, and not just property owners, to participate in implementing the Tributary Strategy.	

Point Source Strategy Comments

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Middle Potomac Team	MDE	**Point Sources –** This is the one area of the IP where responsibility and accountability are clearly spelled out. The advent of the ENR policy coupled with permit limits and funding via the Restoration Fund clearly identify the responsibility of the implementing agencies – the owners of the 66 "significant" WWTPs in Maryland. Restoration Fund grant conditions and permitting through the regulatory process provides the means for ensuring accountability. The ENR Implementation Schedule tables beginning on p. 16 are informative and helpful. ***Recommendation: Maryland provide the Tributary Teams with an annual progress update reflecting progress toward construction and comparison of l discharged with the load cap for each of the WWTPs on the list.***	
Lower Eastern Shore Tributary Team	MDE	p.14 – Explain that there are many WWTPs that use spray irrigation, drip irrigation, or other land application methods, and as a result, are not included in the point source strategy. Also, explain that point sources do not include MS4/stormwater caps and explain why.	
Lower Eastern Shore Tributary Team	MDE	p.14 – "Less than 500,000 gallons per day" might be more accurate than "500,000 gallons per day or less". WWTPs at exactly 500,000 gallons per day must upgrade to ENR.	
Lower Eastern Shore Tributary Team	MDE	p.17 – The "Load Cap Point and Nonpoint Sources" row in the ENR Implementation Schedule tables is confusing. It's unclear what the information in this row refers to. The row says this is a cap, but then provides information under the 2000 TNL and 2000 TPL columns. Are these the current nitrogen and phosphorus loads from all sources within the entire	

		basin? This is the Point Source Strategy section, which doesn't discuss non-point source pollution, so why include the information in this row here? Does the information in this row under the ENR nitrogen cap and ENR phosphorus cap refer to the TOTAL cap for nitrogen and phosphorus from both point source and non-point source pollution within the entire basin? Perhaps these total caps should be listed in the beginning or in a different section? If they are important, then they are not being highlighted sufficiently. If the non-point source pollution caps are important, they should be mentioned in the non-point source strategy sections.	
Lower Eastern Shore Tributary Team	MDE	p.26 – The MDE state initiatives should describe its current permit enforcement and WWTP inspection efforts for the 2-year, 5-year, and long-term action plans.	
Lower Eastern Shore Tributary Team	MDE	p.27 – An important "stakeholder role" for state government should be to promote the use of spray irrigation among counties and municipalities. Dr. Ching-Tzone Tien, MDE, told the Lower Eastern Shore Tributary Team in June 2004 that nitrogen and phosphorus loads from wastewater to the Chesapeake Bay would be reduced if more wastewater treatment plants in the Lower Eastern Shore Tributary Basin (and other tributary basins as well) were switched to spray irrigation systems. If the wastewater will drain into groundwater that flows towards a Maryland-designated "impaired" waterbody, **all of the nitrogen and phosphorus will be removed** before the wastewater reaches the groundwater. COMAR 26.08.03.01C(3) says, "This State shall require that wastewaters containing nutrients which cause or contribute to eutrophication be: (a) given advanced waste treatment before discharge; (b) disposed of by **spray irrigation** on land; or (c) disposed of by other practicable procedures which will avoid direct discharge to surface waters." If there are concerns about the use of spray irrigation, such as concerns about sprawl or overdevelopment, then those concerns should be discussed and methods mentioned (such as strong zoning and water/sewer planning) to address these concerns. The technology is used quite often within the Lower Eastern Shore Tributary Basin.	
Lower Eastern Shore Tributary Team	DNR	p.28 – Under "Bay Restoration Fund Advisory Committee", move the phrase "consult and advise the counties and MDE regarding the on-site system upgrade program" to the Septic Strategy section.	
Lower Eastern Shore Tributary Team	DNR	p.29 – the table on this page includes WWTP upgrades to ENR. It doesn't seem to make sense to include this here since this has already been discussed in the Point Source Strategy section. Why not include the actual Tributary	

		Strategy BMP goals and current progress table (e.g., Table 2 from the final Tributary Strategy) in the implementation plan, at least as an appendix, preferably for each basin?	
Department of Defense, Regional Environmental Coordinating	MDE	p. 23 – The Aberdeen Proving Ground – Aberdeen WWTP has been privatized and should not be listed as federal.	
Upper Western Shore Team	MDE	Use of enhanced wetlands as an additional scrub to point source discharge	
Upper Western Shore Team	MDE	Need to address sludge management in a method similar to ag nutrient management	
Upper Western Shore Team	MDE	More research and development of point and non-point offset or nutrient trading	
Upper Western Shore Team	MDE	Cecil County expressed concern that loading caps at the wastewater treatment plants would force development onto septics in the rural area, and greatly impact their ability to concentrate growth, avoid sprawl, and preserve their rural areas. A mechanism is needed to allow the concentration of growth in designated areas and provide offsets for increased loads at wastewater treatment plants.	
Upper Western Shore Team	MDE DNR	As early as page 9 (Background), the draft SIP acknowledges that it will not meet the Tributary Strategy goals. Here and elsewhere this kind of honest caveat deserves credit, but this is a common theme throughout the document (except for the point source section) and if failure to fully execute the Tributary Strategy will result in an EPA-orchestrated TMDL for the Chesapeake Bay, are we not engaging in a five year game of cat and mouse to delay the inevitable? If so, could the resources diverted to this exercise not be better applied to developing the final end-game, a TMDL, and then knowing with greater certainty what each segment of the point <u>and</u> non-point sources will be required to contribute? The resources that have and will be expended through a step-wise approach in the point source area have and will be enormous (BNR, then ENR, then who knows what under the inevitable TMDL) in comparison to a process where we identified the end need up front and designed and constructed for it all at once.	
Upper Western Shore Team	MDE	On page 14 (Point Source), reference is made to "…users that are not paying Maryland's Bay Restoration Fee…" Are not all Maryland users in the Chesapeake Bay watershed required to pay the BRF?	
Upper Western	MDE	Significant WWTPs' nutrient caps were established based on the planned	

Shore Team		capacity in the County's Water and Sewer Plan as of April 30, 2003 (page 14, Point Source). You'll see in my other comments a concern that this will likely result in dramatic unintended consequences to growth management. There were some jurisdictions that were prepared to identify their long term expansion needs as of that arbitrary date; others surely dropped a large number in their plan that was as arbitrary as the date; still others, like Cecil County, had not completed long term study of needs and could not, in good faith, substantiate a targeted expansion need. Because Cecil County was unwilling to drop an arbitrary future demand into its plan, our ability to meet the sewer demand of our designated growth area will fall short by as much as seven times (we are now completing a detailed study of our long term growth demands, so we are able to responsibly speculate on these numbers as of this writing), we may fail to encourage development to that area, our more rural areas will continue to see enormous development pressure, the development that does settle in our designated growth area will do so using septic systems, and septic systems will proliferate in general, including areas that would better meet the goals of the Tributary Strategy by being sewered. The draft SIP needed to establish a baseline or goal or starting point for point sources, but the absolute manner in which it establishes these caps will devastate Cecil County's ability to manage the growth that <u>will</u> happen here, resulting in proliferation of septic systems (best expectation is a discharge of 15 mg/l TN) rather than WWTPs (3-4 mg/l TN, page 81). The offsets and nutrient trading discussions (page 80) are too anemic at this point to effectively avoid this outcome; there needs to be much more flexibility to allow expansion of these WWTPs where it meets the goals of the Tributary Strategy and jurisdictions that have shown large expansion plans must be made to substantiate those future demands or transfer them to jurisdictions that can.	
Upper Western Shore Team	MDE	Is the Remaining Funding Gap in the Point Source Implementation Schedule (page 17), genuinely an expected funding gap? Will the BRF not continue to collect fees after 2010?	
Upper Western Shore Team	MDE	Why are schedules for federal facilities not available (NSWC Indian Head, Naval Academy, Beltsville USDA East, etc.); EPA is a signatory to the Bay Agreement – does it stand alone among federal agencies in support of the health of the Chesapeake Bay and are federal facilities exempt from the Clean Water Act?	
Upper Western Shore Team	MDE	Why is Rock Hall WWTP (page 21) projected as "future?" Will it be upgraded? Same question for McKinney (page 22).	

Upper Western Shore Team	MDE	Many of the WWTPs (Point Source) have large targeted design capacities. It would be helpful to add a column showing the latest 2-year rolling average flow from each facility (to see the relative planned growth in the design numbers). It would also be constructive to evaluate whether the design flows can be achieved without violating water quality standards in the receiving streams, irrespective of adopted TMDLs or the draft SIP.	
Upper Western Shore Team	MDE	It would be similarly of use to evaluate the 820 mgd total design capacity in the point source implementation schedule against available projections for statewide growth. Assuming 250 gpd per equivalent living unit (recognizing that some portion of flow is industrial and commercial) and 2.6 persons per household, this 820 mgd might suggest a sewered population of 8.5 million; how does that compare to statewide projections for urbanized areas, if they exist? If the projections fall short of that served population, the draft SIP will have allowed some jurisdictions to tie up loadings that will not be used and the result, in counties like Cecil, will be a needless proliferation of septic systems that will be counter to the stated goals of the Tributary Strategy.	
Upper Western Shore Team	MDE	The first Point Source barrier to implementation noted is that continued growth will lead to increased loads on wastewater treatment plants (page 25). The stated solution is to encourage water reuse (a very difficult thing to do in most instances) and use of trading or offsets. If the offsets are not aggressive (for example, if MDE maintains their opening proposal of two to one for conversion of septic systems to sewers), local governments cannot justify the expense of reaching to those areas; this will have implications beyond the Tributary Strategy, including public health issues without feasible solutions. Along the same lines as some of the discussion in the Agriculture strategy, if the offsets are too conservative, they will not be used, and the default here will be a proliferation of septic systems and a serious failure within the Tributary Strategy.	
Upper Western Shore Team	MDE	The second Point Source barrier to implementation noted is the District of Columbia's unwillingness to include upgrade of Blue Plains WWTP in their strategy (page 25). Is DC not a signatory to the Bay Agreement? Do other WWTPs have the ability to "opt out" as well? The importance of this cannot be overstated. Blue Plains' reduction in Maryland's plan (page 19) from some 3.4 million #/yr to some 2.1 million #/yr represents over 1.3 million pounds TN (just Maryland's portion) and 17% of the entire point source goal. Without Blue Plains' "cooperation" nearly all of the other significant WWTP's reduction contributions will seem pointless. In the Point Source	

		stakeholder roles (page 28), EPA is responsible for Blue Plains' NDPES permit; as a signatory to the Bay Agreement, is EPA serious or not; if they will not exercise their direct authority on Blue Plains, how can they impose a Bay-wide TMDL on Maryland? The draft SIP will lack serious credibility without addressing this inconsistency.	
Upper Western Shore Team	MDE	One of the Point Source stakeholder roles (page 27) is water conservation to reduce the amount of wastewater requiring treatment. Indeed, this is a worthy goal, but how will this necessarily reduce nutrient discharges? Water conservation will result in a concentration of the nutrients and the loading will remain essentially the same. While surely not intended to be so, this type of strategy could mislead many as to the actual effectiveness.	
Upper Western Shore Team	MDE	Another Point Source stakeholder role (page 27) is MDE's administration of the BRF relative to significant WWTP's. Why are the upgrades not prioritized in terms of the largest dischargers first to get the earliest reductions possible? Alternatively, as incentive, why not modify the BRF to provide 100% funding if completed by 2010, but only 50% thereafter?	
Upper Western Shore Team	MDE	p. 14-18 – No where in this section is any mention made of increased monitoring of facilities and improved enforcement of standards. Why not? Neither is any mention made of reducing the frequency and severity of leakage and spills from sewer lines. Why not?	
Upper Western Shore Team	MDE	p. 16 first paragraph – Are trades or other nutrient load offsets temporary until growth or technical limitations can be solved, or will they be permanent? Why should they be permitted in place of new construction or upgrade of existing facilities on a permanent basis?	
Middle Potomac Team	MDE	**Point Sources –** This is the one area of the IP where responsibility and accountability clearly spelled out. The advent of the ENR policy coupled with permit limits and fun via the Restoration Fund clearly identify the responsibility of the implementing agenc the owners of the 66 "significant" WWTPs in Maryland. Restoration Fund grant cond and permitting through the regulatory process provide the means for ensuring accountability. The ENR Implementation Schedule tables beginning on p. 16 are informative and helpful. ***Recommendation from Park and Planning Commission representative (PPC):*** 1. Setting different standards for "significant" vs. "non-significant" WWTPs is an important first step in identifying and prioritizing nutrient reduction efforts for maximum cost-benefits. However, if as implementation proceeds, it turns out that the Bay Goals cannot be reached with the point source strategy primarily focused upon	

		significant WWTPs, as now proposed, it is recommended that a) there be more rigorous standards for what are now considered "non-significant" point sources and b) the Implementation Plan contain flexibility to permit a) above as more is learned. 2. This Plan should state how it will be made to work in coordination with the regulatory approach embodied in the TMDL memoranda of understanding, which contain a 2010 deadline. PPC Rep and Building Industries Association Recommendation: The State should examine how the point source strategy, including sewer extensions, works or does not work with i)Smart Growth initiatives and policies to utilize infill development where infrastructure is in place and ii) with stream valley environmental protection. Is the point source strategy really a good idea when the wastewater treatment plants are already not meeting their nutrient goals? ***Recommendation: Maryland provide the Tributary Teams with an annual progress update reflecting progress toward construction and comparison of load discharged the load cap for each of the WWTPs on the list.***	
Chesapeake Bay Foundation	MDE	Within the Point Source Strategy, why are the Rock Hall STP in Kent County, and McKinney STP in Frederick County listed with projected completion dates as "Future" and the Hampstead STP in Carroll County listed with a projected completion of "After 2010"?	
Lower Potomac Team	MDE	Effluent which is discharged into headwater streams where the water flow is usually low and natural flushing is poor, should be treated to a more strict standard.	
Choptank Team	MDE	The plan calls to bring all 66 major Waste Water Treatment Plants (WWTP) to ENR. But when considering the expanded flows due to growth, the ENR reduction will be no more than a 40 % reduction to the 1985 numbers. The Flow increases imply additional growth, and up to this point, WWTP's have been some constraint to development throughout the state. THEREFORE, the CAPS should be set LOWER than the plan calls for.	
Choptank Team	MDE	The permitted flows for point sources seem very liberal and unjustified given the ambitious N reduction goals. In the Choptank, the permitted flows will allow a near doubling of the number of homes hooked to WWTP's. Unless a major percentage of the permitted flow is used to hook up houses that currently are on septic systems, this permitted flow seems unwarranted. If	

		currently unused capacity is filled with new construction, the long term result will be that ENR technology and large sums of public funding will be used to obtain a point source N reduction that is only about 10 % of the 1985 loads. ENR technology could be used to obtain major reductions in point source N loads rather than to allow unchecked expansion for the next decade at least. High permitted flows will encourage urbanization, and increases in impervious areas, which are known to have negative impacts on local aquatic environments and water quality.	
Choptank Team	MDE	Flexibility to use the Flush Fee money for upgrades to some of the minor plants should be considered in the rural areas. (as flow capacity goes up, more houses will be built.)	
Choptank Team	MDE	The plan must address the minor plants in a more complete way.	
Choptank Team	MDE	The plan must spell out steps for watching what's happening (with growth and increases in flow allocations) in the minor plants.	
Environmental Planning, Harford Co.	MDE	p. 15 – Does the comment that "Achieving these reductions will account for more than one-third of Maryland's commitment…" including Blue Plains? A listed "barrier" on page 25 states that the upgrade to the District of Columbia Strategy does not include an upgrade to Blue Plains. This should be a stated number one priority in the State.	
Environmental Planning, Harford Co.	MDE	p. 23 – The City of Aberdeen has taken over the operation of the WWTP for APG – Aberdeen through the privatization of facilities by the Army. This should be reflected in the schedule.	
Environmental Planning, Harford Co.	MDE	p. 26 – It is very important to develop an offset strategy to address growth and cap maintenance and address water conservation.	
Charles Co. Dept. of Utilities		The first part of the Point Source Strategy plan, upgrading treatment plants, has been in place for a few years and upgrades are already underway. This part of the Implementation Plan is the most fully developed at this point. The goals for the treatment plants call for nutrient reductions that will be achieved through the ENR upgrades. Two Charles County facilities are listed on an ENR Implementation Schedule contained in the Plan. The facilities, with one exception, are on target to complete the upgrades necessary to achieve the goals of the ENR Strategy. The information in the implementation plan (page 18) on the Swan Point WWTP is not accurate because it lists the facility as a "significant" plant and lists the projected completion date as 2011. Specifically, Phase 1of the Swan Point project (300,000 g.p.d.) will be complete, but at this phase this facility is in a "non-significant" flow status; it isn't until Phase 2 of this project (600,000 g.p.d.) that the facility will reach the "significant" status. Because the facility is being upgraded with private funding	

		and is contingent on development projects on uncertain timetables, the completion date cannot be set at this time and listing the projected construction completion year as 2011 is too speculative.	
Charles Co. Dept. of Utilities		The second part of the Point Source Strategy Plan, establishing a plan to maintain a nutrient loading cap, is still being considered by the State. In April, MDE distributed a preliminary draft of a nutrient cap strategy. While the draft plan is intended to "maintain" the nutrient cap, it will impose potentially severe limitations on growth. Under the draft plan and following the Tributary Strategies, new or expanding facilities are allotted a "zero" allocation. New or expanding facilities have to make costly arrangements and deals to obtain an allocation to build or expand a facility. The legal basis for this is uncertain and areas like Charles County that are experiencing growth will be forced to make costly investments to fund growth. This approach, which is based on the Tributary Strategies, is not equitable and should be changed. Also under the draft proposal, a discharger would not get the full benefit of its upgrade and does not get the full allocation. Rather, 25% is "returned to the environment." Utilities believes that the entity paying for and performing the upgrade should get the full benefit of the upgrade because it owns the allocation. In addition, retiring some allocation would mean there is less allocation available for future growth than is currently available and this is contrary to the goal of making more allocation available for growth. Additionally, trading should be available to achieve the Chesapeake Bay nutrient cap as well as maintain the cap. The trading program should not require discharge permits to be modified in order to conduct trades. Eligibility to participate in the trading program should not be based on concentration averages. Trading with nonpoint sources should be encouraged and widely available.	
Charles Co. Dept. of Utilities		**Other "point source" discharge comments/concerns are as such:** $ The septic conversion rate does not reflect the high costs of some conversions and the assumptions used are not appropriate in all cases. $ Oyster banking should be promoted and utilized because if its great potential to achieve cost-effective nutrient reductions. MDE has recognized the potential of oyster banking in the past to achieve significant nutrient reductions. The Chesapeake Bay Program has also recognized the potential for commercial oyster production to achieve reductions and the application of oyster reductions for trading programs and offset programs. • In regard to County wide growth potential, it is our desire that MDE, on case by case basis, give favorable consideration toward the reuse of wastewater effluent for irrigation purposes in lieu of surface water discharge, which will force additional costly plant expansions and upgrades.	

Urban Sources

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Patapsco/ Back Creek Team	DNR	p.29 - I could not find the assumptions that were used in Table on Urban Implementation Schedule. No documentation has been provided to account for the 5 year projections and shortfalls. What are the nutrient load reductions associated with this table?	
Chesapeake Bay Foundation	DNR	Tree Planting on Urban Land is certainly a challenge, highlighted by the fact that tracked progress through 2004 for this element of the Trib Strategy is zero. At future implementation rates of 12 – 24 acres a year, it will take Maryland between 416 and 833 years to meet this goal. If the State places a priority on the temperature moderation and community benefits associated with urban trees, the State must do more than direct DNR to leverage private funds or work in five communities. While DNR technical assistance and leveraging of private funds are both vital, the State must be more creative – and encourage local governments to be more creative as well - to adequately address seemingly impossible goals within the Urban section of the Trib Strategies.	

Stormwater Strategy Comments

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Middle PotomacTeam	MDE	**Stormwater –** Except for those requirements, required by law and regulation, responsibility and accountability are not clearly spelled out in the Stormwater area of the IP. The table on p. 31 lists 10 different practices, the overall goals for the strategy and implementation goals for 1-2 years and 3-5 years. At least one county member of the MPTT has told me that their lack of Tributary Team participation is directly tied to the fact that there have not been county-specific goals and the county follows the requirements of their MS4 (urban stormwater) permit.	

		Recommendation: Maryland work with each county (and select municipalities as appropriate) to develop jurisdiction-specific goals for each of the ten practices listed in the p. 31 table. Where it makes sense, some of these goals should be incorporated in the jurisdiction's MS4 permit. ***Recommendation: Maryland provide the Tributary Teams with an annual progress report reflecting progress toward reaching the goals for each of the ten practices for each jurisdiction. Progress should be expressed both in terms of management actions and loads.***	
Lower Eastern Shore Tributary Team	DNR	p.31 – in the table, wetland restoration is included. Explain why this is not part of the original Tributary Strategy, and why it's included here.	
Lower Eastern Shore Tributary Team	DNR	p.33 – Mention that the "Small Creeks and Estuaries Restoration Program" is an MDE program.	
Lower Eastern Shore Tributary Team	DNR/ MDE	p.37 – perhaps include a text box or separate page describing the different types of stormwater management methods.	
Department of Defense	MDE	p.32 – We support Maryland's proposal to retain authority for implementing the State's erosion and sediment control program and stormwater management plans for federal construction projects vice delegation to local jurisdictions.	
Patapsco/ Back Creek Team	DNR	Under the Stormwater Strategy there is no strategy for meeting the 2 and 5 year Forest Buffer and stream restoration.	
Patapsco/ Back Creek Team	DNR	p. 30 - What is the projected acreage of the newly developed and redeveloped lands referenced in the first paragraph? What is the previous land cover assumed from these lands? Where did these figures originate?	
Patapsco/ Back Creek Team	MDE	p.30 - In the second bulleted item, how many retrofits are expected as referenced?	
Patapsco/ Back Creek Team	MDE/ DNR	p.30 - In the third bullet, how many acres are covered?	
Patapsco/ Back Creek Team	DNR	p. 31 - In the table on implementation schedule: - How were the 1-2 yr and 3-5 yr. estimates determined? - How were the Strategy goals determined?	

Patapsco/ Back Creek Team	DNR	p.31 - What are the nutrient load reductions associated with this table?	
Patapsco/ Back Creek Team	MDE	p.32 - The City of Baltimore's permit requires retrofitting 20% of its impervious area not 30%. The MS4 permits do not stipulate a degree of treatment. What assumptions are used in the strategy?	
Patapsco/ Back Creek Team	MDE	p.34 - One of the key barriers to implementation; lack of funding, is not listed. Likewise an implementation to this barrier should include increase in state cost share funds, local utilities etc	
Patapsco/ Back Creek Team	DNR	p. 35 - How do the DNR initiatives translate to measurable goals/nutrient reductions? Does MDE or MD. Dept of Agr. (or other agencies committed to any initiatives in the 2 year strategy?	
Patapsco/ Back Creek Team	DNR	p. 36-37 - How do these actions translate to meeting the strategy?	
Upper Western Shore Team	DNR	The Stormwater Implementation Schedule (page 31) notes a host of items that aren't discussed, as are erosion and sediment, SWM, etc. (e.g., nutrient management, tree planting, forest buffers); such discussions would be helpful in understanding these parts of the strategy.	
Upper Western Shore Team	MDE	The Small Creeks and Estuaries Restoration Program (page 33) should be reflected in nutrient credits for significant WWTPs to encourage their administration of such projects.	
Upper Western Shore Team	MDE	Similarly, nutrient offsets should be developed by MDE for local agency's upgrade and retrofit of stormwater management facilities (Urban solutions to barriers, page 34).	
Upper Western Shore Team	MDE	Some have commented that the statement that the soil erosion and sediment control "…program developed in 1970 is essentially the same that exists today…" is indicative that the program is outdated. It would be helpful to counter that belief by pointing out that the program incorporates highly researched and long-proven BMPs and that, properly administered and enforced, the program can be highly effective. The legitimate shortcoming of the program is a lack of sufficient inspection resources at the state level and more robust and effective enforcement measures.	
Upper Western Shore Team	MDE	A barrier to implementation (Urban, page 34) is that "additional research is needed to quantitatively assess other useful stormwater BMPs and pollution	

		prevention measures (street sweeping, storm drain cleaning, stream restoration, etc.)…" There is considerable completed work on this topic.[1] Indeed, it is in need of some update (for example, development of superior street sweeping equipment may have increased the effectiveness of this BMP), but some BMPs have been previously shown to considerably reduce nutrients (e.g., pet litter enforcement). The SIP should include a call for urban jurisdictions to adopt and enforce those BMPs that have been proven and target further analysis for the development of future urban BMPs.	
Upper Western Shore Team	MDE	Among the Urban stakeholder roles (page 36), should consideration be given to the consolidation of the soil erosion and sediment control program and the stormwater management program. If such a consolidation removed redundancies, reduced applicant costs, removed conflicts between the programs, and increased enforcement resources, isn't it likely that greater nutrient reduction would occur?	
Upper Western Shore Team	MDE	Under Urban stakeholder roles for state government (page 36) is a call to, "issue NPDES discharge permits to certain municipalities…" It would be helpful to indicate that this would target only those municipalities where we can expect a meaningful reduction in so doing. Too often, as part of political expediency, regulations are applied with an unnecessarily broad brush, resulting in the commitment of resources without commensurate gains.	
Upper Western Shore Team	MDE	Under Urban stakeholder roles for local governments (page 37) is a call for locals to establish stormwater utilities. Is this meant to encourage local governments to take ownership of private facilities? If so, local governments are not likely to follow this lead without an incentive, such as an offset credit for retrofit or upgrade of older facilities.	
Upper Western Shore Team	MDE	Under Urban stakeholder roles for soil conservation districts (page 37), language should be added to call for additional inspection personnel and more robust and effective enforcement tools relative to soil erosion and sediment control plans.	
Upper Western Shore Team	MDP	Planning requirements based on the cumulative effect of development/impervious surfaces on watersheds	

[1] e.g., (1) "WPCF Research Foundation Report 90-5, Nonpoint Source Impact Assessment," CH2M Hill, 1990; (2) Washington Metropolitan Water Resources Planning Board, "Controlling Urban Runoff, a Practical Manual for Planning and Designing Urban BMPs," Thomas R. Schueler, July 1987; (3) Metropolitan Washington Council of Governments, "A Current Assessment of Urban Best Management Practices: Techniques for Reducing Nonpoint Source Pollution in the Coastal Zone," Anacostia Restoration Team, March 1992; (4) USEPA, "Handbook: Urban Runoff Pollution Prevention and Control Planning," EPA/625/R-93/004, September 1993.

Upper Western Shore Team	MDE	Developing incentives for volunteer installation of bioretention facilities i.e. tax credits, offset credits	
Upper Western Shore Team	MDE	Expand MS4 standards to less populated, but high growth counties	
Upper Western Shore Team	MDE	p. 30 first paragraph – Maryland's existing storm water management requirements are inadequate and do not reflect current BMPs. For example, current regulations allow sheet water runoff down slope from impervious surfaces and lawns. This runoff coalesces into rivulets and streams that erode soil even through buffer zones.	
Upper Western Shore Team	MDE	p. 31 first paragraph, p. 32 items 2 & 3 – Implementation of new BMPs and enforcement of all BMPs are essential and should be emphasized. The need for the continued inclusion of new or revised BMPs into existing regulations should be an ongoing process.	
Upper Western Shore Team	MDE	p. 33 last paragraph – The provisions for delegation of enforcement authority should include some sort of monitoring process to see that enforcement is actually occurring. Currently developers are gaming the system as is obvious in Harford County's enforcement records and as has been noted in the Sun newspaper statewide.	
Upper Western Shore Team	MDE	p. 34 Barriers to implementation – Add "Inadequate delegated enforcement of erosion and sediment control regulations." Solutions to overcome Barriers – add "At least monitor delegated enforcement." Add "Continuously update storm water design manual."	
Upper Western Shore Team	MDE	p. 35 State initiatives to address....gaps – add "Continuously improve regulations and at least monitor enforcement."	
Upper Western Shore Team	MDE	p. 36 First bullet – add "Improve." Fourth bullet – add "Provide incentives, initiate monitoring." Seventh bullet – add - Provide "and improve."	
Upper Western Shore Team	MDE	p. 37 Last bullet– add "Provide recommendations to improve BMPs for planning and zoning, public works, environmental programs." as well as for landowners.	
Upper Western Shore Team	MDE	The Stormwater Strategy relies heavily on the 2000 SWM Manual. As we are seeing from recent flood events, this is necessary but not sufficient. The State Initiatives should include an assessment and update of the current standards	
Upper Western Shore Team	MDE	Do we really believe that the 1970 Erosion and Sediment Control practices and the 1994 Standards and Specifications (p. 33) are sufficient in today's environment? If they are, then effective enforcement is lacking. This section needs a rethink and a rewrite!	

MD State Builders Association	MDE	The Stormwater strategy goal of retrofitting untreated developed land must be balanced with the desire to direct growth to existing areas. Infill development and redevelopment are often more expensive than "greenfield" development due to the costs of upgrading existing infrastructure. The potential benefits of low impact development principals, green building and other conservation techniques to local governments could be articulated in more detail.	
MD State Builders Association	MDE	The Tributary Strategy Implementation plan must acknowledge the accomplishments that have occurred through the regulation of stormwater, sediment erosion control and wastewater treatment plant upgrades. The costs of many of the non-point strategies are significant and a prioritization of limited resources should be clearly articulated in implementation. More emphasis on better planning and a focus on appropriate density within priority funding areas should be a focus of the Growth Management Strategy. **(Also found in Growth Management Strategy)**	
Patuxent River Commission	MDE/ DNR	It was recommended that the State come up with some sort of comprehensive guidance document that outlines what they will accept with regard to Low Impact Development or Ecologically Sustainable Development because the State Stormwater manual is not comprehensive enough. There are provisions in the State Stormwater Manual that are not as pro-Bay as they should be, such as not requiring retrofits for redevelopment if 20% of a site is left as green space. Also, the State should work with local governments to assess the effectiveness of CREP, and other programs for the establishment of forest and grass buffers and the retention or enhancement of forest cover on agricultural lands, and to assess possible new programs, incentives, and implementation mechanisms. Key to success is the availability of required resources and improved protection of our natural resources from the impact of growing populations. In regard to this plan, we currently have many regulations and laws to protect our citizens and our natural resources, but unless adequate funding is provided for manpower and training to enforce these regulations, we are fighting a war on paper only and the restoration of the Chesapeake Bay and it's tributaries cannot move forward as expected. More than one commissioner was concerned with the funding that it will take to utilize this plan for each jurisdiction and to assure that its recommendations are followed through.	

Patuxent River Commission	MDE	The passing over of sedimentation issues and strategies is a weakness in this plan. Is there a way in which sediment and erosion control measures can be focused on sooner?	
Lower Western Shore	MDE	It is good to see to the issues of Environmentally Sensitive Design (ESD) and Low Impact Development (LID) identified in the stormwater management implementation barriers on page 34. In addition to the barriers noted, another barrier to use of such techniques is that many developers are unfamiliar with these techniques. A potential solution to this problem is for the Maryland Department of Planning to convene educational workshops and forums on these topics. It important for developers to learn not only the engineering parameters of these methods, but also for them to learn about potential cost savings associated with these methods. The latter point is likely to be quite salient. To the implementation barriers presently listed, I would add the more general problem that best management practices (BMPs) are generally not used to the maximum extent practicable (MEP) as required by the Clean Water Act. A key barrier to compliance with this provision is the general vagueness of the term. Defining the term for developers and localities could greatly increase the use of infiltration and bioretention; techniques critical to protecting our waterways from pollutants. The California State Water Resources Control Board states, “Maximum extent practicable (MEP) requires a serious attempt to apply best management practices (BMPs), and practical solutions may not be lightly rejected. MEP requires the use of effective BMPs, and that applicable BMPs be rejected only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive." Promulgation of this or a similar definition could greatly increase the use of LID, etc. Strengthening this section’s discussion of financing stormwater management would also be useful (p. 37). The phrase, “Establish stormwater utilities” is quite compelling. However the present parenthetical note states that few local governments have implemented such utilities. This is unlikely to inspire the reader towards such an undertaking. Making this note more positive would be useful. For example, replace the clause that begins, “however, few . . .” with language such as “the University of Maryland’s Environmental Finance Center can provide much advice and	

		guidance towards the development of such programs." This information seems especially pertinent as the issue of stormwater finance is one of the primary foci of the Center, and the University of Maryland is identified as a potential partner throughout the plan.	
Lower Western Shore	MDE	Regarding erosion and sediment control, the plan details much restorative action (e.g., stream channel reconstruction, stream bank stabilization, etc. p. 34). Action items that provide protection to sensitive areas would be a valuable addition. State and local code address land use in the critical area. Often overlooked, however are sensitive areas such as stream banks and headwaters. An effort on the part of MDE to develop regulations that preserve woody vegetation within 300 feet of streams and headwaters would provide tremendous watershed benefit.	
Lower Western Shore Team	MDE	The language describing funding and financing for stormwater Management is good, but needs some strengthening. For example, on p. 30 the document says, "Up to 40% of untreated developed land (e.g., developed pre-1985) will be retrofitted . . . as funding is available." It would be stronger to say something like: "will be retrofitted depending on state, federal and local funds, including stormwater utilities." [otherwise "as funding is available" gives one the feeling that this could perhaps be "never."]	
Lower Western Shore Team	MDE	It is commendable that the plan says "Establish stormwater utilities" (p. 37), but it then goes on to say that few have done this. I think a phrase that signals the importance of this financial tool would be in order, for example: "Establish stormwater utilities, key components of a viable funding portfolio." This would communicate (1)that it's important and (2) that it will take several sources of funds (including those raised by local stormwater utilities) to meet the demand for managing stormwater in an increasingly developed landscape. (Then we could still key the language about local authority and that few have yet instituted this...)	
Lower Western Shore Team	MDE	I'd recommend a stronger endorsement for Stormwater utilities. The Stormwater Strategy beginning on page 30 does a good job defining the problem, and then showing how local governments need to implement the State's Stormwater management plan, yet fails to address the lack of funds available for this goal. The language on page 37 recommending that local governments establish Stormwater utilities should be describe the importance of Stormwater utilities, and make a stronger	

		endorsement for this approach to provide funding.	
Middle Potomac Team	MDE	**Stormwater –** Except for the requirements imposed by law and regulation, responsib and accountability are not clearly spelled out in the Stormwater area of the IP. The t on p. 31 lists 10 different practices, overall goals for the strategy and implementatior for 1-2 years and 3-5 year periods. At least one county government member of the M has told our Team that it's lack of Tributary Team participation is directly tied to the that there are no county-specific goals and the county follows the requirements of the MS4 (urban stormwater) permit. The Urban Sources part of the Plan leans heavily on the State Stormwater Management Manual, especially in terms of implementing the Plan's vision for the use of innovative SWM BMPs and ESD. However, an MDE staff member who was involved in the development of the State Stormwater Manual stated at a recent interagency meeting that although the Manual was intended to open the door to the use of innovative SWM and ESD, it was not intended to provide sufficient incentives for its use, or adequate technical guidance for ESD design and implementation. An examination of the Manual bears this out. Moreover, there are provisions in the Manual that are not as pro-Bay as they should be, such as not requiring retrofits for redevelopment if 20% of a site is left as green space. Consequently, the State SWM Manual is not adequate for meeting the stormwater strategy needs of the Implementation Plan. Rather, the State needs to lead the way in encouraging the use of ESD and providing ESD design guidance, if meaningful progress is to be made on the Urban Sources part of the Implementation Plan: ***PPC Recommendation:*** MDE should revisit the State Stormwater Design Ma to consider changes and additions to increase its effectiveness: a. to implement the Urban Sources portion of the Tributary Strategies. b. MDE should work with local governments to help identify effective incentives for using ESD. c. MDE should provide or identify existing ESD manuals and other technical guidance that is acceptable to the State for designing and implementing ESD at all scales	

		from individual retrofits to redevelopment/infill sites to large subdivision developments. The guidance should address the advantages and the limitations of each technique, as well as identify the conditions and situations needed for the success of each BMP. d. MDE should work with local governments to develop reasonable goals for retrofitting untreated developed land, and specific practical and cost-effective strategies for different urban and suburban situations and contexts. ***Recommendation: Maryland work with each county (and selected municipalities a appropriate) to develop jurisdiction-specific goals for each of the ten practices liste the p. 31 table. Where it makes sense, some of these goals should be incorporated jurisdiction's MS4 permit.*** ***Recommendation: Maryland provides the Tributary Teams with an annual progre report reflecting progress toward reaching the goals for each of the ten practices f each jurisdiction. Progress should be expressed both in terms of management acti and loads.***	
Chesapeake Bay Foundation	MDA	Nutrient management on urban and mixed-open lands was included in the Trib Strategies, seemingly without a clear indication of what this "practice" would entail. How likely is it that roughly 26,000 acres each year will be "completed" within each of the next 5 years when no metric exists and developing such a metric for tracking does not appear within the 2 or 5-year, or long-term "action plans"? Perhaps it would be of greater value to require nutrient reductions associated with stromwater management, development or redevelopment, and/or require nutrient management planning, soil testing or similar undertakings of homeowners and others in the urban/suburban sector.	
Chesapeake Bay Foundation	MDE	The Stormwater Strategy should more strongly emphasize stormwater pollution prevention at the earliest stages of land development and redevelopment. The Implementation Plan should call for changes to the *2000 Maryland Stormwater Design Manual* to require that the innovative site planning (detailed in Chapter 5 of the Manual) be required in all cases in order to meet the Manual's General Performance Standards. The Implementation Plan should also require that innovative/low impact site design and planning are included in all aspects of local stormwater	

		management programs and NPDES stormwater permits. These planning and design requirements should be attached to every development or redevelopment project in Maryland in order to meet water quality standards. The goal of retrofitting 40% of untreated land is commendable, but needs much more focus in the Implementation Plan. Many degraded waterways are in older, built out areas. The State should prioritize waterways listed as "Impaired" for nutrients. Where Total Maximum Daily Loads (TMDLs) exist, Waste Load Allocations and specific goals of the TMDL implementation plan should be set forth in the Stormwater NPDES/MS4 permit. In addition, all MS4 permits should be revised to explicitly detail how water quality standards for the receiving waterways will be attained and maintained. No current MS4 permits contain any explicit reference to water quality standards.	
Chesapeake Bay Foundation	MDE	The graphic on Page 29 suggests that the Erosion & Sediment Control element of the Tributary Strategy has been met 100%. Yet the photograph on the very next page seems to suggest that erosion and sediment control remains a significant problem. How has 100% implementation of Maryland's sediment and erosion control regulations reduced sediment run-off into Maryland waterways? What data is available that would support the use of this metric for sediment and erosion control? How do violations of sediment and erosion control plans/regulations factor into this assessment of 100%? CBF investigation indicates that failure to comply with state and county erosion and sediment control laws is still a significant problem.	
Lower Potomac Team	MDA	Nutrient Management on urban lands implies households will learn not to use lawn fertilizer. This must be strengthened, and the educational component spelled out.	
Lower Potomac Team	MDA	Continue the fertilizer discussion on urban lands. Require nutrient testing for all residential properties and commercial areas treated by commercial landscape companies.	
Lower Potomac Team	MDE	Sediment is as great a threat to water quality as urban run off and chemical pollutants. How is sediment and erosion control regulated, how is this enforced, where will it happen, will sediment and erosion plans be required? Will they be tied to growth?	
Lower Potomac Team	MDE	MDE's Stormwater Design Manual should require a peer review of the efficacy of the existing stormwater management design Manual on a regular (bi-annual) basis to ensure the inclusion of the latest state-of-the-art technologies and techniques, especially as it applies to N and P removal. In	

		the plan: • Emphasize Environmental Design. • What about Maintenance of SWM ponds? • What follow up is there on MDE's discharges from SWM ponds… is there inspection and pond maintenance? • Is there improved monitoring and efficiency monitoring? Is there staff to do inspections and monitoring? • Can the state require developers to put up an escrow amount for SWM inspectors to do monitoring during and after construction • Is there anyone to make sure that permitting pieces are in order? (it seems that oversight and the manpower to inspect and enforce are the weak link) • Where are the low impact BMP's? what about rain gardens for homeowners, and bioretention cells for parking lots? We must encourage the use of these, especially since they are 'in the manual'. • The plan must come up with guidelines for the development of codes that require low impact BMP's as a first consideration, or to have imposed limits to impervious surface. Forced trade offs and dis-incentives for not using these BMP's would be another way to add strength. • If there are reduction values for some of these more innovative BMP's, credits could be initiated for using them, if the values could be calculated.	
Lower Potomac Team	DNR	Consider Shore Erosion control in the plan. It makes no common sense to have surface water run off with sediment considerations and not recognize shore erosion as a problem.	
Choptank Team	MDA	Nutrient Management on urban lands implies households will learn not to use lawn fertilizer. This must be strengthened, and the educational component spelled out.	
Choptank Team	MDA	Consider a moratorium or a permanent ban on residential and Golf Course fertilizer application. Expand the Urban Nutrient Management plan requirements.	
Choptank Team	DNR	Tree plantings are mentioned, but no identification of the numbers of trees per acre. The goal is 5000 acres on mixed open lands, 10, 000 on urban lands, 1400 on buffers, but no measurement, no number of trees per acre.	

Choptank Team	MDA	Continue the fertilizer discussion on urban lands, with Scotts, and other major suppliers. Require nutrient testing for all residential properties and commercial areas treated by commercial landscape companies.	
Choptank Team	MDE	Sediment and erosion control, calls for about 61,000 acres per year. How is this required, how is this enforced, where will it happen, will sediment and erosion plans be required? Will they be tied to growth?	
Choptank Team	MDE	We've been told that if we follow MDE's Stormwater Design Manual, we'll ultimately end up with 'meadow conditions'. The plan should require a peer review of the efficacy of the existing stormwater management design Manual on a regular (bi-annual) basis to ensure the inclusion of the latest state-of-the-art technologies and techniques, especially as it applies to N and P removal. In the plan: • Emphasize Environmental Design. • What about Maintenance of SWM ponds? • What follow up is there on MDE's PMB's the discharges from SWM ponds… is there inspection and pond maintenance? • Is there improved monitoring and efficiency monitoring? Is there staff to do inspections and monitoring? • Can the state require developers to put up an escrow amount for SWM inspectors to do monitoring during and after construction • Is there anyone to make sure that permitting pieces are in order? (it seems that oversight and the manpower to inspect and enforce are the weak link) • Where are the low impact BMP's? what about rain gardens for homeowners, and bioretention cells for parking lots? We must encourage the use of these, especially since they are 'in the manual'. • The plan must come up with guidelines for the development of codes that require low impact BMP's as a first consideration, or to have imposed limits to impervious surface. Forced trade offs and dis-incentives for not using these BMP's would be another way to add strength. • If there are reduction values for some of these more innovative BMP's, credits could be initiated for using them, if the values could be calculated.	

Environmental Planning, Harford Co.	DNR	p. 31 – Do not put "0" in the table. It makes it appear that nothing has been done. Put an asterisk and a note as to why the data is not available.	
Environmental Planning, Harford Co.	MDE/ DNR	p. 36 – Under State Government, MDE and DNR need adequate staffing in order to administer the programs, providing technical support to local governments, and address enforcement, The same comment applies to the Soil Conservation District on p. 37; however, this is addressed later in the document on p. 62 for the SCDs.	
Middle Potomac Tributary Team	MDE/ DNR	As water quality issues increase in importance in local planning, and as local governments move to implement the Tributary Strategies and deal with TMDLs, local governments need 303d List information in a usable form more than ever. There has been an ongoing problem with the usability of the State's 303d list. It is a document that is not very user-friendly. It is difficult for local governments to extract from the printed report the location and extent of the impairments within their jurisdiction. MDE should provide local jurisdictions with 303d information in a GIS format, along with the specific geographic basin areas or stream segments (at whatever mapping scale is being used) that are formally listed, and all metadata to go with it.	
Charles Co, Dept. of Utilities		**Impact of the Implementation Plan on Charles County's Stormwater Programs** Much more difficult and costly issues exist with the Tributary Strategies' and the Implementation Plan regarding stormwater programs. See "Stormwater Strategy," p. 30. To date, most localities have not established stormwater programs designed to obtain the level of reductions called for in the Tributary Strategies and little has been done in terms of planning for the costly management practices and retrofits that will be required to conform to federally and state mandated stormwater programs. MDE estimated that the total cost of implementing the Tributary Strategies would be $10 billion dollars and that 51% of that costs would be attributable to Urban Stormwater. These costs will largely be incurred by local governments with little federal or state help. The goal of retrofitting up to 40% of existing developed land with stormwater management measures will require local governments to devote substantial resources to their stormwater programs. Before these goals and measures are made part of the Implementation Plan, a careful study of the actual cost of the implementation goals on local	

		stormwater programs should be conducted. As you can see from these brief comments that it is vital that the County stay involved, as much as possible, to protect our interests during the implementation planning phase of this tributary strategy.	

Septic Strategy Comments

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Lower Eastern Shore Tributary Team	DNR	p.29 – not sure if it can be changed at this point, but septic tanks are not just an urban issue. It seems septic tanks are mostly a problem in developed areas within rural areas.	
Department of Defense	MDE	p. 41 – The Plan proposes that the federal government's role is to support the State's efforts to upgrade on-site sewage disposal systems. Please clarify what this means. Does it only mean that EPA should provide funding that Maryland could use as grants to upgrade septic systems in the Bay Watershed? Or does it also propose that all federal agencies, including DOD, funding upgrades of septic systems on their own properties?	
Patapsco/ Back Creek Team	MDE	p.38 - The first bullet is confusing and contradictory. How can 100 % of all new septics include enhanced denitification subject to funding/regulation? What does this mean?	
Patapsco/ Back Creek Team	MDE	p.38 - What does the second bullet mean?	
Patapsco/ Back Creek Team	DNR	p.38 - What are the nutrient load reductions associated with this table?	
Patapsco/ Back Creek Team	MDE	p.38 - How were the numbers determined to estimate progress through 2004 and the 5 year implementation schedule?	
Patapsco/ Back Creek Team	DNE	p. 38 - What is the nutrient load reduction associated with this table?	
Patapsco/ Back Creek Team	MDE	p.39 - The projected number of septics is 420,000 which is different than the 347,897 on page 38.	
Patapsco/ Back Creek Team	MDE	p. 39 - One of the barriers to implementation is the lack of hard numbers documenting loading rates from septics in crystalline rock areas. A solution would include the funding of studies to determine this.	

Patapsco/ Back Creek Team	MDE	p.39 - Funding should be listed as a barrier since the Restoration Fund can only implement 600 systems per year.	
Patapsco/ Back Creek Team	DNR	p. 40 - Have other state agencies committed to actions under the 2 year plan?	
Patapsco/ Back Creek Team	MDE	p. 41 - What is the initiative under the second bulleted item? Is it to implement 600 systems per year?	
Maryland Association of Realtors	MDE	REALTORS® sell communities as well as homes and understand the need to preserve the environment and the Bay. However, MAR is extremely concerned over a provision in the septic strategy under the 5-year action plan that recommends regulations or code requiring all septic systems to upgrade to enhanced denitrification technology, and imposing long-term maintenance plans. When legislation requiring a similar mandate was proposed in 2000, MAR estimated the cost to property owners would substantially exceed $1 billion. Those costs did not include mandatory maintenance contracts, as provided under the proposed plan, which would add further to the costs borne by private landowners. Moreover, septics contribute only 6-19% of the nitrogen loading depending on the watershed. Such extraordinary costs do not justify the possible results that could be achieved. ….it makes little sense to apply scarce resources, whether private or public, to actions that will not result in the significant reductions that alternative measures can achieve with the same money, such as greater management of measurable point sources.	
Upper Western Shore Team	MDE	Too much emphasis is possibly placed on the effectiveness of advanced septic systems (Septic strategy, beginning page 38). There are many systems that only nitrify, generating higher nitrates prior to entering the groundwater, exacerbating a groundwater problem. A distinction should be made between those systems that nitrify and those that both nitrify and denitrify. The ability to make meaningful progress towards the existing 420,000 septic systems (under the BRF, at 600 per year funded, this will take 700 years) simply does not exist. The BRF is insufficient incentive for anyone except those who have a conventionally-failing system (i.e., hydraulic failure of the disposal field; ironically, these systems, because of the interface with the atmosphere, are probably nitrifying to some degree and may not be the worst offending systems from a nutrient standpoint); for anyone else (an existing home or a new home), the prospect of (maybe) breaking even on the capital side and then incurring an increased operations and maintenance cost for a system they didn't want in the first place is not an incentive. How will septic	

		conversions address phosphorus reduction goals?	
Upper Western Shore Team	MDE	Conventional septage can be expected to have total Kjeldahl nitrogen 18 times that of domestic wastewater, 6 times the ammonia, and 31 times the total phosphorus.[2] As conventional septic systems proliferate, this heavy nutrient load will be added to significant WWTPs, with no consideration in the draft SIP for this impact on the loading caps at the plants. If the draft SIP's strategy for nutrient-reducing septic systems were to actually be realized (which is terribly unlikely without regulation or incentives), the strength of septage will likely be even higher, straining the WWTPs even more. Aggressive nutrient offsets must be made available to significant WWTPs or we will see a proliferation of septic systems (most likely, conventional systems).	
Upper Western Shore Team	MDE	Among the barriers to implementation (Septics, page 39) is a failure to justify the program. Isn't this in part because the best denitrifying septic system will discharge 15 mg/l TN whereas an ENR plant can reach 3 mg/l (page 81)? Isn't it also debatable how needed such systems are in Piedmont soils, versus their greater effectiveness in the Coastal Plain?	
Upper Western Shore Team	MDE	In the solutions to barriers (Septics, page 39), local governments' adoption of sweeping mandates such as these is not possible for those counties without home rule (like Cecil). Without enabling legislation from the State, I do not believe Cecil County can enact these kinds of local ordinances. This similarly applies to the local government stakeholder role on page 41.	
Upper Western Shore Team	MDE	Also in the solutions to barriers (Septics, page 39), asking the counties to take a proactive role for sewer connections is inconsistent with the significant WWTP loading caps and the anemic nutrient offsets for septic conversions discussed by MDE thus far.	
Upper Western Shore Team	MDE	Under State Initiatives (Septics, page 40), where are advanced on-site systems <u>not</u> voluntary (draft SIP says in several places that these are voluntary <u>for the most part</u>)?	
Upper Western Shore Team	MDE	The 2-year action plan (Septics, page 40) cannot be reasonably expected to achieve 588 systems in two years, as the University of Maryland is not likely to have the resources to establish and study that many systems during that period and the BRF is insufficient incentive for homeowners to convert except in the case of conventionally-failing systems, which may already be nitrifying (see previous comment)? Would a more realistic plan be to	

[2] Water Environment Federation, "Septage Handling; Manual of Practice No. 24," 1997.

		encourage local shared facility ordinances to provide incentive (e.g., greater density, etc.) for community systems that denitrify (properly administered, these systems would be more likely to receive regular maintenance)? Should the BRF reprioritize septic upgrade money to those areas and systems that University of Maryland identifies as the best prospects for research and development in the various regions of the watershed and provide cash incentives (above cost) to the homeowner to permit installation, monitoring, etc. over a period of time (five years, ten years) and should some of the BRF septic fund not be directed to University of Maryland to enhance their ability to monitor and report on these systems?	
Upper Western Shore Team	MDE	The 5-year action plan (Septics, page 41), is equally anemic; it is unreasonable to expect that 882 systems will be converted simply by the BRF Advisory Committee "promoting" the concept. There will have to be regulation or real incentives or both.	
Upper Western Shore Team	MDE	The stakeholder role for state government (Septics, page 41) reveals one of the large barriers to the effectiveness of this strategy, when it calls for, "management programs…to ensure these systems operate efficiently in perpetuity…" It is a large challenge for local health departments just to get homeowners to pump their conventional systems every few years; imagine the difficulty of compelling homeowners to maintain a system they don't understand and don't value and that are not failing in the conventional sense (such that it will be inconvenient for the homeowner).	
Upper Western Shore Team	MDE	Allow flush tax septic portion to be used for septic replacement i.e. hookups to treatment plants in critical area communities	
Upper Western Shore Team	MDE	Concern was expressed that the septic strategy would require increased staffing levels at the local government to oversee maintenance and enforcement, besides the increased cost of installation itself.	
Upper Western Shore Team	MDE	New construction in critical areas should be required to have de-nitrifying systems—existing structures retrofit should be only ones eligible for CB Restoration Fund subsidy.	
Upper Western Shore Team	MDE	Septic service people need to be certified and required to report where they provide service and how often. Septic System owners who are getting proper service would be targeted for above.	
Upper Western Shore Team	MDE	p. 39 Solutions to overcome barriers – Add another bullet – explore the creation of incentives for septic system owners (tax incentives, rewards, etc)	
MD State Builders	MDE	The costs involved in achieving the Septic Strategy are clearly the most significant barrier to upgrade of conventional systems. Revenues from the	

Association		Bay Restoration Fund will be inadequate to cover the costs of retrofitting even the estimated failing systems in the State, not to mention the remaining existing systems. Substantial homeowner education must be a conducted to explain the potential benefits of nitrogen-reduction technology systems but perhaps more importantly, education regarding the substantial maintenance requirements as well.	
Patuxent River Commission	MDE	While known problems are addressed, an example of one area that is not addressed is human waste "sludge" from wastewater treatment plants that is being dumped mainly on farmlands. Do we know the scope of its use and the full impact of its use on our lands and waters?	
Lower Western Shore	MDE MDP	The plan is very sensible to call for either upgrading existing septic systems to improve nitrogen removal and to convert facilities that presently rely on septic systems to sanitary sewers (goal 2, page 38). This is especially so as much of the area presently served by septic is ill suited for this type of waste disposal (e.g., the water table in much of the critical area is quite high which means there is frequently insufficient dry soil depth to properly treat the effluent, clay soils are not conducive to sound effluent management) and municipalities lack the resources to adequately monitor the maintenance of on-site disposal systems. However, the plan could be more concrete with regard to the implementation strategy. No state initiatives are detailed regarding conversion to sanitary sewer. For properties in the critical area, systematic conversion of waste removal from antiquated septic systems to sanitary sewers would be far more beneficial than simply encouraging landowners to upgrade to denitrifying systems when their septic systems need to be replaced. Such an effort would greatly reduce fecal coliform contamination, in addition to preventing nitrogen from reaching our waterways. An organized public works effort could produce great benefit. For example, in Anne Arundel County approximately 13,000 homes in the critical area are served by septic systems. Many of these homes are in densely developed neighborhoods where conversion could be far more cost effective than sporadic upgrades to denitrifying systems. While there are barriers to the idea of systematic conversion, such as cost and land use, they are far less problematic than trying to convert properties one-by-one. Careful planning efforts could address land use concerns. For	

		example, planners could effect zoning revisions that would provide better growth management in these areas.	
Middle Potomac Team	MDE	**Septics –** This is perhaps the most unrealistic goal in the entire IP. Maryland is to be commended for providing an institutional framework and cost support for anyone who wants to upgrade their septic system. However, as the IP acknowledges, without ince it is not likely that there will be significant numbers of septic denitrification upgrades foreseeable future. • *BIA Comments: Requiring County administration of programs to get funds may be problematic for already cash strapped counties. Outright grants from the State to Counties are recommended.* • *Better public education about septic systems and their effluent contributions should be a key component of this strategy.* • *Would it be possible for upgraded septic systems to no longer be taxed to add incentive for homeowners to upgrade systems? This would fit with the incentive-based strategy recommended below.* • *It is necessary to examine how the septic strategy works or does not work with Smart Growth initiatives.* ***Recommendation: A specific goal for the number of upgraded systems should be se each County with specific methods for measuring accountability. A mixture of regu and incentive-based methods, including aggressive cost-sharing programs, should b and publicized to stimulate the number of upgraded systems.*** ***Recommendation: Maryland work with each county (and selected municipalities as appropriate) to develop jurisdiction-specific goals for upgrading septic systems, emphasizing alleviation of public health and localized nutrient problems.*** ***Recommendation: Maryland revises its overall septic upgrade strategy goal to reflec is realistic over the next 10 years.*** Comment: there are 22,000 septic systems in Montgomery County –to require that all upgraded within ten years is a rational way to make the numbers work, but this is not realistic or credible. ***Recommendation: Maryland provides the Tributary Teams with an annual progress report reflecting septic system upgrades for each jurisdiction.***	
Chesapeake Bay Foundation	MDE	The Draft Plan suggests increasing the nutrient caps at local wastewater treatment facilities would be an effective strategy for encouraging the connection of septic systems to sewage treatment facilities. While, in some	

		cases, CBF supports the connection of septic systems to public wastewater facilities, we do not support doing so by increasing nutrient loading caps at sewage treatment plants (p39). This flies in the face of recent efforts to begin developing a Statewide "Cap Management" strategy and create a meaningful nutrient trading program, and disregards that Tributary Strategy load caps for sewage treatment plants include room for growth, or septic connections. **(Also in Cap Management)**	
Lower Potomac Team	MDE	The plan should require new housing developments to use Denitrifying systems.	
Choptank Team	MDE	Since there is no plan for major retrofit treatment of septic system loads, reductions in near term septic related loads are not going to occur, especially given the number of new systems being installed. At least there should be a requirement that new systems installed include N reduction technology that is known to work and already has been used successfully in the northeastern states. This will help slow the rate of increase of septic system loads even though it won't reduce them until a major fraction of existing systems are replaced with N reduction technology. The current strategy for human waste streams in the Choptank basin that is only minimal long term reduction in point source N loads and continued high rates of installation of traditional septic systems, almost guarantees that in the long term, delivered N loads from this sector will almost surely increase despite the availability of technology for cutting loads from this sector dramatically. In addition, urban nonpoint loads also are likely to increase as a result of high growth rates, and resulting increases in impervious surface and local N emissions.	
Choptank Team	MDE	The Flush Fee is taxable income. Is that appropriate?	
Choptank Team	MDE	Consider a utility based approach to managing septic systems, using the Talbot county Sanitary District model.	
Choptank Team	MDE	Several of our county team members noted that the septics numbers are very incorrect. Can we improve the numbers?	
Choptank Team	MDE	What's the latest on the BAT workgroup on the new denitrifying systems, and can we do a better job in communicating their availability and effectiveness?	
Environmental Planning, Harford Co.	MDE	p. 38 – Do not put "0" in the table. It makes it appear that nothing has been done. Put an asterisk and a note as to why the data is not available.	

Environmental Planning, Harford Co.	MDE	p. 39 – Under "Barriers", if the State admits that they have failed to justify the need for the septic denitrifying program in many locations, then a solution should be including to either justify the need (especially in the various physiographic provinces), or promote the program only in those areas where it can be justified.	
Environmental Planning, Harford Co	MDE	The State should focus on an education campaign for rural areas to educate people on the proper maintenance of septic systems.	
Bureau of Environmental Health, Harford Co.	MDE	The two goals listed in this section will be difficult to achieve with present regulatory limitations, and funding. We know of no jurisdiction that is currently requiring new systems to be installed in their jurisdictions with nitrogen reducing technology for the purposes of addressing this goal. Currently when denitrification technology is installed it is for other purposes, such as reducing nitrogen levels in well head protection areas, or to improve effluent quality on difficult sites, i.e. slowly permeable sites.	
Bureau of Environmental Health, Harford Co.	MDE	Should funding be used to install treatment on new systems for new construction or for upgrades to permit larger flows? There is very limited funding available, shouldn't the funds be used to up-grade existing systems? If a person is constructing a dwelling, he/she is in a better position to afford a denitrification system. For some, it may mean a slightly smaller house or fewer amenities or delaying those amenities. If nitrogen from septic systems is a problem, individuals should be required to shoulder that cost as the price for living on a septic system? The choice of living on a septic system should not be at the expense of the Bay and its tributaries.	
Bureau of Environmental Health, Harford Co.	MDE	In Harford County, approximately 400-500 new systems are installed per year, and until nitrogen reduction technology is mandated, new systems will contribute to the problem. In 2010 the federal government may step in and mandate compliance with the TMDL program. Until then, there seems to be little support state wide to implement laws and/or regulations to achieve the goal stated. When Harford County updated its septic code in 2003, the committee voted against the use of nitrogen pre-treatment, indicating that it would put the Harford County development industry at a disadvantage, and builders and developers would go elsewhere. The Health Department contended that there would be no long term impact, and the cost would be passed onto the buyer.	
Bureau of Environmental Health, Harford	MDE	The strategy indicates there may be funding to up-date 700 systems a year. There are estimated to be 420,000 systems in the state of Maryland. Again, the revenue from the flush fee is not going to cover the cost. In Harford	

Co.		County, we install between 400-500 new systems a year, plus hundreds of conventional and non-conventional upgrades and replacement systems are installed yearly.	
Bureau of Environmental Health, Harford Co.	MDE	The summary states that there aren't existing regulations and laws on the books that would justify the use of pre-treatment. However, COMAR, and state and federal laws prohibits individuals from disposing sewage in any manner which may cause pollution to the waters of the State. Therefore, can existing laws be used to implement pre-treatment requirements? What is lacking is a way to manage and monitor these systems once they are installed. Without operational inspections and maintenance requirements the programs will never achieve its objectives.	
Bureau of Environmental Health, Harford Co.	MDE	There are numerous examples of management programs including the EPA Model. Perhaps the state should take the lead in developing minimum management requirements for advance pre-treatment systems. Local jurisdictions could then implement the state code or improve upon it to meet local concerns and needs.	
Bureau of Environmental Health, Harford Co.	MDE	In some watersheds, the impact of on-site systems may be such a small part of the problem that the tougher effluent standards may not be justified at his time, but in other watersheds, the impact from in-site systems can, and does, represent a sizeable portion of the problem. This raises the question of weather this technology is applicable or justified everywhere. Would a non-impaired body of water have to be monitored for nutrients and its future development be limited by actual or projected nitrogen load and at some point, development could only occur with reduction in nitrogen from existing development , or would it be the responsibility of the new development not to exceed the load limits? Either way, if septic systems are a part of the problem, it doesn't seem logical to continue the installation of new systems using outdated technology.	
Bureau of Environmental Health, Harford Co.	MDE	As areas outside the designated growth areas are developed, the impact of sewage effluent on the local watershed will increase; and eventually, we will be faced with requiring upgrades to all existing systems at some point in time in the future. This raises the question as to whether OSDS zoning ordinances or planning agencies. Is prevention of the problem the correct approach? If so, shouldn't all on-site systems and for that matter all development occur to achieve the best quality effluent/runoff.	
Bureau of Environmental Health, Harford	MDE	The up-grades of the 420,000 existing systems is an enormous task and maybe impossible. The cumulative nitrogen load is huge, How does one	

Co.		address this need? The extension of public sewer is limited to service areas. The wiggle room public treatment plants will have to assimilate additional loads in the future; as a result of the cap in the total pounds of nitrogen that can be discharged will limit new connections. The limits imposed on total nitrogen loads emanating from public treatment plants may back-fire and encourage rural sprawl. That prospect leaves up-grades to OSDS as the only solution and makes it even more critical that all new OSDS systems be required to contain advanced pre-treatment.	
Bureau of Environmental Health, Harford Co.	MDE	We believe it is fair to say that education is not going to result in voluntary up-grades. While it is necessary to explain the problem and the steps necessary to correct the problem, if offered a choice, most citizens will select the cheaper system. Penalties, incentives and grants, or a combination of all three, will be needed to move properly owners in this direction. Funding is not likely to come anywhere close to covering the cost of the up-grades. Property tax relief over several years, a lower assessment for compliance with the law, or a higher assessment for being out of compliance could be offered as incentives (negative or positive). Funds raised could be directed back to the community in the form of grants.	
Bureau of Environmental Health, Harford Co.	MDE	When should up-grades to existing systems occur and will they be prioritized? By watershed? Should there be a time frame implemented for the up-grades? Should some event such as the sale of the property trigger the up-grades, or would it be more appropriate to request the up-grades with repairs to, or replacement of, the existing system?	
Bureau of Environmental Health, Harford Co.	MDE	The issue of on-site systems and their impact to water quality has been studied, repeatedly, and yet, more studies are being requested. We do know that OSDS discharge nitrogen, resulting in an elevated nitrogen levels in the groundwater in the immediate area near the system, but at that point the science is less clear and varied from site to site, but it is intuitive that in the absence of treatment the nitrogen must go somewhere. The most widely held scientific theory supported by a vast amount of studies, is that at least a portion of the elevated nitrogen in ground water will at some point in time be discharged to surface water. Septic system wastewater and its nitrogen component becomes part of the hydrologic cycle. Depending on the user of the system, the installation practices employed, the soil, water, and geologic conditions, the level of impact will vary from sight-to-sight. Although the exact impact to surface water from every system can not be determined with any degree of accuracy, there is an impact.	

Middle Potomac Tributary Team, Patuxent River Commission	MDP	MDE and MDP should provide local governments with guidance on where, when, and under what conditions the extension of the sewer envelope is warranted. The potential conflicts between sewer extensions, Smart Growth goals and policies, and stream valley environmental protection needs to be addressed.	
Upper Western Shore Team	MDE	Research is needed on the effectiveness of these systems in the various physiographic provinces of the State. Concern over the efficacy of these systems in areas other than the Coastal Plain was expressed.	
Upper Western Shore Team	MDE	It was discussed and agreed that an education campaign to educate citizens on proper maintenance of standard septic systems would be beneficial. We need to help citizens maintain what they have now let alone go to denitrifying systems. Many people who move from urban to rural areas don't even know what a septic system is, or that it needs to be cleaned out every few years. Perhaps a broad education campaign (similar to the Indian crying in the stream many years ago) and/or incentives for the proper maintenance of septic systems would be more beneficial instead of widespread promotion of denitrifying systems in areas of the State where they may not produce the desired effect.	

Growth Management Strategy

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Middle Potomac Team	MDP	**Growth Management –** The IP acknowledges that, while growth management is not an integral part of the existing strategy, "… how this growth is managed will be critical to achieving and maintaining the nutrient cap." This is a critically important topic if restoration progress is to be maintained. There is further discussion under "Cap management," below.	
Lower Eastern Shore Tributary Team	MDP	p.42 - Add a table that will track/estimate expected increases in septic tanks, impervious surface acreage, etc. due to expected growth through the planning period.	
Lower Eastern Shore Tributary	MDP	p.42 – this plan should begin the discussion with counties by proposing an indicator for measuring the rate of harmful sprawl, based on the best	

Team		knowledge available, and say that it is up for review and change. This plan is a good vehicle for initiating this discussion	
Lower Eastern Shore Tributary Team	MDE	p.44 – mention spray irrigation as a method for reducing the nutrient impacts of new development.	
Lower Eastern Shore Tributary Team	MDP	p.44 – mention the joint MDE/MDP effort and explain that the two departments will build upon the success of this initial effort by hosting similar events each year.	
Lower Eastern Shore Tributary Team	DNR	p.47 – in the "Stakeholder Roles" section, "change fertilizer application behaviors" and "shift landscaping preferences" belongs in the Stormwater Strategy section since these fall under the urban nutrient management BMP. For "private landowners/local citizens", suggest that they request notices of and participate in local government public hearings on planning issues, and that they request assistance from their local political representatives (local/state/federal).	
Lower Eastern Shore Tributary Team	DNR	p.47 – in general, this section should provide a summary of the impacts of new growth—air pollution from cars and power plants, stormwater runoff, impervious surface impacts, wastewater impacts, loss of the filtering capacity of trees and wetlands, and loss of wildlife habitat—and some ideas for offsetting the impacts of new growth.	
Patapsco/ Back Creek Team	MDP	p. 45 - Under barriers to implementation, don't local governments have the authority to change zoning to reduce sprawl? Is there a legal tool that can address the second bullet listed under barriers to Implementation? I would include providing funding for Program Open Space and Rural Legacy as examples of possible solutions.	
Patapsco/ Back Creek Team	DNR	p. 46 - Is MDP the only agency with specific actions under the 5 year plan?	
Upper Western Shore Team	MDP MDE	The 1992 Act referenced on page 42 (Growth Management) calls for concentration of development in suitable areas, presumably meaning designated growth areas. How can this be done if the WWTPs are capped at arbitrary levels with only anemic nutrient offsets available to expand those caps? Similarly, the call for adequate public facilities is inconsistent with these caps. This is echoed in the barriers to implementation (page 45), but the meaning of the solution, "the State could develop a system that combines WWTP capacity and local needs with development capacity," escapes me.	
Upper Western Shore Team	MDE	In the 2-year action plan (Growth, page 45), MDE is called on to remove conflicts with goals to direct growth to PFAs, but the arbitrary loading caps	

		would seem to tie their hands in the absence of more aggressive language in the SIP to encourage MDE to envision, in a meaningful way, the effect of not permitting designated growth areas to be served with WWTPs.	
Upper Western Shore Team	MDA	In the stakeholder roles (Growth, page 47), can fertilizer behaviors be further modified by working with vendors (hardware stores, etc.) to post educational posters and even limit sales of fertilizers to the fall?	
Upper Western Shore Team	MDP	The state government, as a stakeholder role (Growth, page 47), is seemingly encouraged to abandon those schools not in a PFA and allow them to fail; does that not address one problem and create another? Seems like poor public policy.	
Upper Western Shore Team	MDP	Require that county comp plans include the designation of aquifer recharge areas and designate forest and farmland as the highest and best land use as a necessary component of development within a watershed	
Upper Western Shore Team	DNR	p. 43 Last paragraph – Add water quantity (see previous comments).	
Upper Western Shore Team	DNR	p. 44 Second bullet – Add - to generate growth forecasts "and their effects on nutrient pollution" on a watershed basis	
Upper Western Shore Team	DNR	p. 45 Solutions to overcome barriers, last bullet – add "and water quantity."	
Upper Western Shore Team	DNR	p. 46 Fourth bullet – Add "and water quantity"	
Upper Western Shore Team	MDP	p. 47 Last 2 bullets – Add a statement about planning to maintain the high quality of water in tributaries where it already exists. This should be especially important in watersheds that have already been evaluated by the WRAS process.	
MD State Builders Association	MDP	One of the most important factors in achieving the goals articulated in the Growth Management Strategy is requiring local jurisdictions with planning and zoning authority to plan for future growth at acceptable densities within priority funding areas. A recent report by the National Center for Smart Growth Research and Education at the University of Maryland found that Adequate Public Facilities Ordinances, applied widely throughout urban areas in Maryland, exacerbates sprawl development by creating a disincentive to build in existing areas. Many local jurisdictions are not accepting their fair share of growth by down- zoning areas and instituting moratoria against growth. The result is leapfrog development in outlying areas on large lots. The Development Capacity methodology created by the Maryland Department of Planning must be adopted by local jurisdictions and should be included in comprehensive plans to ensure that planning for future	

		growth needs at appropriate densities is achieved.	
MD State Builders Association	MDP	The Tributary Strategy Implementation plan must acknowledge the accomplishments that have occurred through the regulation of stormwater, sediment erosion control and wastewater treatment plant upgrades. The costs of many of the non-point strategies are significant and a prioritization of limited resources should be clearly articulated in implementation. More emphasis on better planning and a focus on appropriate density within priority funding areas should be a focus of the Growth Management Strategy. **(Also found in Stormwater Strategies)**	
Lower Western Shore Team	MDP	The Growth Management Strategy should be re-written to more adequately represent the Maryland Department of Planning and Department of the Environment's regulatory requirements that govern local government land use planning and implementation. This section should provide a summary of the role and responsibilities delegated to local governments. It may also be beneficial to note the impacts of local government economic growth and development on State owned services and infrastructure. The Growth Management Strategy Section proposed under the Local Government Leadership and Management Plan should elaborate on how local government land use policy, decisions, and actions must address regulatory responsibilities related to Water Quality Standards, TMDL's, Septic Systems, Watershed Management Plan Implementation and Tributary Strategy goals.	
Lower Potomac Team	MDP	Require county comprehensive plans to use watershed planning as part of the plan update and new initiative designs.	
Lower Potomac Team	MDP	Require county comprehensive plans to consider the elements of each existing TMDL's.	
Choptank Team	MDP	Require county comprehensive plans to use watershed planning as part of the plan update and new initiative designs.	
Choptank Team	MDP	Require county comprehensive plans to consider the elements of each existing TMDL's	
Choptank Team	MDP	Deal with NOX, tailpipe emissions, look to mass transit, and set a standard to reduce the number of passenger miles driven.	
Choptank Team	MDP	The Implementation Plan is, essentially, a pro-growth document, ignoring growth as it impacts water quality, and it should be identified as such.	
Environmental Planning, Harford Co	MDP	Sprawl needs to be defined and an indicator for the rate of sprawl needs to be developed. A consistent approach must be developed for the entire State.	

Environmental Planning, Harford Co	MDP	A "barrier" is identified that the caps at wastewater treatment plants may be in conflict with development inside a Priority Funding Areas; however, no solution is presented.	
Environmental Planning, Harford Co	MDP	What is "appropriate development" in the comment – "Plan for appropriate development in areas with impaired waters"? (p.47)	

Agriculture Strategy Comments

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Middle Potomac Team	MDA	**Agriculture –** Along with Air Deposition, this is the area of the IP that I am least familiar with. The table on p. 50 suggests that the IP for agriculture will fall well short of the overall goal. The Tributary Teams could better understand the role that agriculture plays in achieving the nutrient reduction goals if the table were broken down for each Soil Conservation District. ***Recommendation: Maryland provide the Tributary Teams with an annual progress report reflecting agriculture BMP implementation for each Soil Conservation District. Progress should be reflected both in terms of management actions and loads.***	
Lower Eastern Shore Tributary Team	MDA	p.51 – the level of detail describing state efforts is very good and informative.	
Lower Eastern Shore Tributary Team	MDA	p.53 – under the Conservation Security Program, mention that farmers in the Nanticoke and Choptank watersheds are eligible for this program in 2006.	
Lower Eastern Shore Tributary Team	MDA	p.56 – the action plan for the Agricultural Strategy is much more detailed than the other strategies in the plan. Add more detail to the other action plans.	
Upper Western Shore Team	MDA	The Agriculture Implementation Schedule (page 48) suggests that several goals have been 100% achieved and there is nothing more to accomplish (e.g., nutrient management, phytase feed additive, manure transport) and that others are all but done (poultry waste management, off stream watering with fencing, grass buffers); is that really true? If it is, why does the progress through 2004 on the page 50 table not reflect those as 100% or otherwise (e.g., nutrient management presents a	

		goal of 100%, but shows an 80% completion)?	
Upper Western Shore Team	MDA	Are the current programs (Agriculture, beginning page 51) monitored and enforced over the long term and so, by whom and with what enforcement tools?	
Upper Western Shore Team	MDA	In the solutions to barriers (Agriculture, page 54), why does Maryland not have an ethanol plant? Are there regulatory barriers, is it not cost effective, or is there simply not a market for ethanol? Regarding the alternative cover crops program, how can the state establish a successful program if there is not market for the crops, as is stated in the barriers section?	
Upper Western Shore Team	MDA	Under solutions to barriers for animal waste management (Agriculture, page 55), why is the call for "reaching out" to horse farmers rather than a regulation to compel them to manage their waste? Why is there a reluctance to <u>require</u> such things in the agriculture arena when the state and EPA are more than willing to continuously increase the cost of wastewater treatment, despite sharply declining return on investment? If there is not a willingness to require <u>all</u> point and non-point contributors to reduce their nutrient impact in an equitable fashion, the SIP will fail.	
Upper Western Shore Team	MDA	Under solutions to barriers for land retirement (Agriculture, page 55), is the listed solution intended to mean harvesting crops such as hay or straw from grassed buffers?	
Upper Western Shore Team	MDA	Repeated, passing mention is made to ammonia emission reduction in Agriculture (e.g., page 57), but the issue is not discussed; those outside the farming community don't necessarily grasp the nature of the problem or the potential solutions.	
Upper Western Shore Team	MDA	Is the nursery industry subject to the nutrient management plan requirements of the farming community or are they considered separate (see page 57)?	
Upper Western Shore Team	MDA	The 2-year and 5-year plans (Agriculture, beginning page 56) do not appear to address a strategy to get all livestock out of stream corridors. Stream protection with fencing is the caption for a photo on page 59, but I could not find it discussed elsewhere.	
Upper Western Shore Team	MDA	Why is there a reluctance to <u>require</u>, for example, planting of cover crops on all easements funded by DNR (page 58)? Repeatedly, the draft SIP calls for <u>encouraging</u> this behavior, but it seems that use of state lands should be one of the higher priority areas for these initiatives and it should be a basis for the programs. In the five year plan (page 61) DNR is slated to "encourage landowners whose conservation easements were purchased with State funds to implement BMPs…"; if this was a requirement of the easement, why aren't they simply <u>required</u> and if it wasn't a condition of the easement, how will DNR <u>encourage</u> it?	
Upper Western	MDA	Increase incentives for the conversion of marginal crop production lands to	

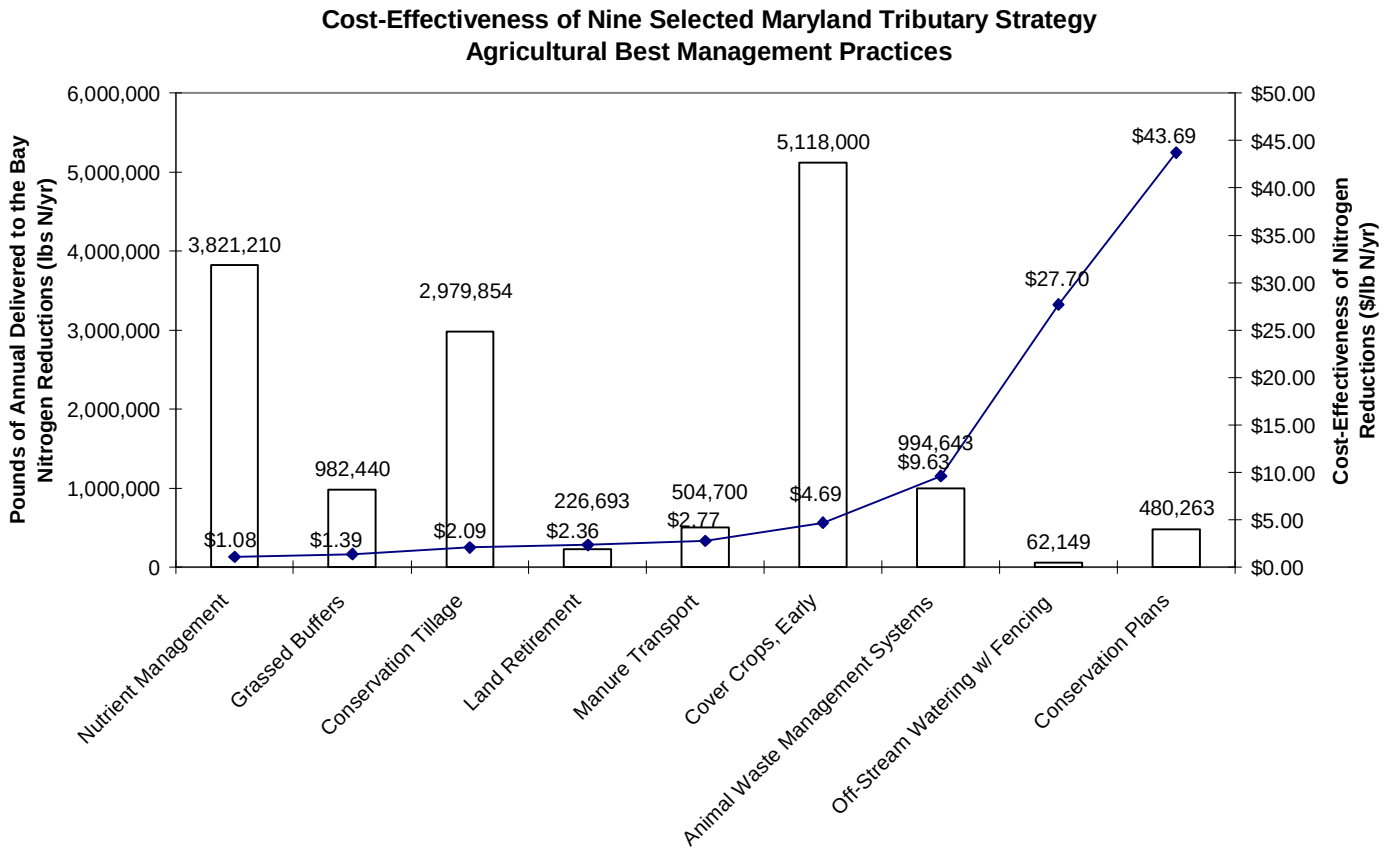
Shore Team		wetlands and forest i.e. off-set or nutrient trading	
Upper Western Shore Team	MDA	Ag air deposition needs more emphasis	
Upper Western Shore Team	MDA	More emphasis on using livestock dietary modification as an off-set	
Upper Western Shore Team	MDA	Continued education emphasis of forested stream buffers and cover crops	
Upper Western Shore Team	MDA	p. 48 & 49 Add to the chart a bar on dairy herd feed nutrient management. Also consider adding a bar on wet area management in pastures	
Upper Western Shore Team	MDA	p. 50 Under pasture BMPs, consider adding a category called "forage management and runoff control, especially on wet seeps and intermittent streams" (i.e. wet area forage management). Add another "practice" for feed nutrient management.	
Upper Western Shore Team	MDA	p. 55 Land retirement: solutions to overcome barriers – add – consider allowing harvest "or light grazing" of grass buffers.....	
Upper Western Shore Team	UMD	p. 62 Add additional bullet for UM – develop a research and extension program on managing forage in wet areas in pastures.	
Lower Eastern Shore Team	DNR	Page 57 right column 2nd to last bullet point include DNR forestry land as land on which manure-based products should be used. Manure-based products are great fertilizers for trees	
Lower Eastern Shore Team	MDA	Page 58 right column, first bullet point do you know something we don't about the CAFO requirements in Maryland? I'm not aware that MDA and MDE have adopted any new CAFO rules so requiring something to be implemented before the rules are in place is questionable.	
Lower Eastern Shore Team	MDA	Page 62 right column, last bullet point does the federal government provide staff and funding to soil conservation districts now? Is it the intent of this recommend to get the federal government into the staffing and funding business for the districts? I know the feds staff and fund the USDA's Natural Resources Conservation Service and NRCS works with the districts, but is there federal money going to the districts now? Just asking because I don't know	
Patuxent River Commission	MDA	The State should provide local governments with jurisdiction-specific goals for the Agricultural Implementation practices in the table on page 50.	
School of Public Policy, University of Maryland	MDA	Congratulations on publishing the latest Tributary Strategies Implementation Plan. Not only are the new 1 to 2-year and 3 to 5-year implementation schedules a refreshing and realistic benchmark for each sectors' best management practices (BMP), but the goal to accomplish these two schedules within existing funding resources is pragmatic.	

However, despite this new ambitious implementation schedule, what the Implementation Plan lacks is an overall guiding principle of spending existing funds in order of cost-effectiveness. Based on my efforts with nine other graduate students and our professor, our report ***" A Bigger Bang for the Buck; Offsets and Other Cost-Effective Strategies for Nitrogen Reductions for the Chesapeake Bay"*** makes the case that Maryland can achieve most of its 19 million pound annual nitrogen reduction goal simply by spending on agricultural BMPs in order of cost-effectiveness.

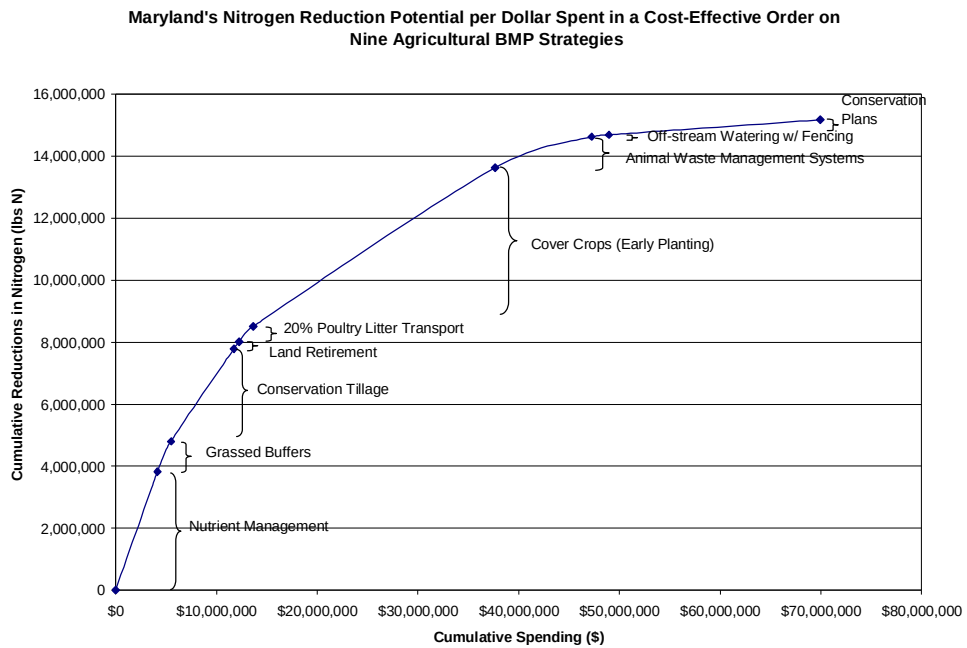
Since its been established that agricultural BMPs provide the lowest cost nitrogen reductions, we chose to study nine of the most common and most important Tributary Strategy agricultural BMPs. By calculating the cost per pound of "delivered to the Bay" nitrogen reductions of each of these nine BMPs, we found that Maryland could achieve over 15 million pounds of annual nitrogen reductions or three-quarters of its 19 million pound reduction goal by spending in order of cost-effectiveness. See the first graph below for the per pound cost of nitrogen reductions and the total number of pounds of nitrogen reduced by each of the nine BMPs if implemented at the original 2004 Tributary Strategies goals. Together, these 15 million pounds of nitrogen reductions could be achieved for $70 million per year.

However, as best we could tell from the Maryland Department of Agriculture's 2003 Annual Report, the state only spends about $17 million per year on agricultural BMPs. Therefore, we included a second graph below of a cost-effectiveness curve demonstrating cumulative spending on the nine BMPs in order of cost-effectiveness. By re-allocating its existing $17 million funds towards achieving the 2004 goals of the first five most cost-effective BMPs, Maryland could achieve over nine million pounds in nitrogen reductions per year or about half of its 19 million pound goal.

We hope that our report and suggestion of adopting an overall cost-effectiveness approach is useful to you in your herculean endeavor. Please visit our report at:
http://www.puaf.umd.edu/faculty/nelson/660%20Final%20Report%20(Dec6_2005).pdf
My professor, Dr. Nelson, and I would be happy to discuss our report with you.

		Dr. Nelson can be reached at 301-405-6345 or nelsonr@umd.edu and I can be reached at 410-353-5492 or michellerp123@comcast.net.	
School of Public Policy, University of Maryland	MDA		

Source: The data for Maryland's "delivered to the bay nitrogen reductions per BMP" were derived from nitrogen reduction effectiveness factors provided by Jeff Sweeney, Nonpoint Source Data Manager for the Chesapeake Bay Program. The data for the state's Tributary Strategy agricultural best management practices (BMPs) implementation goals were available from the "Table 2 – Maryland's Tributary Strategy Best Management Practices. 7/30/04." The data for the Tributary Strategy annual costs were derived from the "Final Draft Costs, Funding Estimates and Implementation Levels – Revised 11/5/04" which was provided by Helen Stewart, of the Maryland Department of Natural Resources.



Middle Potomac Team	MDA	**Agriculture –** Along with Air Deposition, this is the area of the IP that the MPTT is least fa with. The table on p. 50 suggests that the IP for agriculture will fall well short of the overall The Tributary Teams would more clearly understand the role that agriculture plays in achiev the nutrient reduction goals if the table were broken down for each Soil Conservation Distri • *BIA Comments: in many areas of MD, agricultural runoff is still the number one water quality problem. In reviewing the text we do not get a sense that this is taken as seriously as urbanization and development. The Plan does cover ag runoff a lot but the focus is it is still incentive-based. It is not clear that an incentive-based approach alone is sufficient.* *Proposed Language: a) The State should identify areas in Maryland where nutrients from ag runoff are a significant problem and establish acreage goals by Soil Conservation District for this sector, which goals take into consideration the high and rising cost of fuel. This should appear as part of the goals for the Agricultural Implementation practices in the table on page 50.* *b) From the regulatory standpoint, the State should apply increased pressure to agriculture to implement existing conservation and nutrient management*	

		plans and to apply for up to 87.5% cost- share funding from federal sources. ***Recommendation: Maryland provides the Tributary Teams with an annual progress report reflecting agriculture BMP implementation for each Soil Conservation District. Progress should be reflected both in terms of management actions and** loads.* ***PPC Recommendation: The State should work with local governments to assess the effectiveness of CREP, and other programs for the establishment of forest and gra buffers and the retention or enhancement of forest cover on agricultural lands, an assess possible new programs, incentives, and implementation mechanisms for attaining the goals of the Tributary Strategies.***	
Chesapeake Bay Foundation	MDA	According to a Department of Legislative Services FY07 analysis prepared during the 2006 General Assembly, MDA has estimated that Nutrient Management Plans are required for about 8,223 farms covering about 1.5 million acres. As of 12/31/2005, MDA had received 6,498 plans for the management of 1.2 million acres, representing about 80% compliance. The Draft Implementation Strategy (p50) supports this finding. However, Tributary Strategy implementation information contained on DNR's website reports progress under "Nutrient Management Plan Implementation" as of 2002 and 2003 at 1.45 million and 1.68 million acres, respectively. CBF believes it is important to convey consistent, accurate implementation progress and requests clarification on these divergent figures.	
Don Kerstetter	MDA	The US Coast and Geodetic Survey Reports with data date of 1991 and 2001 shows that the nitrate level under farm fields and down gradient of farm fields is as high as 50 mg/l, and as old as 30 years. The major aquifer underlying the Delmarva Peninsula, the well drained upland aquifer extends from the Sassafras to the Pocomoke and from Rt. 50 and its extension of Rt 213 into Delaware. This aquifer has now reached the average level of 10 mg/l which is the EPA 's maximum Containment Level (MCL) the average is up 20 % in the last 10 years. It the Team had a presentation by the USGS it would have been revealed that his amounts to a 30 year backlog.	
Don Kerstetter	MDA	The Team did not review NRCS data on erosion from Eastern Shore farm fields despite strong evidence that the Eastern Shore is included in the 40 % of the US Farm Fiends eroding at a rate in excess of 5 tons per acre per year.	
Don Kerstetter	MDA	The team did not review the sources of nutrient proposed by Dr Tom Fisher of U of M Horn Point Lab whose detailed study of the Choptank Watershed reveals	

		significantly higher (by 24 %) numbers from farm fields than the Bay Model.	
Don Kerstetter	MDA	The Team did not review the significant amount of research on the very low uptake efficiency of corn, the dominant crop on the Eastern Shore. This review might have led us to conclude that crop diversity is essential to the restoration of aquifers and therefore bay surface water cleanup.	
Don Kerstetter	MDA	The team did not study or even mention the sustainable agricultural movement, led by SARE.	
Don Kerstetter	MDA	The only recommendation that will have a positive effect on farm field pollution is cover crops but the proposed program involving only 10 % of farm fields is grossly inadequate.	
Don Kerstetter	MDA	The CREP program has been a valuable asset for reducing ag nutrient loads through installation of riparian buffers and restoring wetlands. These practices are known to work and the program is almost fully funded by USDA. The potential for full utilization of this program should be assessed on a watershed basis. Areas where there are sites that are eligible for CREP practices should be identified and landowners/farmers should be contacted and made aware of those options. A concentrated effort should be made to install some buffer in all eligible areas. Focusing on getting narrower buffers installed everywhere was the reported reasoning for the recent restructuring of the program, but so far, this does not appear to be happening. This is a great opportunity being wasted.	
Don Kerstetter	MDA	Kerstetter's additional comments on Agriculture are added to the end of the is document.	
Environmental Planning, Harford Co.	MDA	p. 50 – Do not put "0" in the table. It makes it appear that nothing has been done. Put an asterisk and a note as to why the data is not available.	
Middle Potomac Tributary Team, Patuxent River Commission	MDA	The State should provide local governments with jurisdiction-specific goals for the Agricultural Implementation practices in the table on page 50.	
Chesapeake Bay Foundation	MDA /DNR	If Maryland's Conservation Reserve Enhancement Program (CREP) were not reauthorized, would Maryland maintain its commitment to restoring riparian and grassed buffers and wetlands? The 5-year action plan for buffer and wetland increases is stated to be contingent on this Federal/State partnership; therefore, CBF recommends the State prioritize CREP reauthorization and ensure this happens.	

Air Deposition Strategy Comments

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Middle Potomac Team	MDE	**Air Deposition** - This is perhaps the weakest section of the IP. It provides little information regarding the relative importance of air deposition in terms of nutrient loads and load reduction potential. It is also vague in terms of understanding who is responsible for reducing loads from both power generation sources and from mobile sources. ***Recommendation: Maryland provide the Tributary Teams with an annual progress report that quantifies the loads associated with various air deposition sources, specifies actions taken to reduce those loads and quantifies the resulting load reductions .***	
Lower Eastern Shore Tributary Team	DNR	p.67 – "Stakeholder Role" for state government should include: 1) encouraging Smart Growth and living close to work to reduce car travel; 2) setting up teleconference, video conference, and/or Internet conference facilities at MDE and DNR to reduce car travel for all types of meetings.	
Upper Western Shore Team	MDE	It seems to be common sense that addressing diesel-fueled engines under the Clean Air Act is an essential component in the air deposition front (page 67); will that program include <u>all</u> diesel engines (trains, buses, pickups, farm equipment, etc.)?	
Upper Western Shore Team	MDE	p. 67 Under state government – Add bullet - MDE will encourage the use of integrated coal gasification combined system (IGCS) for all new coal fired electric generation plants.	
Air Quality Planning Division of the Maryland Department of the Environment	MDE	Page 64, Air Deposition Strategy, Implementation Schedule: The first outlined item should read as follows: "2005: Began development of air quality plans for the new 8-hour ozone and fine particle air quality standards."	
Air Quality Planning Division of the	MDE	Page 66, Air Deposition Strategy, State Initiatives to Address the Implementation Gaps: After the third bulleted item that begins: Continue to work independently and also with...", please add the following	

Maryland Department of the Environment		sentences at the end of this bulleted item: "In 2006, the Maryland Clean Power Regulations (CPR) were proposed. These regulations will significantly reduce NOx emissions from the largest power plants in Maryland."	
Air Quality Planning Division of the Maryland Department of the Environment	MDE	If DNR wishes to add text to the document outlining specific information regarding Maryland's Clean Power Regulations (CPR) or the Healthy Air Act, MDE offers the following language with one caveat. Given the ongoing legislative issues surrounding the CPR and Healthy Air Act, MDE asks that if the following language is incorporated into the Tributary Strategies document, that it be done so in its entirety in order to accurately reflect current issues regarding these pieces of legislation. It is MDE's concern that should sections be shortened or omitted from the following language, critical pieces of information may be misinterpreted. MDE offers the following text: The Clean Power Regulations were developed for the purpose of bringing Maryland into attainment with the National Ambient Air Quality Standards (NAAQS) for ozone and fine particulate matter by the 2010 attainment deadline, reducing mercury emissions from coal-fired electric generating units and reducing atmospheric deposition on nitrogen to the Chesapeake Bay and other waters of the State. The promulgation process for the proposed regulations establish new emission limitations for oxides of nitrogen (NOx), sulfur dioxide (SO2), and mercury on Maryland's largest electrical power plants. Following commencement of the promulgation process in April of 2006, the Maryland General Assembly enacted the Healthy Air Act (HAA) which codified the Clean Power Regulations in nearly all material respects. MDE is currently working to reuse the Clean Power Regulations to meet the requirements of the HAA, and MDE expects this work to be completed during the summer of 2006. Overview of Expected Emission Reductions Ninety-five percent of the air pollution emitted from Maryland's power plants comes from the six largest plants in the State. These regulations will	

		cut NOx emissions by almost 50,000 tons each year starting in 2009, at least a 69 percent reduction from 2002 levels. SO2 emissions will be cut by approximately 190,000 tons per year starting in 2010, over an 80 percent from 2002 levels. NOx and SO2 are major contributors to ozone and fine particle pollution. Mercury emissions from fossil fuel fired plants will be reduced by 80 percent in 2010, and 90 percent in 2013. These regulations, combined with regional reductions from upwind power plants under federal cap and trade programs, will prevent more than 390 premature deaths in Maryland linked to fine particle air pollution exposure. Additional health benefits include reduced aggravation of asthma, bronchitis, and other chronic respiratory conditions. These regulations will also benefit the Chesapeake Bay by reducing the projected nitrogen load to the Bay by more than 400 tons per year.	
Middle Potomac Team	MDE	**Air Deposition** - This is perhaps the weakest section of the IP. It provides little infor regarding the relative importance of air deposition in terms of nutrient loads and load reduction potential or the size of the gap between existing levels and the targets. It is vague in terms of understanding that is responsible for reducing loads from both powe generation sources and from mobile sources. For example it is our understanding that significant load, perhaps 1/3 of air deposition to the Bay, comes from certain power pl Ohio and mobile sources in Fairfax County. ***Recommendation: The State should consider 1) cooperative/regional efforts with th jurisdictions to mitigate or abate their air deposition, and 2) use of scrubbers on pow plants and ratcheting up cafe standards on mobile sources. Such efforts should be included in this Plan.*** ***Recommendation: Maryland provide the Tributary Teams with an annual progress that quantifies the loads associated with various air deposition sources, specifies ac taken to reduce those loads and quantifies the resulting load reductions .Such a rep could realistically include impediments to meeting the goal such as rising fuel costs.***	
Chesapeake Bay Foundation	MDE	In light of the legislative passage of the Healthy Air Act, and the implementing regulations that are currently under public review, the Air Deposition Strategy should be fundamentally updated to reflect this more stringent State approach to pollution reductions. This section should also include forward-looking activities, such as transit improvements, participation in regional air quality initiatives and nutrient reductions from mobile source emissions, as well as recognize the often-unheralded work that	

		the State has already undertaken related to smaller emissions sources.	
Choptank Team	MDE	The Air Deposition section contains no suggestion of any measures to encourage lower rates of combustion of fossil fuels. Petroleum product consumption and electricity use in Maryland has increased approximately 30 percent since 1985, with some of this increase clearly due to road construction projects that encouraged development in areas far from job centers. Road and transit system programs have a major impact on where people live and how far they commute. There also are options for encouraging people to consume less energy, for example, through programs that encourage energy efficient construction and appliances, tree plantings in urban areas to reduce air conditioning costs and adoption of solar technologies. These not only help reduce deposition rates of N and other pollutants, but also improve local air quality, and are consistent with international efforts to limit CO2 emissions to reduce rates of global climate change.	

Other State Initiatives to Address the Implementation Gaps

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Lower Eastern Shore Tributary Team	DNR	p. 69 – what about forest restoration efforts?	
Upper Western Shore Team	MDE	Under the Other State Initiatives (page 68), MDE's offset program needs to be aggressive, while still meeting the challenges of the Tributary Strategy. If MDE applies undue conservatism, the offsets will not be used in a widespread manner and a key component of the Tributary Strategy will fail.	
Upper Western Shore Team	DNR	p. 70 Under DNR – Include shellfish (i.e. fin and shellfish fisheries)	

Coordination Between Regulatory and Incentive-Based Programs

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE

Lower Eastern Shore Tributary Team	DNR	Rename "Part II" to something simpler such as "Maintaining Water Quality as Growth Continues". "Part II" doesn't seem to really cover monitoring, so why include it in the title?	
Lower Eastern Shore Tributary Team	MDP	The discussion and language in the Priority Places and Comprehensive Plans sections is too informal and not as clear or concise as they should be.	
Upper Western Shore Team	MDE	Under Coordination Between Regulatory- and Incentive-Based Programs (page 73), it is correct to say that TMDLs do not prevent development and the importance of this cannot be overemphasized. TMDLs and other programs, such as the Tributary Strategy, must recognize that limiting point source WWTPs only will proliferate septic system based development and none of these programs can succeed without meaningful programs in agriculture, urban pollution reduction, etc.	
Lower Western Shore Team	DNR	Certain information in the existing Part II of the Draft Implementation Plan should be rolled into the new Growth Management Strategy. We caution that much of the text provided in Part II and the Growth Management Strategy does not well represent the State agencies leadership (DNR, MDE, MDP), their programs, or their understanding of local government.	
Middle Potomac Team	DNR	**III. Funding – Ensuring Incentive-Based Programs Work** With the exception of ENR, the success of the IP appears to be vulnerable to availabil funds. Under Stormwater, for example, the IP qualifies implementation with the phra funding is available." There are also various practices in the Agriculture section, e.g., Cover Crop Program, where success appears dependent upon additional funding. ***Recommendation: Maryland provide the Tributary Teams with an annual progress report that identifies where the IP has been adversely affected by funding shortfall, what the significance is in terms of loads, what has been done over the previous 12 months to reduce or eliminate those shortfalls and what this means in terms of load reductions***	
Environmental Planning, Harford Co.	MDE	I do not think "stringent" is the appropriate word in the statement on p. 72, "Tributary Strategies are for larger basins and are usually more stringent than TMDL's." Since TDMLs are regulatory and Trib Strategies are voluntary, I do not believe you can state that Trib Stategies are more stringent.	

Cap Management Strategy

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Middle Potomac Team	MDE/DNR	It's important that the IP explicitly addresses the need for "Cap Management." I have a quibble with one statement, "Once the allocations, or water quality standards, are reached, they must be maintained and the pollution loads must not be allowed to rise above the cap." This suggests that cap maintenance policies will not be implemented until the cap itself is reached. I'd suggest recasting this somewhat to reflect an antibacksliding approach, that includes the above statement but that is put in place well before the cap itself is actually reached. This seems consistent with other wording in the IP that identifies that efforts are underway "… to reduce loads in the face of increased development and population in Maryland." The IP (pp. 76-81) outlines various activities that include looking at the role of offsets and nutrient trading. Recent work by Bay Program staff indicates that absent offset provisions, growth will inevitably lead to increases in nutrient loads if one looks beyond runoff. Accordingly, the Bay Program's Land, Growth and Stewardship Subcommittee (LGSS) has been tasked with projecting growth and loads out to 2030 with an eye to better understanding the scope and scale of the growth-related challenges. The success of the LGSS effort is dependent on active and engaged state involvement. ***Recommendation: Maryland agencies (MDP, DNR, MDE and MDA) continue to work with LGSS and other Bay program committees on the "2030 Initiative," looking at the nutrient impacts of growth and examining opportunities for implementing offsets in the face of growth.*** ***Recommendation: Consider including this as a topic at the 2006 EC meeting as a means of reinforcing the importance of looking at the long-term implications of growth.***	
Lower Eastern Shore Tributary Team	DNR	This could be a good place to list the non-point source caps, point source caps, and current loadings (currently on page 17).	

Lower Eastern Shore Tributary Team	DNR	p.76 – "Political Components" should also include engaging local governments.	
Lower Eastern Shore Tributary Team	MDE	p.76 – will offsets be required for increases in non-point source pollution due to new development (e.g., removal of trees for development)?	
Lower Eastern Shore Tributary Team	DNR	p.79 – refer to the DNR User's Guide to Watershed Planning in Maryland at http://www.dnr.state.md.us/watersheds/pubs/userguide.html developed by the Center for Watershed Protection.	
Lower Eastern Shore Tributary Team	MDE	p.81 – note that offsets of point sources will reduce the opportunity for nonpoint cap management. For example, if half of the acreage in a watershed is needed for cover crops to offset a point source that is above its cap, then there will be less acreage for cover crops to help reduce nonpoint loads and therefore achieve the nonpoint cap. I'm very concerned the state will focus a tremendous amount of resources on point source cap management to the detriment of the Tributary Strategy effort to achieve the nonpoint goals. Note that spray irrigation can help avoid the need for offsets in the first place.	
Lower Eastern Shore Tributary Team	MDE	p. 81- Include more discussion on how to maintain the nonpoint source cap when it is achieved.	
Department of Defense, Regional Environmental Coordinating	MDE	p. 81 – We agree that point to non-point trading and offset should be explored as opportunities to reduce nutrient loads to the Chesapeake Bay and its tributaries.	
Patapsco/ Back Creek Team	MDE	This section should address specific actions that should be put in place within the next 2 and 5 years to address the Nutrient Cap. Likewise there should be a list of barriers to implementation and solutions.	
Upper Western Shore Team	MDP	Similarly, the goals under planning and growth management (page 77) for local treatment versus septic systems cannot happen with arbitrary and draconian WWTP caps and without incentive based shared facilities ordinances.	
Upper Western Shore Team	MDE	Fee-in-lieu funding is referenced on page 79, particularly in reference to stormwater management programs, but it is unclear if there is legislative authority to accept fee-in-lieu under these various programs.	
Upper Western Shore Team	MDE	Again under funding on page 79, it is perhaps true that long term maintenance bonding or financial assurance should be required for	

		stormwater management facilities, but the regulated community already views the State Ordinance as so invasive, complicated, and costly that local jurisdictions are very hard pressed to pass an ordinance that increases the requirement.	
Upper Western Shore Team	DNR	Nowhere does the draft SIP tally the various categories (point sources, urban, septics, airborne, etc.) and compare their 2000 TNL and TPL, the projected reductions stemming from the implementation plan, and the overall reduction goals of the Chesapeake 2000 Agreement. Such a table would be insightful.	
Upper Western Shore Team	DNR	Why does "Watershed Planning" (p. 78) only refer to redevelopment and infill, and not to the taking of prime forest or ag. land, as in the case in many of our counties?	
Middle Potomac Team	MDE MDP	**IV. Cap Management – Preventing Backsliding Despite Continued Growth** It is important that the IP explicitly address the need for "Cap Management." There is statement in the Plan, "Once the allocations, or water quality standards, are reached, tl must be maintained and the pollution loads must not be allowed to rise above the cap." suggests that cap maintenance policies will not be implemented until the cap itself is reached. ***Recommendation: This should be recast to reflect an anti-backsliding approach, su for P and N the standard is that no succeeding year shall have increased loads over preceding year. This restriction should be put in place well before the cap itself is ac reached.*** This Recommendation seems consistent with other wording in the IP which identifies underway "… to reduce loads in the face of increased development and population in Maryland." *An anti-backsliding provision must also consider that Counties may lose ground on Nitrogen loadings as conversion from farmland to subdivision brings increased vehicle usage and increased wastewater discharge. Conversion may also have the effect of reducing the nutrient removal goal and responsibility of the impacted farm sector and increasing the nutrient removal goal and responsibility of the impacted point source sector. The IP (pp. 76-81) outlines various activities that include looking at the role of offsets and nutrient trading. Recent work by Bay Program staff indicates that absent offset provisions, growth will inevitably lead to increases in nutrient loads if one looks beyond runoff. To better understand the scope and scale of such growth-related challenges, the Bay Program's Land, Growth and Stewardship Subcommittee (LGSS) has been tasked with projecting growth and loads to 2030. The success of the LGSS effort is dependent on active and engaged State involvement.* **Recommendation: To this end Maryland should obtain information about the point to point trading (bubble trading,) which is being piloted in Pennsylvania to determine whether Maryland should get involved on a limited scale with such trading.**	

		Recommendation: Maryland agencies (MDP, DNR, MDE and MDA) continue to w with LGSS and other Bay program committees on the "2030 Initiative," looking at t nutrient impacts of growth and examining opportunities for implementing offsets in face of growth. ***Recommendation: Consider including the 2030 Initiative, nutrient impacts on grow implementing offsets, as a topic at the 2006 EC meeting as a way to reinforce the importance of looking at the long-term implications of growth.***	
Chesapeake Bay Foundation	MDE	The Draft Plan suggests increasing the nutrient caps at local wastewater treatment facilities would be an effective strategy for encouraging the connection of septic systems to sewage treatment facilities. While, in some cases, CBF supports the connection of septic systems to public wastewater facilities, we do not support doing so by increasing nutrient loading caps at sewage treatment plants (p39). This flies in the face of recent efforts to begin developing a Statewide "Cap Management" strategy and create a meaningful nutrient trading program, and disregards that Tributary Strategy load caps for sewage treatment plants include room for growth, or septic connections. **(Also in Septic Strategy)**	
Environmental Planning, Harford Co.	MDE	It is important to focus on an off-setting mechanism to address the loading cap at WWTP's and growth management strategies to reduce sprawl.	
Environmental Planning, Harford Co.	MDP	The revision of Zoning Codes to allow more flexible and innovative designs should be promoted rather than the issuance of variances to the Code (p. 79). Variances should not be included as an implementation mechanism.	
Environmental Planning, Harford Co.	MDE	Stormwater Utilities (p.80) – Increasing forest acres as an offset to increased pollutions from other land uses in a good idea and should be promoted.	

Focus Areas to Target Additional Research, Demonstrations and Outreach

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Department of Defense, Regional Environmental Coordinating	UMD	p. 83 – This is germane to our primary comment on the Plan. We agree that installing ENR technology at smaller facilities could be cost-prohibitive and that research is needed to determine cost-effective upgrade and/or pollution prevention strategies for reducing nutrients in the waste streams entering	

		these facilities.	
Upper Western Shore Team	UMD	p. 82 Second paragraph – recommended future actions – State and local governments need to continue to improve working with partners....For example: the process used with builders of the Bay is badly flawed. The input is insufficient, the builders try to dominate and create compromises most favorable to them and there is no attempt to develop a watershed approach. Any further working relationships need to be greatly improved to avoid meaningless or extremely weak guidelines.	
Middle Potomac Tributary Team, Patuxent River Commission	DNR	The State should work with local governments to assess the effectiveness of CREP, and other programs for the establishment of forest and grass buffers and the retention or enhancement of forest cover on agricultural lands, and to assess possible new programs, incentives, and implementation mechanisms for attaining the goals of the Tributary Strategies.	

Tracking and Monitoring Progress

TEAM/INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE
Upper Western Shore Team	DNR	p. 84 Communication strategy – The results of the DNR's stream assessment program should be item number 5.	

Technical Appendix

TEAM /INDIVIDUAL	LEAD AGENCY	COMMENT	RESPONSE

Don Kerstetter's additional Comments on Agriculture:

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Response to draft Strategy dated 2/11/06

March 27,2006

Dear Misters Baxter, Bilek Weiland, Staver, Nemazie,
Enclosed are my comments on the Agriculture portion of the Tributary Strategy draft. Also enclosed is a Sustainable Agriculture Program, which would reimburse farmers for the cost plus incentive bonus to transition to Sustainable Agriculture. The program would reimburse all farmers based on a rating system and acreage. The program as proposed is all-voluntary and would not obligate any farmer to get involved.
Some headlines from this report:

Key factors, which are essential in understanding why modern Agriculture is so detrimental to Choptank water quality and soil depletion, which could have had a major impact on the strategy, were ignored in developing the Choptank Teams input to the Strategy. See pages 1,2,3

Please see statement from The US Department of Agriculture on Sustainable Agriculture and farm field erosion page 2

Tom Fishers (Horns Point Lab) sources of nutrient please see page 2A

Why is excess nutrient so important to Bay water quality Please see pg. 2B.

How is excess nutrient related to species depletion and to diseased species in the Choptank and the rest of the Bay please see pg.2B

Total nutrient intrusion from farming in the Choptank is currently 20 lbs. per acre per year while total nutrient from development is 28 lbs. Please see pg. 2A and do the math

For the genesis of the Sustainable Agriculture rating form please see page 5.

For samples of completed rating forms and a photographic depiction of 2 soil samples with a reimbursement factor of 22% and 48% see attachments after the last page.

Sustainable Agricultural is really going back to the way we farmed 50 years ago with the benefit of increased knowledge. The Sustainable movement is much broader than just farming. It involves increasing farmer profits by encouraging direct marketing. It encourages people to buy fresh buy local. It stresses healthy grass fed animal products that are leaner and healthier while reducing corn feed. Corn production is the major source of nitrogen contamination. It would take decades to implement this cardinal change in the way we farm. It would take an additional 30 years to purge the nitrate backlog in Delmarva's main surficial acquifer. As development increases on the Eastern Shore lawn and golf course fertilizer, retention of wastewater treatment plant effluent, septic nitrate treatment and atmospheric sources must also be addressed. None of these, which are applicable today to heavy developed areas on the Western shore, are even mentioned in the strategy.

The public has been told that this Strategy will clean up the Bay in year 2010. Failure to inform the public of the true challenge will delay public involvement and support and have an opposite affect on Bay cleanup that we all support. Misleading the public will ultimately be very embarrassing to this Republication administration. We all see what the perception of misleading can do politically. I am a Republication and do not want to see this happen. Please be straight with the people in rolling out any strategy. I strongly suggest that this draft not be presented to the public. In the long term it would be better to have no strategy than this flawed strategy.

Sincerely yours

Don Kerstetter

Choptank Sources of N & P based On T. Fisher Measurements

(Bay Model used if unstudied by Mr Fisher)

		2 Area (Acres)	LBS. Yearly	
NITROGEN	(Pounds)			
Agriculture	(Start with TD and subtract C	199,540	3,893,796	71%
Lawns	(Model)	20,162	175,938	3%
Forests Wetlan	ands & Water	144,817	293,635	5.40%
Mixed open	(category between urban an	50,150	254,563	4.50%
Septic	9 lbs/per. Red. DeN/Clark	No.	245,500	4.50%
Paving&Bldg.	(model)	5,875	46,568	1%
	Subtotal Terrestial Diffuse		4,910,000	
Sewer Plants	(T.Fisher & Model)	No.	216,000	4%
Atmospheric	(T. Fisher Measurement)		341,000	6%
		Total N.	5,460,000	99%
PHOSPHOROUS (Pounds)				
Agriculture	(Model %)	199,540	141,765	55%
Lawns	(Model %	20,162	15,400	6%
Forests etc.	Forests Wetlands & Water	144,817	4,249	1.60%
Mixed Open	(Model %)	50,150	27,186	10.70%
Septic			0	0%
Pavinjg&Bldg	(Model %)	5,875	1,752	1%
	1 Subtotal Terrestial Diffuse		190,352	
Sewer Plants	(T.Fisher & Model)		61,800	24%
Atmospheric	(T. Fisher Measurement)		2,380	1%
		Total P	254,532	99%

Dr. Fisher has studied the Choptank watershed in detail over the last 20 years using many data points and local modeling. This effort makes the Choptank the most studied watershed on the Eastern Shore and is therefore more accurate than the Bay model. It is also an indication of nutrient loads in other Eastern Shore watersheds. Except for end of pipe measurements from wastewater treatment plants it is still an estimate particularly sensitive to what is occurring in surficial aquifers in the case of nitrogen. Also much of the phosphorous is stored in the soil, in buffers, and roadside trenches which makes yearly measurement difficult. One large storm could supply many years of the average indicated in the study and dry years understate the average. This study used Dr. Fisher's terrestrial diffuse numbers and the Bay Model if unstudied by Dr Fisher. The Septic N number was substantially increased from the Model based on input from Mr. Clark, Mr. Fisher and the writer's input on the fine-grained aquifer received from USGS.

While N intrusion is significantly higher than P. Research by Dr Fisher indicates that P stimulates algal growth 6.7 times greater than N. Further P is the dominant stimulator of algal growth in May.

NOTES:

1. Due to the sporadic nature of P intrusion Dr. Fisher suggested using the average between the Model at 318,000 pounds and his measurement of 62,500 pounds.
2. The area of consideration includes the Little Choptank and excludes the area of the Choptank in Delaware.

Why is the level of nutrient so important to Bay water quality?

Nutrients stimulate the growth of algae. High levels of nutrient N and P stimulate enormous quantities of algae in warm water commonly called an Algae Bloom. These blooms can turn toxic which kill fish caught in the tide. The algae life span is very short. When the algae die they cloud the water and limit the amount of light reaching the underwater grasses(SAV's). Most of the summer the light as measured by a Sechi disk is less than 50 cm. in LaTrappe Creek. A minimal 1-meter is required for modest growth. When the algae die they also deplete the oxygen, which can also kill fish and other wildlife. Perhaps even more important is the stress that results from low oxygen and toxic tides. **Many scientists believe that stressful conditions lower immune system response and therefore natural resistance to disease. This would explain why oysters fall victim to viruses and why rockfish fall victim to mycobacteriosis.** These diseases are more deadly than the direct killing and it is the reason that most species in the Bay are either in decline or will be in decline as levels increase due the accumulative effect of nutrient in soil and aquifer storage.

Why did Bay water quality deteriorate so rapidly in the last 50 years when agriculture acreage actually declined?

In the late 40's and early 50's farming methods changed. With the advent of chemicals it was no longer necessary to manage the soil to grow crops. As a result multiple rotations, cover crops and inputs of organic matter were discontinued. Soil today is simply a medium to hold chemicals. Well-managed soil is high in humus content, which acts like a sponge to hold moisture and nutrients in the root zone. Well-managed soil does not erode. Well-managed soil is fertile and requires substantially less application of nitrogen. Soybeans for example require no application of nitrogen in the Midwest where soil fertility is still relative high. We apply 50 pounds per acre in our area. Returning to soil management as proposed by the Sustainable Agriculture Movement will return us to a period when the waters were clean, SAV's thrived and soil did not erode. **Some suggest that we are moving toward development so rapidly that the problem of modern agriculture will soon be behind us. The problem with that reasoning is that development as currently regulated has higher nutrient intrusion unit numbers than agriculture. The only reasonable answer therefore is to preserve a more profitable and responsible agricultural enterprise and produce leaner healthier food as proposed by the principals of Sustainable Agricultural.**

A SUSTAINABLE AGRICULTURAL PROGRAM

Purpose: To preserve agriculture; to restore our topsoil and aquifers; to curtail the major pollution source in the Chesapeake Bay Watershed

The following proposal calls for the establishment of a Sustainable Agricultural Program funded by National, State and Local Government which would be available to **all** farmers on the basis of a sustainable rating system having the potential to substantially reimburse all farmers who adopt or who are currently using sustainable farming practices. The form was adapted from an RFP to lease farms that is used by the US. Department of the Interior on its Countryside Initiative at Cuyahoga Valley National Park. The writer in an attempt to analyze the effectiveness and usability of the form has enclosed rating sheets for farming operations based on his limited knowledge. The Rodale rating sheets were completed by Paul Hepperly PHD at the Institute The writer has limited knowledge of pasture based operations so used a rating of 14 out of 16 simply to test the concept. A rating sheet should be created for sustainable pasture. The rating weight of tilled farmland and a pasture-based system is equal at 16. The rating system is based on conversion from tilled to pasture. Some method must be devised to avoid penalizing a farmer who converts to 100% pasture. I used the last rating he had as a tilled farmer. For an existing 100% pasture farmer I suggest the current average of the industries tilled farms be used. It is probably between 6 and 7 at this time. This would be adjusted upward as the industry improves.

FARMING SYSTEM	RATING	Reimb. %
1. Many 2-crop corn and soybean systems	6.5	20%
2. TLF&NS (Farmer Bo Kennedy)	7.5	23%
3. Rodale Conventional Corn/ Soybeans 15 year study	7	22%
4. Rodale multirotational/cover/compost/organic 15 yr.	15.5	48%
Please note the enclosed photograph showing samples from 3 and 4		
5. TLF&S with an assumed 10% conversion to pasture	8.9	28%
6. TLF&S with an assumed 50% conversion to pasture	14.5	45%
7, TLF&NS with assumed 100% conversion to pasture	21.5	67%
8. Current 100% pasture farmer @ 6.5 and 14	20.5	64%

Based on this limited study I would suggest participation to start at a rating of 30% and be proportioned on the basis of rating and acreage. As an incentive the reimbursement should be substantially in excess of the farmers implementation cost. Initially the program would cost the public very little since the entry level would be above the rating of most farms particularly on the Eastern Shore. The cost to the public as participation increases would be substantial. The public must be made aware that this program or a similar program involving a cardinal change in farming methodology is essential if Chesapeake Bay and the publics topsoil asset are to be restored and the farming sector is to be saved.

Along with this program the state should get involved to support the Sustainable Agriculture initiative by urging the public to **buy fresh buy local** and to promote the **health advantage of leaner grass fed animal products**. Farmers should be encouraged to **market from their farms, at farmers markets and local restaurants** without the middleman. All of these actions will increase farmer's percentage of the food dollar from the current 7% to 80% or 90%. I suggest that the team schedule a session with Brian Snyder, the Executive Director of the PASA who has first hand knowledge of all these programs, which are for the most part a nationwide effort.

The State should get involved in the **production of compost from chicken litter** to a specification of the Rodale Inistute, which has demonstrated 50% to 75% reductions in P and N intrusion if extensively used. I suggest the Team invite Dr Hepperly of Rodale to speak on the long-term effect of a quality compost program.

This Sustainable Program would stimulate farming by making it more competitive with other professions, encourage young people to participate and it would slow the rate of farmland conversion to development, which seems to be the current focus of the Choptank Team. **Farmers who choose not to participate suffer no consequence** I look forward to the opportunity to present this concept to the full Team

Respectfully submitted

Donald R. Kerstetter TLF&NS

Mind-set for sustainable Agriculture Rodale multirotational/cover/compost/organic 15 yr.

Less Sustainable Thinking →			More Sustainable Thinking
Get through this year	Next few years make or break	Transfer farm to kids or to another good farmer	Stewardship for many generations

* Adapted with permission from *Sustainable Vegetable Production from Start-Up to Market* (NRAES-104). Natural Resource, Agriculture, and Engineering Service, (NRAES), PO Box 4557, Ithaca, NY 14852-4557, www.nraes.org.

Production Practices for Sustainable Vegetable/Crop Enterprises *

	1	2	3	4	ACTUAL	POTENTIAL
Less Sustainable Practices →				More Sustainable Practices		
1 Crop Rotation	Monoculture (same crop in same field each year)	Two years between the same crop planted in the same field	Three years between the same crop planted in the same field	Four years between the same crop planted in the same field	4	4
2 Organic Matter Maintenance	Add crop residues only (7)	Add animal manures + crop residues	Add cover crops, animal manures, + crop residues	Add compost, cover crops, + crop residues to soil	4	4
3 Nitrogen Fertilization	Broadcast bagged fertilizer in fall	Broadcast bagged fertilizer in spring	band and sidedress fertilizer to match timing of crop uptake	Rely on N from organic residues, in addition to timely fertilization	4	4
Insect Management	Calendar spray insecticides (on predetermined schedule)	Scout for insect pests, then spray non-selective insecticide	Scout for insect pests, then spray selective, least-toxic pesticide	Use cultural practices and beneficial insects to control pests		
4 Weed Management	Apply herbicides as primary weed control tool	Apply educed rates of herbicide and cultivate	Cultivate to remove weeds	Use allelopathy, smother crops, and mulches to suppress weeds	3.5	4
Disease Management	Apply fungicide on a predetermined schedule (e.g., weekly)	Use disease modeling to time fungicide applications as needed	Employ cultural practices that prevent disease	Plant disease-resistant cultivars		
				TILLED FARMLAND Total see note 5	15.5	16
				PASTURE % X 1 to 16 Rating	–	16
				TOTAL	15.5	32
				REIMBURSEMENT %		48

* Adapted with permission from *Sustainable Vegetable Production from Start-Up to Market* (NRAES-104). Natural Resource, Agriculture, and Engineering Service (NRAES), PO Box 4557, Ithaca, NY 14852-4557, www.nraes.org.

PRODUCTION PRACTICES FOR SUSTAINABLE LIVESTOCK ENTERPRISES

Like sustainable crop production, sustainable livestock production involves a wide range of production practices which are acceptable for Countryside Initiative farms. Initiative farmers are free to choose among literally hundreds of specific management options related to livestock species, breeds, genetics, facilities, feeds and feeding, grazing systems, health care, butchering and processing, marketing, and so forth – provided those choices result in humane care of all farm animals during the course of their lives, and provided that the environmental consequences of the livestock enterprise are positive.

ANIMAL WELFARE

Countryside Initiative livestock operations must use what are generally referred to as loose confinement systems. That is, poultry are not caged, swine are not tightly crated, beef cattle are not packed into feedlots, and dairy cattle are not confined to small exercise areas. All livestock must have regular access to open air and pasture. All livestock facilities must be properly ventilated and provide animals with clean, dry rest areas (sheltered from wind during cold weather). Each proposer/lessee is responsible for recommending specific livestock management practices for CVCC/CVNP review and approval.

GRASS-BASED LIVESTOCK PRODUCTION

In simplest terms, Countryside Initiative livestock enterprises are expected to be grass-based. Plant scientist and grazing researcher E. Ann Clark, University of Guelph (Ontario, Canada), describes certain recent concepts of grass-based farming as attempts to mimic or mirror natural processes. In nature, there is no waste, because the output of every process constitutes the inputs for other processes. In contrast, conventional livestock production systems (which depend on specialized crop production to support livestock fed in confinement) break many

NOTES:

1&2 SOIL MANAGEMENT- Includes crop rotation and Organic Maintenance.

3. NITROGEN FERTILIZATION- Any management technique that reduces N application below the level calculated by nutrient management criteria for corn and small grains and zero applied N for beans

4. PESTICIDE MANAGEMENT- Use the arithmetic mean of Insect, weed, and disease management.

5. Use actual total for active tilled farms. Use industry average or last tilled rating whichever is higher for 100% pasture farms

6 PASTURE- Pasture rating based on a 1 to 16 rating of rotational grazing practice and manure management and fencing to avoid surface water contamination plus the 3 factors in the left hand column

7. Base is conservation tillage. Score 0 if a lesser

Mind-set for sustainable Agriculture — TLF&NS (Farmer Bo Kennedy)

Less Sustainable Thinking →			More Sustainable Thinking
Get through this year	Next few years make or break	Transfer farm to kids or to another good farmer	Stewardship for many generations

* Adapted with permission from *Sustainable Vegetable Production from Start-Up to Market* (NRAES-104). Natural Resource, Agriculture, and Engineering Service, (NRAES), PO Box 4557, Ithaca, NY 14852-4557, www.nraes.org.

Production Practices for Sustainable Vegetable/Crop Enterprises *

Less Sustainable Practices →			More Sustainable Practices	ACTUAL	POTENTIAL
Crop Rotation					
Monoculture (same crop in same field each year)	Two years between the same crop planted in the same field	Three years between the same crop planted in the same field	Four years between the same crop planted in the same field	2	4
Organic Matter Maintenance					
Add crop residues only (7)	Add ~~animal manures~~ cover crops + crop residues	Add cover crops, animal manures, + crop residues	Add compost, cover crops, + crop residues to soil	2	4
Nitrogen Fertilization					
Broadcast bagged fertilizer in fall	~~Broadcast bagged~~ liquid fertilizer in spring	band and sidedress fertilizer to match timing of crop uptake	Rely on N from organic residues, in addition to timely fertilization	2.5	4
Insect Management					
Calendar spray insecticides (on predetermined schedule)	Scout for insect pests, then spray non-selective insecticide	Scout for insect pests, then spray selective, least-toxic pesticide	Use cultural practices and beneficial insects to control pests		
Weed Management					
Apply herbicides as primary weed control tool	Apply educed rates of herbicide and cultivate	Cultivate to remove weeds	Use allelopathy, smother crops, and mulches to suppress weeds	1	4
Disease Management					
Apply fungicide on a predetermined schedule (e.g., weekly)	Use disease modeling to time fungicide applications as needed	Employ cultural practices that prevent disease	Plant disease-resistant cultivars		
			TILLED FARMLAND Total see note 5	7.5	16
			PASTURE % X 1 to 16 Rating	–	16
			TOTAL	7.5	32
			REIMBURSEMENT %	23	

* Adapted with permission from *Sustainable Vegetable Production from Start-Up to Market* (NRAES-104). Natural Resource, Agriculture, and Engineering Service (NRAES), PO Box 4557, Ithaca, NY 14852-4557, www.nraes.org.

PRODUCTION PRACTICES FOR SUSTAINABLE LIVESTOCK ENTERPRISES

Like sustainable crop production, sustainable livestock production involves a wide range of production practices which are acceptable for Countryside Initiative farms. Initiative farmers are free to choose among literally hundreds of specific management options related to livestock species, breeds, genetics, facilities, feeds and feeding, grazing systems, health care, butchering and processing, marketing, and so forth – provided those choices result in humane care of all farm animals during the course of their lives, and provided that the environmental consequences of the livestock enterprise are positive.

ANIMAL WELFARE

Countryside Initiative livestock operations must use what are generally referred to as loose confinement systems. That is, poultry are not caged, swine are not tightly crated, beef cattle are not packed into feedlots, and dairy cattle are not confined to small exercise areas. All livestock must have regular access to open air and pasture. All livestock facilities must be properly ventilated and provide animals with clean, dry rest areas (sheltered from wind during cold weather). Each proposer/lessee is responsible for recommending specific livestock management practices for CVCC/CVNP review and approval.

GRASS-BASED LIVESTOCK PRODUCTION

In simplest terms, Countryside Initiative livestock enterprises are expected to be grass-based. Plant scientist and grazing researcher E. Ann Clark, University of Guelph (Ontario, Canada), describes certain recent concepts of grass-based farming as attempts to mimic or mirror natural processes. In nature, there is no waste, because the output of every process constitutes the inputs for other processes. In contrast, conventional livestock production systems (which depend on specialized crop production to support livestock fed in confinement) break many

NOTES:

1&2 SOIL MANAGEMENT- Includes crop rotation and Organic Maintenance.

3. NITROGEN FERTILIZATION- Any management technique that reduces N application below the level calculated by nutrient management criteria for corn and small grains and zero applied N for beans

4. PESTICIDE MANAGEMENT- Use the arithmetic mean of Insect, weed, and disease management.

5. Use actual total for active tilled farms. Use industry average or last tilled rating whichever is higher for 100% pasture farms

6 PASTURE- Pasture rating based on a 1 to 16 rating of rotational grazing practice and manure management and fencing to avoid surface water contamination plus the 3 factors in the left hand column.

7. Base is conservation tillage. Score 0 if a lesser

Mind-set for sustainable Agriculture — TLF&S with an assumed 50% conversion to pasture

Less Sustainable Thinking →			More Sustainable Thinking
Get through this year	Next few years make or break	Transfer farm to kids or to another good farmer	Stewardship for many generations

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Production Practices for Sustainable Vegetable/Crop Enterprises *

Less Sustainable Practices →	1	2	3	4 More Sustainable Practices	ACTUAL	POTENTIAL
Crop Rotation	Monoculture (same crop in same field each year)	Two years between the same crop planted in the same field	Three years between the same crop planted in the same field	Four years between the same crop planted in the same field	2	4
Organic Matter Maintenance	Add crop residues only 7	~~Add animal manures~~ + crop residues cover crops	Add cover crops, animal manures, + crop residues	Add compost, cover crops, + crop residues to soil	2	4
Nitrogen Fertilization	Broadcast bagged fertilizer in fall	Broadcast bagged fertilizer in spring	band and sidedress fertilizer to match timing of crop uptake	Rely on N from organic residues, in addition to timely fertilization	2.5	4
Insect Management	Calendar spray insecticides (on predetermined schedule)	Scout for insect pests, then spray non-selective insecticide	Scout for insect pests, then spray selective, least-toxic pesticide	Use cultural practices and beneficial insects to control pests		
Weed Management	Apply herbicides as primary weed control tool	Apply educed rates of herbicide and cultivate	Cultivate to remove weeds	Use allelopathy, smother crops, and mulches to suppress weeds	1	4
Disease Management	Apply fungicide on a predetermined schedule (e.g., weekly)	Use disease modeling to time fungicide applications as needed	Employ cultural practices that prevent disease	Plant disease-resistant cultivars		
				TILLED FARMLAND Total see note 5	7.5	16
				PASTURE % X 1 to 16 Rating	7	16
				TOTAL	14.5	32
				REIMBURSEMENT %		45

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RODALE 15 YEAR GRAIN FARMING STUDY