Phosphorus TMDLs for Vermont Segments of Lake Champlain: Response to Comments

June 17, 2016

Table of Contents

Introduction

On August 14, 2015 EPA released proposed Phosphorus TMDLs for the Vermont Segments of Lake Champlain. Over the course of 60 days, EPA received comments from nearly 200 individuals or entitles. This document contains EPA's responses to the comments received on the proposed TMDLs.

This document follows the same basic structure as the proposed TMDLs. Comments, or sub-elements of comments, have been gathered by the subject nature of the comment. For example, all comments related to the allocations for Developed Land are gathered in a section with that heading.

Within the subject headings, EPA has numbered the comments sequentially to aid in cross-referencing. For example, the second comment in Section 4, Sources of Phosphorus Loading, is designated as Comment 4-2. After the comment number designation, EPA has included in brackets the name of the person or organization that submitted the comment. Section 11 contains a list of all the commenters with references to the comment number.

Example:
Comment 4-2: [Bacon]
Just making sure folks have determined phosphorous in Lake Champlain and tributaries is not attributed to geological erosion or leaching from surrounding phosphorous deposits or rock formations.

> **Response:**
> Geologic erosion and other mechanisms contribute part of the natural background phosphorus loading to Lake Champlain that was present prior to European settlement of the watershed. However, human activities such as development, agriculture, stream alterations, and wastewater disposal contribute far greater quantities of phosphorus to the lake than these natural background processes.

Where a commenter provided numbered comments or comments on more than one subject, the name/entity is followed by a number or keyword tied to the subject in the comment letter. For example, one element of the comments received from the Conservation Law Foundation – Vermont Natural Resources Council, appears as: Comment 1-2: [CLF-VNRC, introduction].

Where the comments from a number of people or entities were closely related, EPA has grouped the comments together and provided a consolidated response. This approach is noted at the beginning of each such grouping. Where comments from more than one party were substantially the same, the comment appears only once, but the names of the commenters are included. In the case of some comments which are exactly the same or came with a list of signers, the identification indicates the name of the first commenter followed by *et al.*

The responses to some comment contain references to other responses elsewhere in the document. In those cases, the number of the response being referenced is hyperlinked to aid in locating the text (e.g., see response to Comment 4-2, should take you to the example response above).

Finally, to the extent possible, EPA has retained any text emphasis (i.e., bold, underline, italics), text boxes and figures included in the comments received.

1. Background/General

General Support for TMDLs

EPA received four comments expressing general support for the TMDLs. A consolidated response follows the fourth comment.

Comment 1-1: [Peters *et al.*]
The new cap on the amount of phosphorous allowed to enter Lake Champlain establishes tough targets for runoff reduction – and we need tough targets to successfully clean up the lake.

I support stringent allocations for reductions in phosphorous runoff and think that with a few changes, the new standards could be even better.

Restoring Lake Champlain and polluted streams and rivers throughout the watershed is going to be a long, hard fight. Checking boxes isn't enough. We need real accountability throughout the cleanup process that is based on quantitative improvements in water quality. And while the new standards set the necessary goals for seeing improvements, how we reach these goals is going to require community input and commitment. [See specific response following Comment 7-10.]

I also urge Vermont and the EPA to call for greater reductions of phosphorous runoff from impervious surfaces like parking lots and rooftops. All wastewater treatment plants should decrease their phosphorous loads. And the plan should support mandatory programs to reduce streambank erosion. [See specific response following Comment 6-7.]

It's time for Vermonters to make a real commitment to clean water. I support high standards for reducing phosphorous in the Lake Champlain Watershed.

Comment 1-2: [Willey]
I wanted to call on behalf of my family and our community and voice our concern and strong support for these limits. We have a boat and we greatly enjoy the lake. We rent a slip in St A B and for the past months the water is just so horrible. We have a 4 yr. old and I have to be concerned about if he comes in contact with that water before we get out of the bay and into clear water. It's very sad, and disheartening, discouraging and even frightening for members of our community. And I just wanted to voice my concern about that. We want to be able to enjoy the lake for our family. I want to be able to watch my child be able to grow up and enjoy the lake and the health of our lake is important to us.

Comment 1-3: [Dunnington]
I'd like to weigh in on the side of doing whatever it takes to reduce phosphorus in Lake Champlain at a rate that eliminates blue green algae blooms in my lifetime, maybe 30 years.

A point of reference and some perspective. I worked at the Tyler Place in 1968 - and we had blooms that summer. The State has known about this problem for decades. Thank the Lord for CLA and EPA because the State has proven itself to be incapable of managing a solution. It seems that nothing much happens in Vermont unless somebody else pays for it. There were no blooms before big ag introduced "modern" fertilizer practices in the 1950s. I am familiar with the Chesapeake Bay effort (Having worked with EPA on it for almost a decade) - essentially unsuccessful despite decades of effort. I live on the lake in Colchester. Here we see the Town closing its public beaches due to e coli at an increasing rate - more than twice as many closures this summer as in the past three combined. Big picture - we've been more effective with environmental management than China, Brasil or Eastern Europe, but we need to be much more aggressive. It will be especially difficult - and important - around Missiquoi Bay because it is basically a big natural petri dish. People will push back. Some will see this as heavy handed big government. Some farms will go under. Some towns will have to raise taxes to pay for better stormwater management. So be it - unless we ramp up standards, practices and resources - and enforcement - we will accede to a continuing degradation of water quality. Time for spine.

The lake is an invaluable natural and economic resource for thousands more people than those who farm around Missiquoi Bay - and, over time, millions of people. It's long past time to be green. The Vermont Legislature stepped up this session with its water quality bill. Time for the rest of the stakeholders to follow suit. Perhaps the world's success at eliminating the ozone problem could point the way. Let's get on with doing the right thing for Lake Champlain - for the greater good.

Comment 1-4: [Casey]
THANK YOU EPA for all you're trying to do to get Lake Champlain cleaned up! Enough is enough and don't let the farmers off the hook! Grew up on the lake. It is now revolting. So sad. Please please please help!!!

> **Consolidated Response:** EPA acknowledges the concerns raised and appreciates the support for the approach taken in the TMDLs. As noted above, some portions of the comments are responded to elsewhere in the document as well.

Key components of TMDLs

Comment 1-5: [CLF-VNRC, introduction]

The CWA was enacted more than 40 years ago to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."[1] The TMDL process is critical to achieving the CWA's purpose by requiring states to develop pollution budgets for impaired bodies of water. These pollution budgets are guided by the requisite to meet water quality standards.[2]

However, the TMDL process to date has had a spotty record in serving its purpose. In 2013, EPA reported that more than half of the country's assessed waters did not meet water quality standards or their designated uses, such as fishing, swimming, or drinking.[3] The Government Accountability Office (GAO) has found that a majority of long-established TMDLs do not contain the necessary components to help water bodies attain water quality standards.[4] GAO, in alignment with National Research Council and EPA studies and guidance documents, stresses that successful TMDLs: (1) accurately identify and address causes of impairment; (2) ensure implementation is feasible; and (3) can be revised as needed.[5]

We commend EPA and the State of Vermont (the State) for their effort to conduct a detailed and thorough investigation of phosphorus loading into Lake Champlain. The new reduction targets are, for the most part, rigorous and forward thinking with the best intention of cleaning up the lake. However, the draft 2015 TMDL does not incorporate the three key components of a successful TMDL in a number of its provisions and, therefore, EPA cannot be reasonably assured that phosphorus pollution will actually be reduced in the Lake Champlain watershed.

1. The draft 2015 TMDL fails to accurately identify and address causes of impairment by:
a. Inappropriately categorizing point and nonpoint sources of phosphorus pollution;
b. Allowing actual increased phosphorus discharges from wastewater treatment facilities;
c. Insufficiently addressing phosphorus loading during the stormwater permitting process; and
d. Setting a developed load allocation that is inadequate to account for the increase in phosphorus loading from this source category.

2. The draft 2015 TMDL does not ensure implementation is feasible because it:
a. Places a disproportionate burden of reducing phosphorus from developed lands on municipalities;
b. Purports to set final load allocations before an implementation plan is completed, which translates to a blind reliance on future controls that have yet to be identified or codified;
c. Relies on control measures for streambank and forestland erosion that are inadequate to achieve the new load allocations; and
d. Relies on control measures for discharges from agricultural lands that are, as is, insufficient to meet new load allocations.

3. The draft 2015 TMDL's accountability framework does not allow for revision as needed and further, is inadequate to ensure that implementation failures are rectified in a timely fashion.

Footnotes in Comment
[1] 33 U.S.C. 1251(a)
[2] 33 U.S.C. 1313(d)(1)(C)
[3] U.S. Environmental Protection Agency. *National Summary of State Information*, Last accessed October 15, 2015 <http://ofmpub.epa.gov/waters10/attains_nation_cy.control>
[4] U.S. Government Accountability Office. *Clean Water Act Changes Needed If Key EPA Program is to Help Fulfill the Nation's Water Quality Goals*. December 2013. pg. 36.
[5] *Id*. at pg. 36-38.

Response: EPA will respond here primarily to the second paragraph above concerning how the TMDLs address the recommendations made by the Government Accountability Office. The numbered and sub-lettered portion of CLF's introductory comments are more fully elaborated on by CLF and responded to in detail in subsequent sections of this document.

EPA first notes that the "three key components of a successful TMDL" referred to by the commenter are derived from the findings of the referenced 2013 report issued by the Government Accountability Office (GAO) [GAO, 2013]. GAO identified key features experts felt TMDLs should contain if they were to help water bodies attain water quality standards. They grouped these key features into three categories

that help ensure that: (1) TMDLs accurately identify and address causes of impairment, (2) TMDLs can be implemented, and (3) TMDLs are revised if found to be ineffective in helping water bodies attain water quality standards. These features are discussed below including how the 2016 Lake Champlain TMDLs address GAO's findings.

Accurately Identifying and Addressing Causes of Impairment

GAO referenced a 2001 report by the National Research Council in identifying two key features that help ensure that TMDLs accurately identify and address the causes of water body impairment: evidence that impairment is caused by the stressors a TMDL is developed to address, and evidence that addressing these stressors will be sufficient for a water body to attain designated uses.

At this time, there is no disagreement that phosphorus has correctly been identified in the TMDLs as the pollutant of concern. The role of phosphorus in the impairment of Lake Champlain has been long studied and well documented and the TMDLs indicate that addressing phosphorus should be sufficient to attain the water quality criterion. EPA disagrees with the commenter's other assertions under 1 above. EPA's response to these assertions can be found following Comment 6-1 in the Establishing Allocations section.

Ensuring the TMDL Can Be Implemented

GAO referenced EPA studies and guidance documents that identified key features to help ensure that TMDLs can be implemented. These key features include (1) a plan for TMDL implementation that specifically identifies who must undertake what projects to control pollution (i.e., plan specifies actors) and on what land areas (i.e., plan specifies locations) and (2) a demonstration of reasonable assurances that projects to control nonpoint source pollution will actually be implemented, and to an extent that allows the water body to meet load allocations specified in the TMDL.

Chapter 8 of the TMDL describes the approach for implementation. Vermont has developed a Phase 1 Implementation Plan that sets forth the milestones required to put all of the major implementation elements in place (e.g., garnering resources, developing programs, writing regulations, revising Agricultural and Forestry practices, issuing general permits). Five-year Phase 2 Implementation Plans (also referred to as Tactical Basin Plans) will then be developed for each of the sub-basins. The Phase 2 plans will indicate what specific measures will be applied at what specific locations during the five-year plan cycle. An implementation table will outline the priorities of the VT agencies and partner organizations for protection or restoration of specific stream/river or lake segments affected by specific pollution sources and present a specific focus on BMP or programmatic implementation necessary to reduce phosphorus loading to the Lake with geographic specificity.

Section 7.2 of the TMDLs details EPA's determination that there is reasonable assurance that the nonpoint source (and non-NPDES regulated point source) reductions can and will be achieved. EPA's conclusion that there is reasonable assurance that such reductions can and will be achieved rests on the following major factors:

1. Vermont's Phase 1 Implementation Plan, as revised in August, 2015, contains a detailed listing of specific, technically feasible commitments made by the State. Many of the most important

milestones in the Plan are included in Act 64, signed into law by Governor Shumlin on June 16, 2015.

2. EPA's modeling and scenario tools enabled the quantification of reductions achievable from the measures contained in the Phase 1 Implementation Plan, and allowed for verification that these reductions are sufficient to meet load allocations for each segment. This is described in detail in Appendix B.
3. EPA has developed an Accountability Framework to provide a sufficient backstop to ensure a high likelihood that implementation of the nonpoint source measures will occur.

The commenter's further points are responded to following Comment 7-1 in the Reasonable Assurance section of this document.

Revising TMDLs as Needed

GAO again referenced the 2001 NRC report in identifying key features that help ensure that TMDLs are reviewed and revised if found to be ineffective in helping water bodies attain water quality standards. These features include a plan to monitor a TMDL's effect on water quality and use of an adaptive implementation approach in which monitoring data are used to revise and improve a TMDL over time.

Although the proposed TMDLs did not include a separate section on monitoring, Chapter 2 contained a description of the on-going Lake Champlain Long-Term Water Quality and Biological Monitoring Program, operated by the Vermont DEC and New York State DEC and coordinated through the Lake Champlain Basin since 1992. A more comprehensive description of the range of monitoring efforts in place to measure the success of implementation has been added to Chapter 8 of the final TMDLs. This is discussed further in response to Comment 7-2 in the Accountability Framework section of this document.

The TMDLs incorporate an adaptive approach in a number of ways. The Accountability Framework described in Section 7.3 of the TMDLs is the first of these adaptive approaches. In the first phase, Vermont will be held accountable for the milestones required to put all of the major implementation elements in place. If the milestones are not met, EPA has indicated actions that it will consider, including revising the TMDLs and their allocations and expanding NPDES permit coverage. The next phase is tied to the Phase 2 Implementation Plans which depend among other things on the most current measured water quality data to prioritize specific actions or measures to be applied to specific locations. The Phase 2 implementation tables can be revised in response to newly obtained data. As described in Chapter 8, implementation of the TMDLs in St. Albans Bay and Missisquoi Bay also contain adaptive elements.

2. Water Quality Standards

Comment 2-1: [Essex Junction]
When such massive load reductions from every sector are required to meet Missisquoi Bay's water quality standard it calls into question the validity of the standard itself. At public meetings EPA described the modelling process as "dialing down and dialing down" load reductions for each sector until water quality standards were met. "Dialing down" the models without offering any check-in as to whether the reductions sought are realistic begs the question of whether the current standards for our most impaired segments can be met.

Core lake standards are noted as being sampled *"… including as high a proportion of samples as possible during high flow conditions."* Please insure that this allows for proper flow proportioning so as not to overcompensate for the TMDL base. This would require excess VT phosphorus mitigation beyond the WLA and LA's, including the Margin of Safety at significant cost.

Response:
The CWA requires that TMDLs establish the load and wasteload allocations needed to achieve the water quality standards for a waterbody. Water quality standards are determined through a separate process outside the scope of TMDL development. That said, EPA recognizes that the reductions needed to meet the water quality standard for Missisquoi Bay present a major challenge. The State of Vermont periodically considers revisions to the water quality standards (a complex process itself under the Clean Water Act) and submits such revisions to EPA for review and approval. EPA assumes that, during future reviews of the water quality standards, the State will consider any pertinent new information resulting from the TMDL development process. As a result of this review process, it is possible that the water quality standards for one or more segments of Lake Champlain could change in the future. Meanwhile, the TMDLs must be written to ensure attainment of the existing water quality standards. In the case of Missisquoi Bay, existing information suggests it will be very difficult to achieve the standard. However, since release of the August 2015 draft TMDLs, EPA was able to identify a mix of agricultural practices that EPA expects can achieve the full 83% reduction needed from agricultural land (see Appendix B of the TMDL document for a description of the practices). While such a steep reduction will certainly be a challenge, it should be remembered that new approaches to agricultural conservation methods are being developed continually. New methods of manure management, soil amendment, and treating phosphorus in tile drainage, for example, could significantly improve the efficiency of agricultural reductions. In short, while a review of the water quality standards may become appropriate in the future, based on current information EPA believes that the existing standards are attainable.

Regarding the comment on the proportion of samples collected during high flow conditions, please note that the Lake Champlain phosphorus monitoring program is conducted by the states of Vermont and New York in conjunction with the Lake Champlain Basin Program, rather than EPA. But the description of the program makes it clear that every effort is made to collect tributary samples during the full range of flow conditions. The FLUX-generated load estimates used in the TMDLs take into account the full hydrologic record as recorded at USGS stream gages, and the concentrations monitored during high flow conditions are only applied to applicable high flow periods. Phosphorus concentrations during base flow conditions vary much less than those collected during high flow conditions, and the base flow

concentrations are well represented by the monitoring program. The purpose of collecting as many samples as possible during high flow conditions is to ensure that the variability among high flow conditions is captured as accurately as possible.

Comment 2-2: [Lake Champlain Committee]
The current water quality standards are based on user perceptions of water quality rather than hard and fast ecological principles. The standards for the most impaired segments, including .025 mg/L in Missisquoi Bay, "were established based on limitations of practical attainability". In their 1979 Limnology of Lake Champlain, well before water quality standards were promulgated, Meyers and Gruendling reported the mean phosphorus concentration of Missisquoi Bay as .05 mg/L. It has never been clear how the limitations of practical attainability were determined given the state of Missisquoi Bay before standards existed. Furthermore, at the time the standards were established the importance of internal phosphorus loading from sediments was not fully understood. EPA already admits that Missisquoi Bay will not meet water quality standards for 70 years after target loads are met as a result of internal loading (pg. 23). And target loads will not be met until all streambank reaches have achieved equilibrium, a decades-long process on its own.

Response:
In addition to the above response to Comment 2-1, please note the following. In fact, EPA is not suggesting that Missisquoi Bay will not meet standards until 70 years after target loads are met. The modeling completed by LimnoTech actually indicates that standards will be achieved or nearly achieved within the first 10 years after target loads are met. The modeling then indicates a very slight continual decrease in Bay phosphorus concentrations over the next 60 years. The modeling indicates that the internal sediment load is what necessitates such a substantial reduction from watershed sources (64% overall), but once the watershed source reduction is achieved, the Bay response is projected to be fairly rapid. Section 5.2 of the TMDL document has been revised to include this explanation below the equation derived from the LimnoTech reports, and the final paragraph of Section 6.2.1 has been revised to indicate that the allocations take into account a continual phosphorus source from the Bay sediment that would sharply decline once adequate watershed load reductions are achieved. The commenter correctly notes that it will still be a slow process, as achieving the target reductions from streambank erosion and stream corridor processes will indeed likely take many years. But reductions from other sectors could be achieved more rapidly, and the modeling indicates that phosphorus concentrations in the Bay will drop significantly even with lesser reductions (such as a 50% reduction) from watershed sources. In any event, while the timeframe for achievement of water quality standards is an important concern, it is separate from the question of whether standards can be achieved.

Comment 2-3: [Houriet, 3]
Lack of Numeric Standards, operational PI (phosphate index)

Act 64 reveals reflects Vermont's allegiance to a state's rights brand of Water Quality Standards (hereafter WQS) as opposed to the numeric standards set forth in the 1972 Clean Water Act and imposed by the EPA – with mixed results – on the states. On that broad prefatory conclusion of complicated political and applied science issues, wrapped up in an interwoven institutional history of the EPA taking on states chary to be federally-regulated we depend and again defer to Oliver A. Houck.(22).

> The passage of the CWA in 1972 drew a line in the sand. The line of the battle would shift back and forth across that line back and across that line through the administrations of six presidents, punctuated by federal and Supreme Court decisions. The underlying battle is state v. Federal for which the legal proxies are WSQ's and numeric TMDL's.

At the start, the CWA made it clear and mandatory that the states had to adopt numeric standards that would take precedent over the states' loose narrative WQS's the EPA allowed the states to retain keep, more or less as a token of federalist partnership. Amazingly numeric guidelines have survived court onslaught and are still intact, albeit with nominal authority to implement. One heads the four part list of reasonable assurance:

"The control actions or management measures should be (1) specific to the pollutant and waterbody to which the TMDL are applied. " (23)

Also there is sec 130.2 Definitions. (H) Total Daily Maximum Load.

" A TDML is a written, quantitative plan and analysis ...for a specific waterbody and pollutant and must include the following (11) elements...(*3) Quantification* of the pollutant load that must be present .(4) .*Quantification* of the amount of the current pollutant deviates from the pollution load to attain and maintain water quality standards."

Aside from being inscribed in EPA rules, and backed by Congressional intent, one would think that a common sense alone would have been sufficient to shore up the absolute necessity of numeric standards, above all, *limits.* Wbat's [sic] the difference between setting speed limits on the highways and penalties on the small per cent of the incorrigible drivers who persist to drive drunk over these limits, unless limits in law were imposed upon society across the board?

But the EPA had a hard sell to convert TMDL's into common sense terms. Houck sums it up.

> This was a turf war. Governor after governor to spoke to protest a "federal take-over," a "subterfuge to encroach upon the constitutional authority " of the states. Although couched in the language of "expertise" to their supporters in the House of Representatives (and in the American Petroleum Institute and the U.S. Chamber of Commerce) the issue was not so much clean water as it was retaining the clout to make decisions that affected state and local government. And it has so remained. Virtually every year since 1972, state agencies and their trade organizations have proposed returning to the CWA to a water quality standards-based program as a matter of state sovereignty, although to a program that would be relaxed at the same time to eliminate "unrealistic" and "rigid" federal numeric standards as well, and afford greater "flexibility" for water quality permitting. We can *do* water quality standards-based regulations the states have maintained, just let us. (24)
>
> **Response:** EPA notes that Vermont's Water Quality Standards include explicit *numeric* criteria for total phosphorus. The starting point for the TMDLs in each lake segment are those same *numeric* criteria. Each TMDL *quantifies* the pollutant load associated with the total phosphorus criteria for that segment of Lake Champlain and the current total phosphorus load.

3. Watershed and Impairment Description

Comment 3-1: [Vermont Rural Water Association (VRWA)]
The approach to divide Lake Champlain into segments and give the details on given segments is right on target. It is known there are distinct differences in the lake quality in given areas and by dividing into segments a one size fits all tactic will be avoided. Given one pollution reduction approach may work in one watershed does not mean it will work in another; it is good Vermont will be given authority to figure this out at the local watershed level.

> **Response:** EPA appreciates the commenter's support for both the way Vermont has divided the lake into segments for water quality purposes, and the way the TMDLs take segment-specific approaches to allocations.

4. Sources of Phosphorus Loading

Comment 4-1: [CLF-VNRC, 1]
The draft 2015 TMDL does not accurately identify and address causes of impairment.
The first element of a successful TMDL is to accurately identify and address the causes of water body impairment. Phosphorus has correctly been identified in the draft 2015 TMDL as the pollutant of concern because "it is causing or contributing to excessive algal biomass in the lake, and monitoring data indicate phosphorus levels are elevated above established phosphorus criteria in the Vermont Water Quality Standards."[6] However, the draft 2015 TMDL does not sufficiently address phosphorus pollution. It inappropriately categorizes sources of phosphorus, it allows phosphorus loads to increase, it does not include a phosphorus-monitoring requirement for stormwater permits, and it sets an inadequate allocation for developed lands.

Footnote
[6] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 7.

> **Response:** As discussed in the response to Comment 1-5, EPA agrees that the TMDLs correctly identify phosphorus as the pollutant of concern. EPA's responses to the assertions in the last sentence of the comment are provided at Comment 6-1 in the Allocations section of this document.

Comment 4-2: [Bacon]
Just making sure folks have determined phosphorous in Lake Champlain and tributaries is not attributed to geological erosion or leaching from surrounding phosphorous deposits or rock formations.

> **Response:**
> Geologic erosion and other mechanisms contribute part of the natural background phosphorus loading to Lake Champlain that was present prior to European settlement of the watershed. However, human activities such as development, agriculture, stream alterations, and wastewater disposal contribute far greater quantities of phosphorus to the lake than these natural background processes.

5. Establishing Lake Segment Loading Capacities

Modeling

Comment 5-1: [Vermont League of Cities and Towns]
The draft TMDL states that insufficient data exist to definitively establish phosphorus discharges from categories of developed land. Accurate historical phosphorus data are available for wastewater treatment facilities and really not much else. In essence, extensive modeling of contributors to the phosphorus problem represent best guesses. The draft TMDL includes a five percent margin of safety, "to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality" in addition to making conservative estimates of work needed in each segment and with respect to each contributing source.

We understand the current lack of data. We can see that phosphorus loading produces extreme results in stressed portions of the lake. We are, however, concerned about the extent to which modeling of outcomes is relied upon in the TMDL as data become available. Some of the requirements established in the TMDL strike us as severe, given what scientists know about phosphorus contributions to the lake. We urge you to include a commitment to relying on actual data as our experience with reducing phosphorus discharges from all sectors increases. We also urge you to incorporate flexibility in the TMDL that allows for adjusting approaches to reflect what is learned as real data across all contributing sectors are made available.

> **Response:**
> EPA agrees with the commenter and indeed intends for new information to be taken into account during the implementation phase. For example, EPA is working with VTDEC to ensure that the tracking tools and Phase 2 tactical basin plans are being developed with options to plug in updated loading and reduction efficiency data as relevant monitoring studies are completed.

Comment 5-2: [Anonymous 1]
I live in Vermont and enjoy kayaking on Lake Champlain. I just read the EPA report. I have done some reading about the Chesapeake Bay phosphorus "program". They have a detailed computer model of the watershed, it's been recently upgraded to a new version and has been used for almost 20 years. I believe it simulates the entire "phosphorus cycle", resident phosphorus and newly introduced load and considers P in the sediment.
Is there such a computer model for the Lake Champlain water shed?
How did the EPA determine that it will 10-15 years for any noticeable change? My gut feel (based on nothing) is that it will take much longer.
Is it even conceivable that physical removal of phosphorus in the sediment is a possibility? Say pick 2 or 3 bad areas and during turn-over periods somehow chemically filter P out of the water or apply alum. Is this something camp owners could do on a micro level?
How about sucking up the algae blooms and removing the P that way? Yes it will take a long time.
Is there a national data base regarding Phosphorus and B-G algae?

Response:
EPA supported the development of a watershed model and a lake model that together simulate the processes the commenter describes, including phosphorus introduced from the watershed and phosphorus stored or recycled within the lake system. The lake model is simpler than the Chesapeake Bay model, but it is designed to answer the same types of questions.

EPA has not formally determined that it will take 10-15 years for any noticeable change to occur. But given the size of the lake and watershed, and the number of years that phosphorus has been building up in the lake, it is clear that improvement will take a number of years, as the commenter suggests. Most of the implementation actions Vermont has committed to will take at least 10-15 years to complete throughout the basin, so it is reasonable to assume that it will be, at a minimum, 10-15 years before changes should be expected to be seen in the lake – and that doesn't take into account the lag time between practice implementation up in the watershed and water quality response in the lake. For Missisquoi Bay, a more detailed water quality model was developed (through the Lake Champlain Basin Program) and this model predicts that if phosphorus inputs to the lake drop to the needed levels (a 64% reduction) then the Bay is expected to come close to achieving the standard within another 10 years. But that is following full implementation in the watershed, which could take at least 20 years. So the full time-frame could easily be 30 years or more for Missisquoi Bay. But, improvement (short of actually attaining the phosphorus criterion in the Bay) should certainly be noticeable sooner than that, if substantial implementation occurs within 10 years, for example.

Phosphorus removal via sediment extraction would only make sense for areas of the lake where there has been a substantial build-up of phosphorus in the sediment, such as Missisquoi Bay and St. Albans Bay. However, sediment removal is not likely to be feasible because it is extremely costly and may be ecologically damaging. The possibility of Alum treatment has been looked at and found to be potentially feasible (based on a preliminary study) for parts of St. Albans Bay, due to the relatively small size of the Bay and other factors. See Section 6.2.1 of the TMDL document, and Chapter 5 - I of Vermont's Phase 1 Implementation Plan for a discussion of this issue. While no similar study has been conducted for Missisquoi Bay, Vermont DEC has indicated an openness to consider an internal lake treatment if that should become feasible in the future through new technologies. (See Comment 7-3.)

Comment 5-3: [Lake Champlain International (LCI) *et al.*, 2 & 3]

Second, the primary objective of a TMDL, according to the US Environmental Protection Agency (EPA), is "to determine the loading capacity of the water body." Loading capacity, otherwise known as "assimilative capacity," is at best an estimate in the models. Be that as it may, the very concept of assimilative capacity is an attempt to bend immutable ecological principles to socio-political-economic constructs of the given times. By EPA's own definition, loading capacity is "the greatest amount of a pollutant (in this case, the nutrient phosphorus) that a water can assimilate and still meet water quality standards," or in other words, dilution is the solution to pollution. This is a false premise, standing in stark contrast to the goals of Antidegradation. There is absolutely no empirical evidence, nationwide or elsewhere, that supports that a natural system—waterbody—can sustainably endure ongoing marketplace-generated phosphorus loads ad infinitum without some deleterious impact manifesting itself in the ecosystem's inability to support the EPA's stated, and legally mandated, goals

of swimmable, drinkable, and fishable waters. If there is one such example, we ask that the EPA produce it for our review.

Given we are now on our second TMDL plan for Lake Champlain, the first being adopted in 2002, and the consistent decline of our waters' health under that plan, there is little reason to be optimistic, despite the enhanced modeling of this latest effort, that the false premise of assimilative capacity is now somehow a scientific truth. While perhaps not explicitly stated in the morose outlook for several segments of the lake under the best of circumstances, the 2015 TMDL accepts impairment and lack of attainment of water quality standards for the next several decades and, in some cases, half century. This comes as no surprise given the tenuous pretense of attempting to solve a problem with the same sort of thinking that created it.

Third, and closely tied to the first, any clean-up plan that does not strictly incorporate the basic laws of physics and chemistry—the conservation of mass/matter—as opposed to the pseudo-scientific notion of assimilative capacity in the case of nutrients, is doomed to failure. Any energy added to the Lake Champlain system in the form of anthropogenic nutrients will not simply be assimilated as we might hope and stubbornly insist, but rather will be transformed, eventually manifesting itself as it will in the ongoing and ever-worsening proliferation of cyanobacteria outbreaks and all the human misery and economic fallout that accompanies such calamities. Lake Carmi, its 2009 TMDL predicated on assimilative capacity, and its failed implementation plan are further witness to the preceding. It will only be through the capture of and conversion of nutrients from ecosystem liability to that of societal commodity, in abeyance with the conservation of mass/matter, that we have any hope of restoring the natural equilibrium to the system, slowing its accelerated and reckless eutrophication. The notion of dilution is as misguided as using our rivers as sewer pipes and our bays and lakes as cesspools is arcane.

Response:

Assimilative capacity is more than just a modeling estimate. Many lakes in Vermont serve as current examples of waters that are receiving a steady input of a pollutant such as phosphorus but have been meeting water quality standards for years. This is because the amount of phosphorus coming in is sufficiently balanced by the amount going out through the outlet, settling out through sedimentation to bottom sediments, or being taken up via plant and animal organisms. Some of the phosphorus taken up by organisms or stored in the bottom sediment may be recycled back into the water column at some point, but the assimilative capacity takes such recycling into account. The problem in Lake Champlain's case is that we have not been able to slow the amount of phosphorus inputs down enough to balance the outputs, and the problem is made more difficult to solve in places like Missisquoi Bay due to the build-up and expected long-term release of phosphorus from the bottom sediments.

While the water quality trend in Lake Champlain has indeed generally been downward (worsening), this should not be taken as an indictment of the concept of assimilative capacity. If phosphorus inputs were actually reduced to the levels called for in the TMDL and water quality still did not begin to improve, then yes, that could raise questions about the accuracy of the modeling, etc. But phosphorus inputs to Lake Champlain have never come close to the levels specified in either the 2002 or the draft 2015 TMDL load allocations, so it is much too early to question the validity of the approach. The concept of assimilative capacity is based on science and empirical evidence.

There are a number of examples of lakes in Maine that were impaired due to excessive phosphorus inputs, and then restored when phosphorus inputs were reduced (after years of hard work) to levels below the assimilative capacity of the lake. Examples include: Highland Lake, Mousum Lake, Cobbossee Lake, Echo Lake and Madawaska Lake. Descriptions of the successful restorations of these lakes can be found here: http://www.epa.gov/polluted-runoff-nonpoint-source-pollution/nonpoint-source-success-stories. These lakes are still receiving phosphorus inputs every year from a variety of sources, but the levels are low enough that standards are now being met. While these lakes and watersheds are smaller than Lake Champlain, it is encouraging to note that phosphorus levels were reduced through use of many of the same types of practices (BMPs) that are included in Vermont's Phase 1 Plan. EPA acknowledges that the restoration of parts of Lake Champlain will be unusually challenging and may take decades to accomplish. But the many Maine examples offer hope that Lake Champlain can also be restored if phosphorus inputs are similarly reduced to a sustainable level.

EPA agrees with the commenter that capture and conversion of phosphorus into a marketable commodity through technologies under development, and diversion out of the basin, could indeed contribute to achieving the TMDL. EPA notes that on December 15, 2015, Green Mountain Power announced it intends to proceed with a community digester in the St Albans Bay watershed that will combine the liquid manure from three farms, produce electricity and bedding and remove a significant portion of the phosphorus that would typically exit from the digester process. Similarly, Ben & Jerry's, has teamed up with *Native*Energy to install screw-press manure solids separators on two dairies in the Missisquoi River watershed and, with additional funding from Green Mountain Power and *Native*Energy, added a decanter centrifuge manure solids separator on a third. These systems, although primarily focused on reducing methane emissions to date, have demonstrated that they, when coupled with the decanter centrifuge, can segregate most of the phosphorus in the treated manure for potential exportation out of the Lake Champlain watershed as a marketable commodity. More of these systems are currently in the planning and design phase.

Seasonal variation

EPA did not receive any comments on this portion of the proposed TMDLs.

Climate Change

Comment 5-4: [VT EPSCoR Research Team]

Climate Change Section (Chapter 6)

Watershed:

We applaud the state for considering climate change projections in development of a Phase 1 plan to meet EPA TMDL criteria for Lake Champlain. This an important consideration for the state, as we are already observing a number of different components of climate change that are impacting both internal and external loading of P to the lake, with direct ramifications on lake phosphorus concentrations and Vermont's ability to meet TMDL criteria. Within the watershed, the state is correct to focus on high flow events, as their increased occurrence is already offsetting the flow normalized decreases in P concentration in many Lake Champlain tributaries associated with recent BMP implementation efforts in the basin. Furthermore, more frequent and severe high flow events may decrease or compromise the effectiveness of existing BMPs.

There is some concern within our group that there is an over allocation of emphasis on reducing erosion in forested catchments, as those projects will have relatively low 'bang for their buck' in reducing P loading to the watershed and meeting EPA criteria. Allocation of limited financial resources should be directed towards those promoting the sequestration of REACTIVE forms of P in the Champlain Valley via streambank stabilization, agricultural BMP implementation and urban/suburban green stormwater infrastructure.

Furthermore, both the state and the EPA need to move beyond just considering TP as the parameter for which clean water criteria are set. Ultimately, what is important to the ecosystem and water quality is the fraction of 'TP' that is potentially bioavailable or reactive. In catchments draining into the main lake, TMDL criteria should be driven by BMPs that target dissolved P fluxes, as in deeper lake segments, dissolved P is tightly cycled near the surface and maintained within the water column over time, thus driving long-term lake P concentration relative to TMDL criteria. In the case catchments feeding deep lake segments (eg the Winooski), BMPs that reduce the dissolved fraction of P should be the focus of efforts in these watersheds. Modification of manure application methods and timing, lawn fertilization, and tile drain construction are examples of practices that disproportionately affect the dissolved fraction of the watershed P load, and should be the priority in those watersheds, as they will have the greatest impact on deep lake segment P concentration over time. Conversely, in catchments that drain into shallow lake segment where most of the water column P is derived from release from sediment (eg Missisquoi, St. Albans), a particular emphasis should be place on implementing BMPs that sequester reactive forms of sediment derived P that could become mobile upon entering the lake. Sites with a particularly high concentration of reactive sediment bound P that is also susceptible to erosion during high flow events should be the high priority target of BMPs in these watersheds. Sediments/soils that are enriched in particularly reactive P and are most susceptible to erosion tend to exist in the agricultural and, to a lesser extent, urban catchments of the Champlain Valley. As such, BMPs that target stabilization of these particularly reactive pools of P should be the priority. In both cases, investing extensive resources in forested catchments will provide little assistance in meeting EPA criteria, as these environments contribute minimally to elevated dissolved P loads (i.e. there is not much you can do to decrease the load of dissolved P coming out of a forest, which is already low), and sediment that is eroded in these systems tends to be depleted in reactive forms of P, relative to sediments in urban and agricultural catchments and streambanks. Again, focusing limited funds on

BMPs that will suppress transport of particularly reactive forms of P, and considers the drivers of elevated P concentrations in the relevant lake segment (dissolved P-deep segments), reactive particulate P in shallow segments, would promote the most efficient use of limited funds towards decreasing lake segment P concentrations. This would serve to enhance the state's credibility when additional modifications to the plan are required to meet TMDL criteria.

Lake:

The most noticeable shortcoming of Chapter 6 is the omission of changes in the drivers of internal loading of P due to climate change. In this context, the chapter suggests that climate change will increase the 'P assimilative capacity' of the larger Lake Champlain system due to increasing flows from the lake. Our ongoing research suggests the opposite to be the case with respect to the impact of climate change on internal lake dynamics. Indeed, we are already seeing changes in the in-lake dynamics that suggest internal loading of P to the water column is on the rise due to climate change, particularly in the systems outside of the main lake where lake sediments remain a viable source of P. Long-term analysis of DEC lake monitoring data suggests that the conditions that favor the release of sediment bound P to the water column are increasing in severity, frequency and duration. Summer water temperatures are increasing, which promote benthic productivity that consumes oxygen near the sediment water interface, releasing sediment bound P as minerals that are sensitive to low oxygen conditions dissolve. Furthermore, our analysis detects that in addition to increasing temperatures, wind speeds during the autumn months are in decline. This suggests that the other physical condition that promotes internal loading, water column stratification and stability, is also on the increase. Additionally, there are early indicators that dissolved oxygen concentrations are decreasing in bottom waters due to climate change in deeper segments of the lake that have not experienced extensive internal loading of P in the past such as Mallets Bay and the Northeast Arm of the lake. This could promote internal loading of sediment-derived P to portions of the lake that previously had P concentrations that were only driven by loading from the watershed. If deeper systems are becoming more prone to internal loading of P from sediment due to climate change, this will make meeting the EPA's criteria for water column P concentrations more difficult to achieve. All of these data suggest that while there may be some change in assimilative capacity of the lake due to changes in water balance, they will be offset and perhaps overwhelmed by the increased occurrence of environmental conditions that promote P release from the sediment, which would confound the state's effort to satisfy obligations to the EPA. Again, investment in research that produces process-based temporally and spatially explicit models of Lake Champlain are required to accurately project changes to the system under climate change, and identify in-lake and watershed management solutions to this problem. Both the state and the EPA need to invest in development of this kind of modeling capacity.

Response:

EPA is pleased to acknowledge the commenters' endorsement of the climate change components of Vermont's Phase 1 Plan. EPA also appreciates the commenter's observations on phosphorus loading from forested lands. First, it should be remembered that the TMDL only includes substantial reductions from forested lands in two out of the twelve lake segment watersheds. Substantial phosphorus reductions from the forest sector were specified in two watersheds (Missisquoi Bay and South Lake B) because reductions from all sources were needed to get to the lake segment targets in these watersheds. So much phosphorus reduction is needed in these areas that there is no opportunity to choose which sources to focus more on – all must be addressed. But the UVM research suggesting the phosphorus

from forest areas may be less bioavailable than other sources could be helpful to the implementation process, as decisions are made on what reductions to invest in first. It should also be kept in mind that a significant portion of the needed reduction from forest lands may have already been achieved due to improved compliance with Acceptable Management Practices (AMPs) since the TMDL modeling base period (2001-2010).

EPA's and VTDEC's focus on total phosphorus rather than reactive phosphorus has partly been driven by modeling and monitoring constraints. Given that phosphorus can move between particulate, dissolved and reactive forms, the measurement and modeling of total phosphorus has long been considered the most accurate way to characterize loads and loading capacities – particularly in the absence of sufficient monitoring data on the various phosphorus fractions. Thus, Vermont established water quality criteria for total phosphorus and the TMDLs are developed to meet the relevant water quality criterion. Nevertheless, the commenters' recommendations on priority actions are well taken, and EPA expects that some of these recommendations could be considered by VTDEC as implementation priorities are developed through the Phase 2 tactical basin planning process. Such prioritization should help ensure earlier implementation of those actions that will likely have the biggest impact.

Regarding climate change, EPA's contractor assessed the potential effects of climate change on phosphorus loading to the lake via the lake's tributaries. EPA focused on this component because an established methodology existed to project loading changes using the same watershed model (SWAT) that was used to support the establishment of load allocations. The potential effect of climate change on in-lake processes and phosphorus and algal dynamics within each segment is a second category of research that was beyond the scope of EPA's analysis. Such a study would be a major undertaking. EPA based the TMDLs on the best available information at the time of TMDL development. With respect to climate change, EPA's information was limited to the effects of climate change on tributary loadings. An analysis of the future effects of climate change on in-lake biological and chemical processes in each of the lake's individual (and very different) segments would need to look at all potential factors affecting phosphorus levels, including the kinds of factors addressed by the commenter's ongoing research. EPA agrees that this is an important area for further research, and has modified the TMDL document to acknowledge this. For a related discussion see the response to Comment 7-5.

6. Establishing Allocations

Comment 6-1: [CLF-VNRC, 1a]
The draft 2015 TMDL inappropriately categorizes point and nonpoint sources of pollution.
EPA's regulations require that the wasteload allocation portion of a TMDL identify "existing and future" point sources.[7] The draft 2015 TMDL, however, fails to identify all such point sources and defers identification of point sources to future "accountability" actions. Of even greater concern, the draft 2015 TMDL acknowledges that certain sources are, in fact, point sources but then fails to include such sources in the wasteload allocation. Instead, the draft 2015 TMDL includes these sources in the load allocation portion of the TMDL, which is reserved for nonpoint sources.

EPA regulations make clear that inclusion of sources in the wasteload or load allocation is of great legal significance. At the time a TMDL is completed, EPA has an affirmative obligation to make a determination whether a source falls within the CWA definition of point source. Similarly, a determination must be made whether a source is a nonpoint source. The regulations do not allow the nonpoint source category to serve as a placeholder or catchall provision where insufficient information is available to affirmatively determine whether a source is a point or non-point source. Similarly, the regulations do not allow EPA to include known point sources in the nonpoint source category for purposes of allocation. Lastly, where sufficient information is available, EPA must make a determination one way or the other. If a source is known to be a point source, EPA is required to include it in the wasteload allocation and follow through with appropriate and necessary regulatory action.

Perhaps most egregious is the draft 2015 TMDL's placement in the load allocation of privately owned stormwater sources, construction stormwater permits, and municipally owned stormwater sources that were not automatically included in the MS4 permitting program. These sources are known point sources and must be included in the wasteload allocation.

Footnote in Comment
[7] U.S. Environmental Protection Agency. *Overview of Impaired Waters and Total Maximum Daily Loads Program*, Last accessed October 15, 2015 <http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/overview.cfm>

Response:
EPA interprets the definition of "wasteload allocation" at 40 C.F.R. § 130.2(h) to mean that allocations for existing and future point source discharges subject to the NPDES permit program must be included in the wasteload allocation portion of the TMDL, and that point source discharges that are not regulated by the NPDES program may be included in either the WLA or the LA portion of the TMDL. (Wayland and Hanlon, 2002).[1] In both the draft and final TMDLs, EPA chose to include in the WLA for the developed land category ALL stormwater related point sources, including "privately owned stormwater sources, construction stormwater permits, and municipally owned stormwater sources that were not automatically included in the MS4 permitting program," whether or not they are currently subject to the

[1] Thus, EPA disagrees with the commenter's assertion that EPA *must* include all non-NPDES regulated point sources in the WLA portion of the TMDL, and also disagrees with the corollary claim that EPA must then "follow through with appropriate and necessary regulatory action" simply by virtue of including such sources in the WLA.

VTPDES permit program.[2] Except for discharges associated with a CSO treatment facility and agricultural production areas (which have separate WLAs), all point sources in the "developed land" category were aggregated because there was insufficient information to assign specific allocations, as described in the TMDLs in Section 6.1.2, Developed Land Wasteload Allocation. .

Comment 6-2: [CLF-VNRC, 2b]
The draft 2015 TMDL allocations cannot be finalized before the implementation plan is fully developed.
In order for the draft 2015 TMDL to be approved, it must provide reasonable assurances that the allocations for nonpoint sources will be achieved.[23] When reviewing whether a TMDL delivers reasonable assurances, EPA has traditionally sought to answer two questions: "1) Is there reasonable assurance that nonpoint source control actions will occur, and 2) If these actions occur, is there reasonable assurance that they would achieve enough phosphorus reduction to meet the load allocations specified in the TMDL."[24]

The draft 2015 TMDL relies on the Phase 1 Implementation Plan, new modeling and scenario tools, and the accountability framework to provide reasonable assurances that nonpoint source control measures will achieve the load allocations.[25] However, it is problematic that the draft 2015 TMDL depends significantly on an implementation plan that remains in its initial phase of development.

Over the next 20 years, the State will develop and implement the Phase II Implementation Plans through the tactical basin planning process.[26] This lengthy time period required to develop each plan means EPA must rely on the broad strokes in the Phase I Implementation Plan to make a determination of reasonable assurances.

Moreover, the tactical basin planning process has not produced reliable results. The plans have repeatedly lacked assurances and guidance on their content. Oftentimes projects included in these plans are never realized because watershed groups and others working on the ground lack the resources and time to expand project implementation. Rather than requiring the basin plans to contain specific measures, the draft 2015 TMDL presents a "wait and see" approach to identifying and establishing phosphorus control practices. While aligning the basin planning process with the draft 2015 TMDL may appear efficient, it does nothing to assure projects identified will actually be implemented.

The draft 2015 TMDL's reliance on an implementation plan that is woefully incomplete as well as its incorporation into the unreliable tactical basin planning process undermines any reasonable assurance that nonpoint source control actions will occur. Further, the measures devised to address phosphorus from nonpoint sources, including stream banks and forests, are not sufficient to meet the load allocations as detailed below.

Footnotes in Comment
[23] U.S. Environmental Protection Agency. *Reconsideration of EPA's Approval of Vermont's 2002 Lake Champlain Phosphorus Total Maximum Daily Load ("TMDL") and Determination to Disapprove the TMDL*. January 2011. pg. 8.
[24] 24 *Id*. at pg. 9.

[2] The commenter's concerns appear to be focused on stormwater from developed land. In the categories of agriculture, forest land, and streambank erosion, EPA did include in the load allocations both nonpoint sources and non-NPDES regulated point sources, consistent with EPA's interpretation of the regulations described above. However, EPA has clarified in the final TMDLs at the beginning of section 6.2 that EPA is not specifically aware of any such sources.

[25] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 49.
[26] VT Department of Environmental Conservation Watershed Management Division. *Updated 2013-2036 Timeline for Completing the Vermont Lake Champlain Restoration Plan*, Last accessed October 15, 2015 <http://www.watershedmanagement.vt.gov/erp/champlain/docs/2015-08-13UpdatedTimeline.pdf#zoom=100>

Response:
In EPA's view there is sufficient detail in Vermont's August 2015 draft Phase 1 Implementation Plan to provide for reasonable assurance of Vermont's actions in the coming years. The Phase 1 Plan provides detail on 87 action steps, each with specified timeframes. The development of the plan over 18 months was the subject of many informational meetings and earlier versions of the plan informed the General Assembly's development of Act 64. The August 2015 version reflects the requirements and statutory deadlines contained in Act 64. The Phase 1 Plan is not considered final because Act 64 directs ANR to make final revisions, with opportunity for public input, once EPA's TMDLs have been finalized.

EPA's modeling and scenario tools enabled the quantification of reductions achievable from the measures contained in the Phase 1 Implementation Plan, and allowed for verification that these reductions are sufficient to meet load allocations for each segment. This is described in detail in Appendix B.

EPA disagrees that the approach outlined in the TMDLs reflects a "wait and see" approach. There are a host of measures in the Phase 1 Plan that apply across the lake segments and will be implemented as soon as regulations are revised and permits issued. Perhaps the most significant of these are the revisions to the Required Agricultural Practices (RAPs). They will be finalized in 2016 and will impact nearly all farms. As specified in Act 64, the following new practices will be required: 25' vegetative buffer on streams, 10' vegetative buffer on field ditches, , livestock exclusion (required where necessary to prevent erosion and adverse water quality impacts – not addressed via regulation previously), nutrient management planning on farms that manage animal waste, new standards for cover cropping (the May 13, 2016 draft RAPs also require cover crops in floodplains), new standards for protecting soil health and reducing sedimentation and agricultural stormwater runoff, and reduction of soil erosion down to "1T" on croplands (previously twice as much was allowed). In addition, the new inspection and enforcement provisions of the Phase I Plan will dramatically increase compliance with both the old and new requirements, adding assurance that they will be implemented. As an indication of how quickly Act 64 is being implemented, the Vermont Agency of Agriculture, Food and Markets has already hired 6 new farm inspectors (DiPietro, 2016). The RAPs will be augmented in the Missisquoi Bay watershed by the Secretary of Agriculture's decision to evaluate all farms in the watershed and require BMPs (beyond the RAPs) where necessary to meet water quality standards. (See Vermont AAFM, 2016 and also responses to Comments 7-1 and 7-1a.)

For the developed land sector, the Phase I Plan includes new permits, to be issued in 2017, that will require BMPs on back roads everywhere they are needed (to help meet developed land WLAs for each lake segment throughout the entire basin. In addition, existing impervious parcels larger than 3 acres will require retrofit BMPs. Paved roads and MS4s will all need retrofits as well, consistent with the WLAs for each lake segment. In the forest sector, new requirements for BMPs at stream crossings and along forest roads will apply to more than 60% of forest land, and the state-wide prohibition on

discharges to waters will be enforced on all forest land (see response to Comment 6-84). For streambank/stream corridors, a number of stream corridor protection measures (that will speed up the transition to more stable stream systems) are already required, and apply basin-wide.

The key actions needed to restore the lake are being driven by the provisions of Act 64 and the Phase 1 Plan. The Phase 2 plans are intended to refine, target and prioritize implementation of measures at the sub-watershed scale, based in part on the most current measured water quality data, so that VT gets the most reductions for their implementation dollars to achieve the quantified amount of phosphorus reduction linked to the TMDL targets. They will ensure that the optimized mix of BMPs needed to meet the allocations are scheduled, and provide an effective means to track and account for implementation activities in each watershed.

It's also important to note that the Tactical Basin Plans consist of five-year cycles. The commenters' reference to 20 years reflects the fact that the TMDLs show four iterations of the basin planning process. As part of the Phase 1 Implementation Plan, the Tactical Basin Plans (Phase 2 plans) for the Lamoille and Missisquoi Basins will be developed in 2016 (ready for implementation in 2017) and for the Poultney, Mettawee and Lower Lake Champlain basins in 2017 (ready for implementation in 2018). These basins include the most stressed areas of the Lake and the completion of these plans are included as elements in the TMDL's accountability framework. These Tactical Basin Plans will be developed with significant opportunity for public input and EPA will also provide feedback as they are developed.

The commenter's concern about the inconsistency of prior tactical basin plans may fairly characterize efforts in the past, but the comment does not acknowledge the transformations of the basin planning process currently underway. In recent years Vermont has reorganized disparate components into a Monitoring, Assessment and Planning Program and revised its approach to the development and use of the tactical basin plans (See Vermont ANR, 2016). And the tactical basin plans being specifically developed to implement the Lake Champlain TMDL will be very different from past plans, as detailed in the Phase 1 Plan. The Phase 2 plans will include a set of actions modeled to meet a percentage of the phosphorus reduction target for each basin (the portion to be achieved in the first 5-year increment), with initial information on how the remaining needed reductions will be achieved in subsequent years beyond the first 5-year increment. The plans will include a schedule for BMP implementation, and EPA will be reviewing progress on implementation at both 2.5 year and 5 year check-in points for each plan. If actions are not sufficiently on schedule, a variety of consequences may be triggered, as explained in the accountability section of the TMDL document.

To summarize, the two key differences with the new TMDL-driven tactical basin plans are that the action tables will now specify activities that will achieve a quantified amount of phosphorus reduction linked to the TMDL targets, and EPA will be monitoring implementation progress closely.

Comment 6-3: [Lake Champlain Committee]
LCC firmly believes that we need to take aggressive actions to protect and improve water quality, but unrealistic phosphorus budget numbers present three significant challenges. First, they set us up to fail. For example, if farmers achieve a laudable, difficult, expensive reduction of 40% of phosphorus loading, they will be criticized for not doing enough. Second, policy choices that follow from unrealistic phosphorus budget

allocations have implications for other sectors in other lake segments as well, though it is difficult to assess what these implications might be given the complexity of the models EPA used to justify their decisions. Third and perhaps most important, putting forth such unrealistic reduction assumptions undermines the credibility of the entire TMDL. A great deal of high quality modeling work went into developing the TMDL, but if the Scenario Tool is pushed beyond what is reasonable to reach predetermined policy-based loads, then the rest of the work will be suspect.

EPA's pollution budget fails to provide realistic loading numbers for the most impaired lake segments. In pretending that the numbers put forth are achievable EPA risks missing an opportunity to foster a larger, more difficult conversation about what Lake Champlain can achieve. In all the modelling of pollution reductions, the standards have been kept static and modeled reductions have been adjusted to meet them. At least farm by farm assessments will provide a check on how realistic such reductions are for agricultural land, but there is no similar process proposed for forested lands or streambank erosion. Now is the time to begin discussion with the public and legislature about what can be achieved on Lake Champlain. At some point EPA and Vermont will need to ask which modeled reductions are realistic and which are fantasy.

LCC firmly believes we need to take aggressive actions to improve water quality, and maximizing phosphorus reductions requires allocation of scarce financial resources. The TMDL is an important tool for identifying policies and projects that achieve reductions. When the TMDL starts with targets that are more aspirational than realistic as it does for Missisquoi Bay, it risks moving us away from the most cost-effective reduction opportunities.

Response:

The development of a TMDL starts from the Clean Water Act's directive that the load "shall be established at a level to implement the applicable water quality standard." [CWA § 303(d)(1)(C)]. While it is fair to comment on whether it is realistic to achieve the total load or whether the total load is appropriately allocated, the TMDL developer must ensure that the total load meets the water quality standard. EPA did indeed keep the standards "static" during the modeling work. That is the TMDL development process laid out in the Clean Water Act and in EPA's regulations. Any adjustment to the water quality standards would typically be pursued through a separate process, as described in the response to Comment 2-1.

EPA disagrees with the commenter's suggestion that EPA is pretending that the reductions are achievable. EPA went to significant effort, in collaboration with the State of Vermont, to identify a set of actions, which if implemented, are reasonably assured of achieving standards in the lake. Act 64 and the Phase 1 Implementation Plan provide assurance that these actions will be implemented. The level of analysis that went into establishing the link between committed actions and resulting phosphorus reductions may be unprecedented among lake TMDLs nationally.

EPA also disagrees with the commenter's suggestion that now is the time to have a broader discussion about what the lake can achieve. As discussed in the response to Comment 2-1, EPA believes it is premature to conclude that current standards cannot be achieved. The methods used to reduce phosphorus inputs represent an evolving field of inquiry with many opportunities for innovation. The standard for one segment, Missisquoi Bay, will be more challenging to meet than the others (as documented in EPA's analysis) but that doesn't mean we should automatically start to discuss changes

to the standard. Rather than lowering the water quality target now (or "giving up before we start," as ANR Secretary Markowitz phrased it at a public meeting) EPA supports an aggressive approach to implementing reductions needed to achieve the standard. If emerging science and data conclusively indicate in future years that needed reductions are not achievable, then reconsideration of the standard may be appropriate.

EPA agrees with the commenter that it will be valuable to closely evaluate the amount of phosphorus reduction actually achieved from various source sectors as implementation proceeds. Such measurements may indeed be most feasible for agricultural sources through new and on-going monitoring studies. Within the forest sector, forest roads are the dominant source of phosphorus. Just as with recent municipal road studies, it is feasible to measure phosphorus loads from forest roads with and without state-of-the-art BMP implementation and evaluate the phosphorus reduction achieved. Phosphorus reduction within the stream corridor sector is more difficult to evaluate, but one study (Langendoen et al., 2012) in the Missisquoi Bay watershed concluded that the practice of sloping back banks and establishing 5-year-old vegetation on the banks could achieve a 90% phosphorus reduction for certain stream reaches. While the results of this study are not necessarily applicable to all stream corridors, it is important to recognize that we already have information on what may be achievable from some stream reaches, and more data could be collected as implementation proceeds. In summary, while further phosphorus reduction studies may not currently be planned for all source sectors, such studies certainly could be conducted through entities such as the Lake Champlain Basin Program. The results of these studies would further inform any future discussions of achievable phosphorus reduction levels.

Comment 6-4: [New York State Department of Environmental Conservation]
New York State submits these comments on USEPA's draft "2015 Phosphorus Total Maximum Daily Loads (TMDLs) for Vermont Segments of Lake Champlain." New York recognizes and supports Vermont's strong commitment to reducing phosphorus as contained in its proposed implementation plan for the draft TMDL.

New York is of the opinion, however, that USEPA's draft TMDL is fundamentally flawed. While the draft TMDL correctly recognized that Lake Champlain can handle, or assimilate, a higher load of phosphorus (as compared to the 2002 TMDL), USEPA has proposed to allocate all of that increased assimilative capacity to Vermont, even in "shared" water segments. New York respectfully requests that USEPA provide for an equitable allocation of additional allowances for phosphorus discharges for both New York and Vermont. Otherwise, the proposed TMDL will be patently arbitrary and capricious. It is not acceptable to New York for USEPA's 2015 draft TMDL to provide all the additional allowances to Vermont sources when the TMDL assessment is based on all areas surrounding the Lake, including areas within New York.

In 2002, the Lake Champlain Phosphorus TMDL (2002 TMDL) was developed jointly by Vermont and New York but approved separately by USEPA Regions 1 and 2. The 2002 TMDL covered 13 segments of the Lake and established individual allowances for each wastewater treatment facility in Vermont and New York, as well as allowances for agricultural, developed, and forested land in each sub-watershed of the Lake.

All of the wastewater discharges in New York are meeting the limits imposed in the 2002 TMDL. Further, many of New York's Clean Water Act and other programs exceed the standards established by the federal government. For over ten years, New York's concentrated animal feeding operations (CAFOs) have produced

nutrient management plans, developed by certified planners, which require farms to meet Natural Resource Conservation Service standards. New York's robust standards for permitting construction site runoff were first issued in 2002, with multiple updates since to increase the protection of water quality. In 2010, laws were adopted to control phosphorus associated with lawn fertilizer and dishwashing detergent. Moreover, since 2002, New York has had funding programs in place for pollutant reduction projects on farms and municipal facilities.

In 2011, in response to a lawsuit against USEPA by the Conservation Law Foundation, the Vermont portion of the 2002 TMDL was disapproved by USEPA Region 1. New York's TMDL and associated program was not the subject of this lawsuit. USEPA Region 1 developed a draft TMDL for the Lake Champlain segments within Vermont's jurisdiction, which is now the subject of public comment.

Monitoring data has shown higher levels of phosphorus entering Lake Champlain than recognized in the 2002 TMDL. The most recent assessments of how much phosphorus is entering the Lake from all sources is much greater, by 291 metric tons per year, than recognized in the 2002 TMDL. The 2015 draft TMDL divides this increased loading between Vermont, New York and to some extent, Quebec.

The 2015 draft TMDL also recognizes that phosphorus from all areas surrounding the Lake can be 148 metric tons per year greater than was recognized in the 2002 TMDL. That is, while the lake is receiving more phosphorus, it has the ability to handle, or assimilate, more phosphorus. However, USEPA in the 2015 draft TMDL, provides that all of the additional allowances, or assimilative capacity to handle phosphorus, will be given to Vermont. It is not acceptable to New York for USEPA's 2015 draft TMDL to provide all the additional allowances to Vermont sources when the TMDL assessment is based on all areas surrounding the Lake, including areas within New York.

Vermont's May 29, 2015 submission of its final Phase I Implementation Plan (Plan) for USEPA's draft 2015 TMDL is critical to improving lake water quality. Vermont Governor Shumlin's letter supporting policy commitments contained within the Plan, and Vermont's June 17 passage of Act 64 – Vermont's Clean Water Act – will improve lake water quality. Unfortunately, USEPA's draft 2015 TMDL does not appear to recognize the efficacy of Vermont's commitments. Vermont's comprehensive program to reduce all sources of phosphorus runoff and wastewater discharges will likely result in much greater reductions in phosphorus in Lake Champlain than EPA has credited in the 2015 draft TMDL. USEPA has been overly conservative in this regard.

New York recognizes the progress that Vermont will make through its Plan and supports continuation of those efforts. However, fair phosphorus allowances must be applied in the 2015 draft TMDL. An equitable portion of the additional phosphorus allowances must be held in reserve for New York's portion of the Lake Champlain watershed. In light of New York's concerns about inequity in the division of phosphorus allowances between land areas, New York must reserve its right to legally challenge USEPA's TMDL or its application based on inequitable distribution for any other reason.

I welcome further opportunities to discuss this matter with both USEPA and Vermont.

Response:
For clarification, EPA notes that there are five lake segments where allocations are shared by Vermont and New York: South Lake A, South Lake B, Port Henry, Main Lake and Isle LaMotte. EPA does not consider New York's comment to be applicable to the allocations in the TMDLs in the other seven lake segments.

As explained below, EPA does not agree with New York's comments that the TMDLs are fundamentally flawed. However, Vermont and New York and EPA have completed a Memorandum of Understanding (MOU) to resolve the concerns expressed above to the satisfaction of both states. The essence of the MOU is a commitment by New York to initiate revisions to the 2002 TMDLs for the New York portions of Lake Champlain within 10 years and by Vermont to initiate development of new TMDLs for the Vermont portions of Lake Champlain at the same time and to jointly derive an equitable allocation of loading capacity in the shared segments of the lake.

EPA disagrees with New York's view that EPA has not recognized the efficacy of Vermont's commitments. EPA has gone to great lengths to update the models, particularly the watershed input portions, to explicitly evaluate the measures Vermont has included in its implementation plan. EPA has used the best available data on the performance of the phosphorus control measures in the implementation plan and does not agree that it has been overly conservative in this regard.

EPA disagrees with New York's view that the TMDLs in the five shared segments are arbitrary or fundamentally flawed. EPA recognized the complication created when EPA Region 1's approval of the Vermont TMDLs was challenged while EPA Region 2's approval of the New York TMDLs was not. EPA invited New York to reopen the New York TMDL and join in the development of revised TMDLs that would affect both states. New York did not to reopen its TMDLs and thus the 2002 allocations for the New York segments of Lake Champlain remain in effect.

New York was kept abreast of the development of the modeling and computation of the increased base loads, including the fact that the assimilative capacity of many Lake Champlain segments had increased along with the base loads. New York was also aware, through its participation in the Lake Champlain Basin Program, of the increased requirements (including the need to demonstrate stronger reasonable assurance that reductions would be achieved) that Vermont was facing to meet the new segment allocations. New York provided no indication that it was prepared to revise its TMDLs throughout this process; on the contrary, New York was clear in its communications with EPA Region 2 that it did not want to revise its TMDLs.

The existing New York Lake Champlain TMDLs include a portion of the overall Lake Champlain loading capacity. In the absence of updated NY TMDLs, EPA concluded that it was reasonable not to distribute any additional loading capacity to NY. As a practical matter, there are no means to alter a TMDL's loading capacity without reopening a TMDL. EPA concluded it was reasonable not to set aside a portion of the loading capacity "in reserve" without any guarantee that New York would ever reopen its TMDLs and make use of this reserve capacity.

Even if New York had joined in revisions to the TMDLs, the resulting changes in loading capacity available to NY sources may not have been significantly different in most of the five shared lake

segments. Had New York been part of the 2015 draft TMDL development, EPA would have likely updated the apportionment of the loading capacity to reflect each states' newly calculated contributions to the baseload of phosphorus in each segment and may have taken into consideration other relevant factors.

As shown in the first table below, if the new baseload calculations alone had been used to apportion each state's share of the loading capacity, New York's share (percentage-wise) would have decreased in each of the five shared lake segments. This is mainly due to the updated data (referenced above) indicating a larger percentage of phosphorus coming from Vermont sources in comparison to the percentage from Vermont indicated by the data used in developing the 2002 TMDLs.

	% Share of loading capacity from 2002 TMDL		% Share of loading capacity using 2001-2010 baseload	
Segment	VT	NY	VT	NY
South Lake B	47	53	56.5	43.5
South Lake A	5	95	52.2	47.8
Port Henry	3	97	45.5	54.5
Main Lake	69	31	71.5	28.5
Isle LaMotte*	1	99	9.6	79.7

The allocations in EPA's 2016 TMDLs reflect the newly calculated loading capacity for Vermont only since NY's TMDLs were not being revised. The loading capacity from NY's 2002 TMDLs is the applicable loading capacity for NY. The left side of the table below shows the 2016 allocation for Vermont and the 2002 allocation for New York. The right side of the table shows what the allocations would have been if they had been based solely on the share of loading capacity using the 2001-10 baseload capacity (from the table above).

The table below indicates that New York would have received slightly smaller allocations in South Lake A and South Lake B, and a slightly larger allocation in Port Henry compared with its existing (2002) allocations. The differences in each of these three segments are no more than one half ton and EPA does not consider them to be significant. There are significant differences in the allocations for the Main Lake segment and relatively small differences in the allocations for the Isle LaMotte segment.

	EPA TMDL allocation (mTons P)	2002 allocation	Allocation based on % Share of baseload	
Segment	VT	NY	VT	NY
South Lake B	29.9	23.9	30.4	23.4
South Lake A	11.8	11.2	12.0	11.0
Port Henry	3.1	3.4	3.0	3.5
Main Lake	129.0	33.7	116.3	46.4
Isle LaMotte	3.6	22.3	2.9	24.3

EPA believes it was reasonable to allocate the newly calculated increased capacity to Vermont since New York did not reopen its TMDLs. New York and Vermont will have the opportunity to consider adjustments to the allocations in the Main Lake and Isle LaMotte segments and any other potential adjustments when they develop their revised and new TMDLs as described in the MOU.

Comment 6-5: [Essex Junction]
In the immediate future, a similar and equally comprehensive response to phosphorus sources must be pursued in New York portion of the 2002 approved TMDL that remains in effect and without appeal. Vermonters are counting on an equal response to the TMDL by EPA Region 2 as the permit comes up for renewal.

Response:
As noted above, Vermont and New York have signed a Memorandum of Understanding that addresses both states' concerns about equitable responsibility.

Comment 6-6: [Vermont Rural Water Association (VRWA)]
VRWA recognizes EPA Region 1 has no authority over New York and Quebec but the lack of requirement for them to reduce discharges is problematic. It needs to be recognized no reduction in their loading and or an unanticipated increase will negatively impact Lake Champlain quality. Poor performance by New York and Quebec will only result in a penalty situation for Vermont.

Response:
New York's allocations and associated obligations remain unchanged from the 2002 approval of the New York portion of the TMDL. Poor performance by *any* of the three main jurisdictions will negatively impact Lake Champlain water quality. The TMDLs do not establish any specific "penalty situation" for Vermont that is based on the performance of New York and/or Quebec.

Comment 6-7: [Peters *et al.*]
I also urge Vermont and the EPA to call for greater reductions of phosphorous runoff from impervious surfaces like parking lots and rooftops. All wastewater treatment plants should decrease their phosphorous loads. And the plan should support mandatory programs to reduce streambank erosion.

Response:
One of the advantages of the aggregated wasteload allocation for developed lands (which includes all stormwater sources) is that it affords Vermont a certain amount of flexibility to consider the totality of the stormwater permitting programs as it designs the most effective program to meet the overall reductions. Thus Vermont will have the opportunity to weigh the cost-effectiveness of reductions from the whole range of impervious surfaces.

Although EPA did evaluate scenarios that included requiring reductions at all wastewater treatment plants, the ultimate conclusion was that in many instances it would result in small incremental reductions that would not meaningfully impact the reductions required at non-WWTF sources and at costs likely to be much higher than achieving reductions from other sources of phosphorus. EPA therefore focused WWTF reduction efforts in targeted segments.

EPA did set streambank erosion reduction targets in the seven segments where there was sufficient information to quantify the load. Vermont's Phase 1 Implementation Plan includes the authorities and steps the state will take to achieve the necessary reductions. Some approaches will be similar across the watershed, while others will need to be specific to the conditions in any given stream reach.

Wasteload allocation

Comment 6-8: [South Burlington Water Quality Department]
The City of South Burlington not only supports efforts to clean up Lake Champlain but has been a leading entity in water quality improvements at a cost of millions of dollars to our constituents. The City of South Burlington has demonstrated a strong commitment to water quality by developing the State's first Stormwater Utility, recently spending in excess of $25 million on the Airport Parkway Facility upgrade and is scheduling a major upgrade to the Bartlett Bay Facility. Both South Burlington WWTFs are state of the art Biological Nutrient Removal Facilities and Airport Parkway is one of the most advanced facilities in the State of Vermont. Requiring additional money to be spent on these facilities for very little return would be a disservice to the environment and the citizens. We understand that everyone contributes to the problem and therefore everyone needs to be part of the solution but the City of South Burlington should not be penalized for being proactive while less proactive entities may be rewarded for their inactivity. South Burlington WWTF operators fully appreciate that clean water is an irreplaceable resource and have dedicated their careers to increasing water quality.

Response:
EPA does not believe that any WWTFs should or would be penalized for being proactive. According to VT DEC's analysis, additional capital improvements are not forecast to be necessary for the Airport Parkway facility or the Bartlett Bay facility to meet the new allocations in the TMDL.

Comment 6-9: [City of Burlington, Introduction and 10]
An overarching theme of each of the City's comments is the need for the TMDL to reflect and incorporate flexibility, efficiency, and affordability.

Given that Burlington made water quality investments towards the end of the modeling period (2001-2010) and since the modeling period end (2010) that may not have been captured in monitoring data and modeling results, the TMDL must establish that credit will be given for such investments.

> **Response:**
> Credit may be given for all structural stormwater projects completed after 2010 (i.e., after the modeling period) that are documented as working as designed. In addition, VT DEC, in its role as lead entity for tracking and accounting during the implementation phase, may determine that certain retrofit stormwater projects completed prior to 2010 may also be eligible for credit. This is because the TMDL modeling was not sensitive enough to specifically account for the presence of the small number of retrofit projects in place just prior to 2010. Therefore, EPA's recommendation is that, in determining whether credit should be provided in these cases, VT DEC should consider the level of phosphorus reduction achieved by the practice, how close the installation was to 2010, and whether the practice has been documented to still be performing as designed. This text has been added to the TMDLs in Section 7.3.

Comment 6-10: [Dennett]
The new cap on the amount of phosphorous allowed to enter Lake Champlain establishes tough targets for runoff reduction – and we need tough targets to successfully clean up the lake. I would add that industrial polluters are not getting the same scrutiny as farmers and residential landowners.

> **Response:**
> The small number of industrial point source dischargers of phosphorus (e.g., Global Foundries, Rock Tenn) were included with and given the same scrutiny as the WWTF dischargers. As noted elsewhere, EPA targeted point source reductions in the segments where they make a meaningful and cost-effective contribution to the overall reduction.

WWTF

Comment 6-11: [CLF-VNRC, 1b]
The wasteload allocations for wastewater treatment facilities allow a substantial increase in phosphorus loading into impaired waters. The CWA requires the incorporation of sufficiently stringent effluent limitations to meet water quality standards.[8] Vermont water quality standards dictate "in all waters, total phosphorous loadings shall be limited so that they will not contribute to the acceleration of eutrophication or the stimulation of the growth of aquatic biota in a manner that prevents the full support of uses."[9]

For Lake Champlain, the annual phosphorus concentrations already exceed water quality standards and impact designated uses.[10] Therefore, the draft 2015 TMDL allocations cannot justify additional discharges of phosphorus pollution into Lake Champlain. For wastewater treatment facilities in impaired lake segments, an allocation set above the actual phosphorus load of that facility is inconsistent with the CWA.

In the draft 2015 TMDL, 26 of the 59 wastewater treatment facilities that discharge into Lake Champlain have received new allocations. The parameters for setting these allocations were based largely on geography (facilities in lake segments with a greater proportion of phosphorus originating from wastewater treatment facilities) and size of the facility (design flow capacities greater than 0.10 million gallons per day). The remaining 33 facilities will maintain their current permitted discharges.

There are a number of serious concerns with this approach. First, of the 26 facilities with reduced allocations only 14 are required to implement upgrades immediately. In an effort to provide the State with flexibility, EPA acknowledges that "[c]onstruction of upgraded phosphorus treatment facilities will not be required until actual phosphorus loads approach 80% of facilities' WLAs [wasteload allocations]."[11] While 14 facilities' loads have already exceeded 80 percent of the new allocation, the remaining 12 facilities can increase their discharge of phosphorus pollution until the 80 percent threshold is met or they can maintain their current discharge indefinitely.

Second, the facilities that have reduced allocations but are not required to upgrade in the near future are discharging significant loads of phosphorus into Lake Champlain. Barre City, Global Foundries, and South Burlington Airport have some of the largest design flows (>3.0 million gallons per day) with actual phosphorus discharges ranging from 1266 to 1740 pounds per year (average of all facilities is 572 pounds per year). Moreover, all three of these facilities are located in the Main Lake Segment, where phosphorus originating from wastewater treatment facilities comprises a significant percentage of the base load. The 80 percent threshold provision will allow these facilities to continue their discharges.

Third, 18 facilities have not received new allocations in the draft 2015 TMDL nor the 2002 TMDL. The phosphorus concentration limit for several of these facilities is 5.0 mg/l at design flow. In contrast, the draft 2015 TMDL bases its new allocations on phosphorus limits of 0.2 mg/l at design flow for large facilities and 0.8 mg/l at design flow for mid-sized facilities. Further, EPA has noted that the 2002 TMDL wasteload allocations based on effluent concentrations of 0.6 mg/l is "well above what was technologically feasible at the time."[12] This difference in concentration limits between newly regulated facilities and ones that have been ignored is astronomical. The phosphorus limits for wastewater treatment facilities should be in greater alignment with and reflective of the best available control technology.

The draft 2015 TMDL's neglect to regulate facilities with appropriately stringent phosphorus concentration limits as well as its delay of upgrade requirements that essentially allows increased phosphorus discharges are contrary to plain requirements of the Clean Water Act and addressing the causes of Lake Champlain impairment.

Footnotes in Comment

[8] 33 U.S.C. 1311(b)(1)(C)

[9] VT Department of Environmental Conservation Watershed Management Division. *Vermont Water Quality Standards*. October 2014. pg. 21.

[10] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 15.

[11] *Id*. at pg. 30.

[12] U.S. Environmental Protection Agency. *Reconsideration of EPA's Approval of Vermont's 2002 Lake Champlain Phosphorus Total Maximum Daily Load ("TMDL") and Determination to Disapprove the TMDL*. January 2011. pg. 8.

Note: On May 9, 2016, EPA received a letter from CLF reiterating concerns with the proposed TMDLs. Although submitted well beyond the close of the comment period, EPA has included it as Comment 10-26 at the end of this document. The first numbered element of the May 9, 2016 letter overlaps considerably with the comment above and the response below.

Response:
EPA disagrees with the commenter's assertion that an allocation for a wastewater facility above the actual (current) phosphorus load of that facility is inconsistent with the CWA. Neither the Clean Water Act nor EPA's TMDL regulations and guidance categorically preclude allocations to a WWTF above the actual phosphorus load of the facility, as long as the sum of the WLAs and the reasonably assured LAs, along with the margin of safety, do not exceed the total loading capacity.

As described in the opening paragraph of Section 7.1 of the TMDLs, section 303(d) of the CWA requires that a TMDL be "established at a level necessary to implement the applicable water quality standard." EPA regulations define a TMDL as the sum of WLAs and LAs and a margin of safety, and provide that "[i]f best management practices or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent." 40 C.F.R. §130.2(i). EPA's TMDL guidance further explains that when a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, the TMDL must provide "reasonable assurances" that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable (USEPA, 1991; see also Perciasepe, 1997). This is what EPA has done in these TMDLs.

There is no statutory or regulatory requirement that prohibits EPA from establishing a TMDL in which some WWTFs receive WLAs that effectively allow an increased load through growth, others receive WLAs that maintain current loads, and still others receive WLAs that require reduced loads, as long as the WLAs, in combination with the reasonably assured LAs and margin of safety, are set at levels that collectively will ensure that WQS will be met. Indeed, 40 C.F.R. § 130.2(h) specifically includes future point sources of pollution in the definition of "wasteload allocation." Clearly this would apply to the situation where a WWTF increases its load up to design capacity, as well as to entirely new sources. The CWA and EPA regulations also do not require WLAs to be limited to current or reduced loads until such time at which nonpoint source reductions have been actually achieved, and the commenter cites to no such provision.

The commenter has identified specific concerns about the WLAs for two groups of WWTFs and how the WLAs would be implemented. First, the commenter notes that 12 of the 26 facilities that received new reduced WLAs compared to the 2002 WLAs will not need to initiate upgrades immediately to achieve the reduced loads. This is because they are all discharging below their new - reduced - wasteload allocations. By EPA's calculation, there are 13 facilities that will not need to make immediate upgrades (Barre City, Enosburg Falls, Global Foundries, Northfield, Richmond, RockTenn, Essex Junction, Shelburne 1 and 2, South Burlington Airport Parkway, South Burlington Bartletts Bay, Stowe and Waterbury). EPA has analyzed the cumulative data for these 13 facilities from 2006 to 2015 to determine trends and thus the likelihood that there would be an increase in the phosphorus load. The total actual load from the 13 facilities has ranged from a high of 7.932 mt/yr in 2006 to a low of 3.075 in

2015. EPA calculated 3- and 5-year running averages of the total load from these facilities, starting with 2006. Both the 3- and 5-year running average total loads decrease steadily over time. The cumulative average load for the last five years of record (2011-2015) is 26% lower than the five prior years.

EPA also looked at the cumulative flow from these 13 facilities over the same period as another indicator of growth trends. EPA excluded 2011 because record spring rains and the passage of Tropical Storm Irene in the late summer combined to produce abnormally high flows at each of the facilities. Over the nine years, the cumulative flows from the 13 facilities has averaged 12.410 mgd and varied from a high of 13.788 to a low of 11.653. The three year rolling averages vary above and below the nine-year average by a small amount (5% or less). There is no discernable trend up or down. With no notable trend in flows and a clear downward trend in load, EPA concludes that it is unlikely that there will be an increase in total load from the 13 facilities any time soon, or before commensurate nonpoint source reductions occur.

The commenter observed that the facilities that have reduced allocations but are not required to upgrade in the near future collectively discharge a significant load and that three in particular have some of the largest design flows. However, notwithstanding the design flows, the loads from these three facilities are relatively low (together discharging 1.5% of the phosphorous load to the Main Lake segment from 2013-2015) and, as noted above, are not expected to increase in the near future. Specifically, Global Foundries has a large design flow, but the five year average discharge from 2009-2013 was 0.663 metric tons/year, 70% below the new allocation, which is scheduled to be put in a new permit in 2016. Barre City's five year average discharge (2009-2013) was 0.668 mt/yr, 40% below the new allocation. The 2009-2013 average discharge for South Burlington Airport Park was 0.872 mt/yr. While that discharge is only a little below the new allocation of 0.91 mt/yr, recent upgrades to the facility resulted in lower discharges for 2013-2015 – that period averaged 0.59 mt/yr, which is 35% below the new allocation. All three of these facilities are currently discharging phosphorus concentrations near or below 0.2 mg/L, and well below the new reduced allocations, so these plants are already performing quite well, and there is now an incentive in place for them to continue performing well, and avoid the need for expensive upgrades for many years.

Second, the commenter raised the concern that 18 facilities did not receive reduced allocations in either the 2016 or 2002 TMDLs. These facilities were not ignored by EPA. EPA's process and rationale for setting the WLAs for these WWTFs were clearly described in Sections 6.1.1 and 6.1.1.1 in the proposed TMDLs. EPA made decisions about each of the 18 facilities based on the relative contribution of WWTFs in each segment, the size of the facilities and the extent to which other point and nonpoint source measures would be sufficient to meet the total allocation for the relevant TMDL segment. For example, while the concentration of phosphorus in the discharges from some of the very small WWTFs is high, the combined total load from the eight facilities with phosphorus concentrations greater than 3 mg/l is only 1 mt/yr. This is less than one sixth of one percent of the total phosphorus load from VT sources (631 mt/yr). So even though the phosphorus concentrations are high, the amount of phosphorus discharged from these facilities is very small. In addition, as noted in the draft TMDLs, the 2002 allocations for two of the 18 sources (Burlington Electric and Weed Fish Culture Station) were already lower than a limit equivalent to 0.2 mg/l at design flow, so EPA retained the 2002 WLAs for these two facilities in the 206 TMDLs.

Comment 6-12: [Burlington, 6]
Require all facilities to evaluate if they can optimize with either chemical addition or biological optimization. Then determine how these reductions may provide more compliance flexibility for WWTF. Since Table 9 ("Vermont Individual WWTF Phosphorus Wasteload Allocations") is just one scenario for compliance with the Lake Segment Total Capacity Loads, it should be removed from the TMDL to make room for alternative scenarios such as Statewide optimization.

The City recommends that the TMDL require ALL WWTFs to conduct and implement phosphorus removal optimization through biological, chemical addition, and other process control measures. The City is not aware of the scientific basis or sufficient other data to support the setting 15% as the cutoff for "significant" contribution to a given Lake segment. As such, EPA's decision to not require any action by many WWTFs is arbitrary.

The City understands that phosphorus entering the Otter Creek Lake Segment does not have a 1:1 impact on Main Lake, but if, for example, other municipalities were required to optimize – would it provide some benefit to the Main Lake? And if so, shouldn't (in the spirit of equity) this reduce the burden upon the Main Lake, Shelburne and Burlington Bay discharges? This, combined with the medium plants going to 0.8 mg/L plus optimization and the small plants optimizing, could provide SOME benefit and for less cost to Vermont ratepayers than technological upgrades to 0.2 mg/L.

In theory, the City understands that some of the scenario described above could possibly be achieved through WWTF WLA Reallocation by VTDEC. However, unlike the Developed WLA (which does not get into specific allocations to each MS4 NPDES permit), the TMDL calls for SPECIFIC reductions at SPECIFIC plants/NPDES WWTF permits in Table 9. This, in our opinion, makes the evaluation of alternative scenarios, trading or re-allocation efforts more difficult in the future. We ask that EPA consider Table 9, and the framework described in the TMDL (of targeted Lake Segments, and requiring 0.8 mg/L compliance at medium facilities and 0.2 mg/L at large facilities) as one "optimized" scenario which the State can use as a starting place during implementation. As such, while it may be valid to use this scenario to generate the WWTF-WLA in Table 7, we request consideration that Table 9 be removed as part of the formal TMDL.

Response:
EPA disagrees with the assertion that the decision to target segments for consideration of reduced WWTF allocations was "arbitrary." Section 6.1.1 in the TMDLs describes the criteria and process EPA used to determine whether to consider reduced WWTF allocations. EPA did not set a 15% "cutoff." Rather, EPA determined that there were segments where the 2002 WWTF allocations were less than 10% of the segment baseload and the reductions required from all non-WWTF sources was readily obtainable. EPA considers this a reasonable basis for having excluded the WWTFs in these segments from consideration for further reductions. There were other segments where 16% or more of the baseload was attributable to WWTFs and EPA considered those contributions significant enough that new WWTF allocations should be considered.

The individual WWTF Phosphorus Wasteload Allocations provided in Table 9 represent the scenario that EPA determined, in combination with all the non-WWTF allocations, margin of safety and reasonable assurances, would allow the phosphorus criteria to be met in each and all the Vermont

segments of Lake Champlain. There is nothing inherent in the allocation that would prevent VT DEC from pursuing the commenter's suggestion that optimization at every facility be pursued. As noted by the commenter, Vermont has the flexibility to reallocate within a segment as long as the segment total is not exceeded.

EPA does not agree with the suggestion to remove Table 9. EPA's TMDL guidance recommends allocations be as specific as possible, consistent with EPA's definition of wasteload allocation at 40 CFR 130.2(h). Without the specific allocations, Vermont DEC's permit writers would not have a clear indication of the permit parameters that would comply with the TMDL WLAs. The principal reason for aggregating the WLA for developed land was that there is insufficient data to make more specific allocations. That is clearly not the case for the WWTFs.

Integrated Planning

EPA received three comments on this subject. A consolidated response to the comments follows the last comment.

Comment 6-13: [Vermont Department of Environmental Conservation, 4]
Integrated Planning and Permitting
DEC supports the concept of integrated planning and permitting as a useful tool to assist municipalities in meeting their Clean Water Act obligations, including the requirements of the TMDL. DEC would like EPA to strengthen its support in the TMDL for DEC utilizing integrated permitting, including:
DEC requests that the language on page 29-30 be changed to:

- When implementing the TMDLS through NPDES permits, EPA acknowledges and supports DEC's commitment to employ flexible approaches including:
    - Effluent phosphorus limits in permits will be expressed in total annual mass loads.
    - Construction of upgraded phosphorus treatment facilities will not be required until actual phosphorus loads approach 80% of the facilities' WLA.
    - Phosphorus compliance schedules in the discharge permits will allow adequate time for planning, engineering and municipal budgeting.
    - Other forms of flexibility that support achieving the wasteload allocations in an optimally cost effective manner. Including phosphorus trading and integrated planning and permitting.

Moreover, there should be similar mention of the types of flexible approaches that will be used on the 6.1.2 Developed Lands WLAs, including CSO allocations and Separate Stormwater Developed Lands WLA, such as Integrated Permitting.

Comment 6-14: [Burlington, 1]
Integrated Planning (IP), including the incorporation of EPA Integrated Municipal Stormwater and Wastewater Planning Approach Framework (June 5, 2012) should be specifically referenced in Chapters 6 and 8 of the TMDL. More specifically, the TMDL should provide that future implementation plans specifically authorize the use of IP in all facets of TMDL compliance and future related permitting.

IP is called out on Page 28 under 6.1.1 WWTF Wasteload allocations *"… the State requested EPA to apply the following principles….Other forms of flexibility should be available to achieve the wasteload allocation in an optimally cost-effective manner, including phosphorus trading and integrated permitting*." However, it is not specifically referenced on page 29 – 30 of TMDL later on in EPA's acknowledgements: "*When implementing the TMDLs through NPDES permits, EPA acknowledges that DEC intends to employ flexible approaches including*: …" nor in sections of Chapter 6 addressing developed lands or in "Chapter 8: Implementation" on page 57.

The City requests that the language on page 29-30 and page 57 be **changed** to:
When implementing the TMDLS through NPDES permits, EPA acknowledges **and supports** DEC's **commitment** to employ flexible approaches including:

- Effluent phosphorus limits in permits will be expressed in total annual mass loads.
- Construction of upgraded phosphorus treatment facilities will not be required until actual phosphorus loads approach 80% of the facilities' WLA.
- Phosphorus compliance schedules in the discharge permits will allow adequate time for planning, engineering and municipal budgeting.
- **Other forms of flexibility that support achieving the wasteload allocations in an optimally cost effective manner. Such forms should include phosphorus trading and integrated planning and permitting.**

Moreover, there should be similar mention of the types of flexible approaches that will be used on the 6.1.2 Developed Lands WLAs, including CSO allocations and Separate Stormwater Developed Lands WLA, such as:

- Phosphorus trading
- Integrated Planning and Permitting

Comment 6-15: [Essex Junction]
Integrated Permitting. The Village of Essex Junction supports integrated permitting to allow prioritization of limited capital funds to communities with WWTF's CSO and MS4 permit responsibilities.

Consolidated Response:
EPA supports DEC's commitment to employ flexible approaches that meet the WWTF phosphorus allocations in a cost-effective manner and has added language indicating that support to Section 6.1.1 of the final TMDLs. EPA acknowledges that integrated planning and permitting can be a useful tool and has added the fourth sub-bullet in Comment 6-13 above to Section 6.1.1 and the Phase 1 section of Chapter 8, and added a reference to integrated planning in Section 6.1.2.

The EPA acknowledges that DEC intends to support the use of Integrated Planning as a means for municipalities to comply with the Lake Champlain TMDL, and any other Clean Water Act obligations. Integrated Plans must be consistent with EPA's "Integrated Municipal Stormwater and Wastewater Planning Approach Framework" (Stoner and Giles, 2012) and provide a plan that is consistent with, and designed to meet the objectives of, the Lake Champlain TMDLs. Such Integrated Plans may include, where it is scientifically defensible and credible, the integration of a municipality's various NPDES

WLAs into one Integrated WLA consisting of the total of the NPDES related WLAs for phosphorus discharged by that municipality, provided that this integration of the WLAs is consistent with the TMDL for the relevant segment(s) of Lake Champlain. In EPA's view, there currently are relatively few municipalities that have the data in hand to develop these Integrated Plans.

Annual Load Limits

EPA received three comments on this subject. A consolidated response to the three comments follows the last comment.

Comment 6-16: [Green Mountain Water Environment Association (GMWEA), 1]
Both EPA and DEC have indicated that only 3% of the phosphorous (P) load to Lake Champlain is attributed to discharges from Wastewater Treatment Facilities (WWTFs). Pursuing additional reductions at our WWTFs is an inefficient investment strategy for addressing our shared concerns for Lake Champlain. We believe that Vermont's limited funds could be more efficiently spent to achieve reductions from the sources that make up the other 97% of the problem. The proposed TMDL only partially acknowledges this reality. The proposed TMDL and implementation plan will require many WWTFs throughout the State to provide additional P reductions at a large cost to the local ratepayers. While we disagree that this is the best strategy to achieve the necessary P reductions, we accept that this is the strategy that will be employed by EPA and DEC. Therefore, on behalf of the GMWEA and our membership, we would like to make the following comments on the Lake Champlain P TMDL and Phase 1 Implementation Plan:

We support the use of annual load limits at WWTFs as a method to reduce P inputs to Lake Champlain. The goal of the TMDL is to reduce the annual load of P to the Lake and annual load limits at WWTFs are an effective way to achieve this result. This approach has been supported by EPA in the past (March 3, 2004 memorandum from James A. Hanlon, EPA Director of Wastewater Management, to Jon Capacasa, Director of Water Permits Division) and is appropriate in this case.

Comment 6-17: [S. Burlington WQD, 6]
We support the use of annual load limits at WWTFs as a method to reduce Phosphorus (P) inputs to Lake Champlain. The goal of the TMDL is to reduce the annual load of P to the Lake and annual load limits at WWTFs are an effective way to achieve this result. This approach has been supported by EPA in the past and is appropriate in this case.

Comment 6-18: [Essex Junction]
We support annual phosphorus TMDL based discharge permit limits for WWTFs.

Consolidated Response:
EPA acknowledges the support for the use of annual limits at WWTFs.

Trading

EPA received seven comments regarding trading between point sources. A consolidated response follows the last comment.

Comment 6-18: [Green Mountain Water Environment Association 3; S. Burlington WQD, 7]
We support the decision to allow P trading between WWTFs within the same Lake segment. A well-managed trading program has the potential to reduce P inputs to the Lake on a faster time schedule and in a more cost efficient manner.

a. We also support the decision to consider the Main Lake, Burlington Bay, and Shelburne Bay as a single segment for purposes of trading.

b. The EPA and DEC must provide more detail regarding how a P trading program between WWTFs will work and they must do it soon. There are 9 plants due for permit issuance in 2016 and this information must be provided so that they can make informed decisions regarding their permit options. Vermont DEC should not proceed with wastewater plant permit issuance absent guidance on a P trading program.

c. Those WWTFs that are not required to complete P related upgrades should be allowed the opportunity to complete P optimization so that these P reductions can be used as part of a P trading program.

Comment 6-19: [Essex Junction]
EPA's focus on wastewater treatment facilities and MS4 stormwater facilities is understood as it is the only permit leverage EPA has. Most facilities accept this reality under this TMDL and appreciate the effort by the ANR to provide the best solution given the current situation. We support the compliance schedules and the WWTF load reductions while noting there will be future opportunities for optimization and nutrient offsets/trading with those facilities that were untouched in this final TMDL.

Comment 6-20: [S. Burlington, Stormwater Services, 1]
The final TMDL document should include provisions that allow Phosphorus (P) trading between sources within the Waste Load Allocation (WLA) within the same Lake segment. Development of a P trading program between Wastewater Treatment Facilities (WWTFs) and stormwater (i.e. MS4s) sources has the potential to reduce P loading to the Lake on a faster timeline and to achieve these reductions in a more cost effective manner than an implementation program that does not include this capability. The EPA's Lake P TMDL and DEC Implementation Plan both indicate that a P tracking and accounting system will be developed. The Implementation Plan goes on to indicate that regulated MS4s are required to track P reductions associated with deployment of Best Management Practices (BMPs). Since this tracking is technologically possible and will be occurring anyway, it is feasible to implement a P trading program between these sources.

a. On January 13, 2003 The U.S. EPA Office of Water prepared a document titled "Water Quality Trading Policy" that supports the use of trading programs. The document states that, "Water quality trading is an approach that offers greater efficiency in achieving water quality goals on a watershed basis. It allows one source to meet its regulatory obligations by using pollution reductions created by another source that has lower pollution control costs" (Page 1). The document goes on to state that "The purpose of this policy is to encourage states, interstate agencies, and tribes to develop and implement water quality trading programs for nutrients, sediments and other pollutants where opportunities exist to achieve water quality improvements at reduced costs. More specifically, the policy is intended to encourage voluntary trading programs that facilitate

implementation of TMDLs…" (Page 2). Since EPA has previously recognized the benefit of these trading programs, why does the Lake Champlain P TMDL not contain trading programs for sources within the WLA?

b. EPA's Water Quality Trading web site (http://water.epa.gov/type/watersheds/trading.cfm) indicates that trading works best when: (1) there is a driver that motivates facilities to seek pollutant reductions, (2) sources within the watershed have significantly different costs to control the pollutant of concern, (3) the necessary levels of pollutant reduction are not so large that all sources in the watershed must reduce as much as possible to achieve the total reduction needed, and (4) watershed stakeholders and the state regulatory agency are willing to try an innovative approach and engage in trading design and implementation issues. The Lake Champlain P TMDL meets all of these criteria: (1) The Lake P TMDL will motivate regulated entities to seek reductions, (2) it is well documented that treatment of stormwater runoff can be a more cost effective way to remove P than upgrades at WWTFs, (3) the Lake P TMDL states that more opportunities for stormwater P reductions exist in the Otter Creek, Main Lake, Shelburne Bay, Burlington Bay, Mallets Bay, and St. Albans Bay Lake segments than are needed in all sector sources (Page 36), and (4) numerous stakeholders have expressed an interest in P trading programs and the Vermont DEC has never shied away from innovative approaches to achieve water quality improvements (e.g., Stream Flow Based TMDLs).

c. Nutrient trading programs have been developed and implemented in other parts of the country. Appendix A of EPA's Water Quality Trading Toolkit for Permit Writers (available at: http://water.epa.gov/type/watersheds/trading/WQTToolkit.cfm) provides numerous examples of these programs. Many involve trading between sources in the WLA and Load Allocation (LA). Trading between sources within the WLA will be easier to quantify and the regulatory framework necessary to track these P reductions is already in place (e.g., wastewater and MS4 permits).

Comment 6-21: [S. Burlington WQD, 1]
The final TMDL document should include provisions that allow Phosphorus trading between sources within the Waste Load Allocation (WLA) within the same Lake segment. Development of a P trading program between WWTFs and stormwater (i.e. MS4) sources has the potential to reduce P loading to the Lake on a faster timeline and to achieve these reductions in a more cost effective manner than an implementation program that does not include this capability. **At the minimum, trading between stormwater and WWTFs in the same municipality should be allowed as this will allow municipalities to prioritize projects based on the best outcomes.** This will also allow "bundling" of projects into one overall package when presented to the citizenry for approval. Integrated Planning may allow trading between stormwater and WWTFs in the same municipality and we are in support of Integrated Planning as outlined by the EPA. In regards to the "Phosphorus TMDLs for Vermont Segments of Lake Champlain", the City of South Burlington reserves judgement on the value of Integrated Planning for the City of South Burlington until the completion of the EPA/City of Burlington test project "OWM Integrated Planning Technical Assistance Work Plan Contract EP-C-11-009" and asks that the final TMDL document include provisions that allow P trading between sources within the WLA within the same Lake segment. The EPA's Lake P TMDL and the DEC Implementation Plan both indicate that a P tracking and accounting system will be developed. The Implementation Plan goes on to indicate that regulated MS4s are required to track P reductions associated with deployment of Best Management Practices (BMPs). Since this tracking is technologically possible and will be occurring anyway, it is feasible to implement a P trading program between these sources. The EPA's own website states "Water quality trading is an innovative approach to achieve water quality goals more efficiently. Trading is based on the fact that sources in a watershed can face very different costs to control the same pollutant…the foundations of trading are that a

water quality goal is established and that sources within the watershed have significantly different costs to achieve comparable levels of pollution control...it can be a powerful tool for achieving pollutant reductions faster and at lower cost…" This process is already utilized in other EPA regions in a much broader manner than what we are asking. From the Pennsylvania Department of Environmental Protection (DEP): "…Since 2005, the Pennsylvania Department of Environmental Protection has been leading the way nationally in developing its nutrient trading program. The program is one of the first programs in the country to have both agricultural operations (nonpoint sources) and wastewater treatment facilities (point sources) participating in a nutrient credit trading program…Trading may take place between any combination of eligible point sources, non-point sources and third party aggregators…" Another example is the Greater Miami River Watershed Trading pilot program in Ohio which also involves nutrient trading between point and agricultural nonpoint sources.

Comment 6-22: [Green Mountain Water Environment Association, 5]
We recommend that the final TMDL document allow P trading between WWTFs and stormwater sources within the Waste Load Allocation (WLA) within the same Lake segment. Specifically, we recommend that P trading be allowed between WWTFs and the P load allocated to stormwater (i.e. MS4) sources. The EPA TMDL and DEC Implementation Plan indicate that a robust P tracking and accounting system will be developed. The Implementation Plan indicates that regulated MS4 municipalities are required to track P reductions associated with deployment of Best Management Practices (BMPs) (p. 34). Since this tracking is technologically possible and required it should be possible to implement a P trading program between these sources. A program of this nature has the potential to reduce P inputs to the Lake on a faster schedule and at a lower cost than efforts managed within the "silo" of a single P source.

Comment 6-23: [Vermont League of Cities and Towns]
Wastewater treatment facilities in Shelburne, Burlington, St. Albans, and Missisquoi Bay need to reduce their phosphorus discharges by 64.1, 66.7, 59.4, and 51.9 percent, respectively. The cost to bring wastewater treatment facilities into compliance with new discharge limits is estimated at $70 million. Major reductions in phosphorus discharges could be secured if the TMDL provided for phosphorus trading between sources within lake segments. We urge you to adopt such a program for Lake Champlain that is consistent with EPA's endorsement of water quality trading and models that are being implemented in other water bodies around the country.

Consolidated Response:
EPA encourages states to consider trading programs where opportunities exist to achieve water quality improvements at reduced costs. However, such trading programs would be part of the implementation strategy and are not a TMDL component. The choice to design, adopt and implement a trading program is one for Vermont to make since VT DEC is the permitting authority. Therefore EPA has not included the specifics of a trading program in the final TMDLs.

However, as noted in the Consolidated Response to Comments 6-13 - 6-15 above regarding integrated planning, EPA supports DEC's commitment to employ flexible approaches that meet the WWTF phosphorus allocations in a cost-effective manner, including phosphorus trading, and has added language indicating that support to Section 6.1.1 and the Phase 1 section of Chapter 8 of the final TMDLs.

As alluded to by one of the commenters, mechanisms for determining and ensuring compliance are essential for all trades and trading programs. Vermont will need to establish clear enforceable mechanisms consistent with NPDES regulations that ensure legal accountability for the generation of any credits that are traded. In designing trading programs, EPA recommends that States and stakeholders consult and be consistent with EPA's 2003 Water Quality Trading Policy (USEPA, 2003) and the 2009 Water Quality Trading Toolkit for Permit Writers (USEPA, 2009).

EPA received eight comments regarding trading between sectors or between point and nonpoint sources. A consolidated response follows the last comment.

Comment 6-24: [Green Mountain Water Environment Association, 4; S. Burlington WQD, 8]
We support the development of a nutrient market to facilitate P trading between sectors. The U.S. EPA Office of water prepared a document titled "Water Quality Trading Programs" on January 13, 2003. The document expresses EPA's conclusion that water quality trading is an approach that offers greater efficiency in achieving water quality goals on a watershed basis. The document encourages states and others to develop and implement nutrient trading programs so that required reductions can be achieved at a reduced cost. We agree with the assessment provided by EPA in this document and look forward to continued discussion regarding P trading within the Lake Champlain P TMDL.

Comment 6-25: [Town of Williston]

Quantifying Phosphorus Reductions and Trading

As the formula for calculating phosphorus reductions from non-point sources is finalized, a system for trading should be included within the TMDL. This trading system should foster a holistic approach which allows trading between point and non-point sources alike. Furthermore, metrics to quantify phosphorus reduction credits for municipalities which send waste water treatment to neighboring municipalities should be available. In short, communities which exceed their required amount of phosphorus reduction should have a system in place to sell that credit to those contributing to the same segment.

Comment 6-26: [Green Mountain Water Environment Association, 6 and S. Burlington WQD, 9]
We recommend that the final TMDL document allow P trading between WWTFs and agricultural sources within the same Lake segment. Specifically, we recommend that P trading be allowed between WWTFs and the P load allocated to agricultural sources. A system to track P reductions from BMPs implemented on agricultural land will be developed as part of TMDL implementation. Since this tracking is technologically possible and required it should be possible to implement a P trading program between these sources. If necessary, a factor of safety can be applied to ensure that P reductions are realized through the trading program. A program of this nature has the potential to reduce P inputs to the Lake on a faster schedule and at a lower cost than efforts managed within the "silo" of a single P source.

Comment 6-27: [Burlington, 4]

The City requests that language regarding the trading relationship of Burlington Bay and Shelburne Bay to the Main Lake should apply to all wasteload sectors (Wastewater, Agriculture, Combined Sewer and Separate Stormwater) not just WWTPs.

Burlington appreciates the recognition on page 29 that Burlington Bay, Shelburne Bay and Main Lake should be treated as a single lake segment…"since loads from each of these segment's watersheds have an approximately equal impact on phosphorus concentrations in the critical Main Lake segment." However, this language currently only exists in the section 6.1.1 Wastewater Treatment Facilities Wasteload Allocations. This important language should apply to the discussion of ALL Wasteload sectors (Developed Lands, Agriculture and WWTFs). While the City understands that EPA has concerns about trading frameworks for WLAs other than WWTFs, this does not change the scientific, lake flow, Bath Tub modeled fact of the interrelationship of these segments. It is up to VT DEC to determine trading frameworks and ratios that may address EPA's concerns about variability and equivalency – but the phosphorus from WWTFs is not any different than the phosphorus from Developed Lands or Agriculture once it gets into the lake – and this statement is about the Lake dynamics.

Comment 6-28: [Vermont Rural Water Association (VRWA)]

VRWA requests EPA Region1 support any future efforts by the state for phosphorus trading initiatives. We understand the state has the flexibility to offer trading and is now exploring this concept within watersheds and between similar phosphorus source discharges. VRWA will continue to advocate for trading options across sectors as well. There are examples to show efforts across sectors leads to cost effective measures to reduce phosphorous discharges and the clean-up dollars get stretched further.

Comment 6-29: [Anderson]

The TMDL should clarify the extent to which a cap and trade system can be used by the State of Vermont to achieve the TMDL limit.

Consolidated Response:

As the commenters fairly note, EPA's Water Quality Trading Policy (USEPA, 2003) is not constrained to point sources. EPA has added a paragraph in the Phase 1 section of Chapter 8 in the TMDLs indicating that Vermont has the flexibility to adopt a program that allows trading across all sectors within lake segments. EPA recommends that any such trades be consistent with EPA's guidance regarding accounting for uncertainty when crediting nonpoint source reductions (USEPA, 2009 – Nonpoint Source Credit Exchange section). Trading between nonpoint and point sources may require a greater than 1:1 trading ratio given the uncertainty in calculating credits from nonpoint sources. Further, only those nonpoint source reductions over and above the requirement of the TMDL load allocation can be considered as credits for trading purposes.

EPA also notes that it is unlikely that a workable trading system is possible in the South Lake A and Missisquoi Bay segments because the necessary levels of pollutant reduction are so large that all sources in the watershed must reduce nearly as much as possible to achieve the total reduction needed - there will likely not be surplus reductions to sell or purchase.

Finally, EPA notes that while successful point source trading programs have been implemented, to date other states have struggled to find a workable approach to trading between point and nonpoint sources.

Should Vermont choose to consider such a program, EPA encourages broad stakeholder involvement in developing the program.

Comment 6-30: [Essex Junction]
Section 3.2, 5.1, 6 and others clearly note *"…the interconnectedness of segments (and the way each segment influences other segments) necessitates a lake wide approach to the TMDL development."* The report notes this interconnectedness was taken into consideration. There is significant work to be done in Challenged Segments of the lake. Allow Vermont great flexibility in our pursuit of a nutrient offset and trading market development to insure the greatest flexibility across the permit sectors and lake sectors where appropriate. We need to implement broad, marked based opportunities to accelerate the TMDL compliance process.

Response:
EPA has clearly indicated that Main Lake, Burlington Bay and Shelburne Bay may be treated as a single segment for the purposes of trading. There has not been sufficient analysis conducted to date to allow for evaluation of trading across other lake segment boundaries.

Comment 6-31: [Burlington, 5]
Page 29, strike explicit reference to the 1987 ANR Wasteload Allocation Process to allow for DEC to pursue revisions to the process without binding reference to the 1987 document. The City would like the State to maintain flexibility to review and potentially revise (if appropriate) the existing ANR Wasteload Allocation Process. As such, it seems wise to remove references to the 1987 version so that revisions are possible.

Response:
EPA disagrees with the suggestion to strike reference to the existing ANR Wasteload Allocation Process as it is the state's current methodology for making reallocations. However, EPA has modified Section 6.1.1 in the TMDLs to include language providing for any revision or successor to the current process.

Consequences

EPA received four comments related to the possibility that WWTF discharge limits would be ratcheted down if nonpoint measures are not implemented. A consolidated response follows the last comment.

Comment 6-32: [Green Mountain Water Environment Association, 10]
Vermont DEC must provide some assurances to WWTFs that complete P upgrades as part of their upcoming permit renewal that subsequent permit renewals will not require further reductions if other sectors do not meet their P reduction targets. Permit cycles are typically 5 years and the timeframe to pay for upgrades typically extends from 10 to 20 years. Any facility that is required to make upgrades to meet a 0.2 mg/L P discharge limit, or has their annual P load limit based on a 0.2 mg/L discharge rate, must be provided with some certainty that they'll be provided with sufficient time to pay for these investments.

Comment 6-33: [S. Burlington, WQD, 5]
The Vermont DEC and the EPA must provide some reasonable assurances to WWTFs that complete P upgrades as part of their upcoming permit renewal that their subsequent permit renewal will not require further reductions if other sectors do not meet their P reduction targets. Permit cycles are typically 5 years and the timeframe to pay for upgrades typically extends from 10 to 20 years. Any facility that is required to make upgrades to meet a 0.2 mg/L P discharge limit, or has their annual P load limit based on a 0.2 mg/L discharge rate, must be provided with some certainty that they'll be provided with sufficient time to pay for these investments or that the limit won't change to a lower level once large amounts of ratepayer money is spent on designing and building to a 0.2 mg/L discharge rate. There are multiple examples in EPA Region 1 of nutrient limits promulgated by EPA that changed to a lower level before construction was even completed at WWTFs. For example, in 2001 the Upper Blackstone District embarked on a $180 million upgrade to the treatment plant so it could meet new discharge limits. Before that work could be completed, however, the EPA issued a new permit for the plant in 2008 that imposed further, more stringent limits on nutrients. **Is it common sense to waste vast amounts of money that could have been spent on the environment by designing and building to one standard instead of a "moving target"?** A common sense approach would be to give some stability to municipalities in planning by giving them a limit and then not changing it until the next upgrade cycle.

Comment 6-34: [Essex Junction]
For future consideration, Vermonters cannot afford the expensive cost per pound reductions that could be forced on NPDES permittees should the accountability framework goals not be met. EPA recognized this reality within section 6.1.1. We respectfully request they maintain this position in future discussions and considerations.

Comment 6-35: [Vermont Rural Water Association (VRWA)]
The data available does demonstrate focusing efforts in areas other than point source will lead to more significant phosphorus loading reductions. Without clearly defined direction to prioritize investments in non-point source, an unsustainable economic situation could be created for direct discharges and for the state collectively in the future. Without getting into the exact financial details, ratcheting down discharge standards toward zero via enforcement tactics and not focusing efforts in other non-point source areas would cost hundreds of millions of dollars. Since the direct discharges only account for approximately 3 percent of the total load to Lake Champlain overall this would not be a wise investment. Tying up the hundreds of millions, a majority of capital available, to reduce the 3 percent would prevent any chance of hitting the required 34 percent reduction of phosphorus loading to Lake Champlain.

Consolidated Response:
As the comment from Essex Junction recognizes, EPA and Vermont have determined that when looking across all the possibilities and likely costs for phosphorus reductions, a targeted approach to WWTF discharges is appropriate. EPA also recognized that implementation of nonpoint source reductions to meet the load allocations of the 2002 TMDL fell short. While EPA believes that Vermont's Phase 1 Implementation Plan identifies the appropriate nonpoint source measures and extent of their application, the experience with the 2002 TMDL led EPA to conclude it was necessary to build in an accountability mechanism to incentivize full implementation of those nonpoint source measures.

If, in the future, EPA determines that implementation of nonpoint source control measures is lagging or cannot meet the load allocations, EPA will have no choice but to make up the needed reductions from the wasteload allocations. The Accountability Framework provides a very clear signal as to how progress toward meeting the reduction goals will be measured. Hopefully, Vermont's citizens and government will maintain over the long-term the level of fiscal and political support for cleaning up Lake Champlain witnessed by their commitments in 2015.

Schedule/Cost

EPA received four comments related to the cost of WWTF upgrades and the use of compliance schedules. A consolidated response follows the last comment.

Comment 6-36: [Burlington, 2]
With the recent elimination of State grants that previously funded 100% of phosphorus upgrades (Act 64) and the continued burden on municipalities to fund numerous water quality efforts, the TMDL should make specific reference to the role of Financial Capability Assessments (FCA) for all aspects of TMDL implementation at the municipal level.
The EPA has published several policies related to Financial Capability Assessments (FCAs), including the recent "Financial Capability Assessment Framework for Municipal Clean Water Act Requirements" (2014) – the City suggests these policies are critical to guiding the crafting of realistic implementation schedules for all aspects of the TMDL. While the TMDL does refer to considerations of "adequate time for planning, engineering and municipal budgeting" with regard to WWTFs, FCAs are more comprehensive in that they allow for the examination of capital needs across all water resource sectors (including stormwater and, to some extent, drinking water). Moreover, FCAs go beyond "municipal budgeting" and examine the ability of an individual community's ratepayers to sustain the long-term rate increases necessary for Clean Water Act related improvements.

Comment 6-37: [Green Mountain Water Environment Association, 2; S. Burlington, WQD, 5]
We support the implementation of new permit requirements through compliance schedules that allow sufficient time for planning, budgeting, and engineering and that take advantage of cost-efficient opportunities to couple P upgrades with other planned facility construction projects. Mandating P reductions outside of this schedule will result in the inefficient spending of the limited dollars that Vermont communities have available for this work.

Comment 6-38: [Vermont Rural Water Association (VRWA)]
It is good that a reasonable amount of time to implement stricter discharge standards for certain direct NPDES permit holders is noted in the plan. The data clearly shows for those with lower future discharge standards a significant amount of capital will be needed. The most recent survey on upgrade costs (VT ANR FED -Lake Champlain TMDL: 2014 Cost Estimate Analysis for Vermont Wastewater Treatment Facilities – April 2015) shows numbers approaching a hundred million dollars. This amount of capital, even with the many sources of funds available, is not on hand in Vermont in a given year.

Given increasingly tight budgets for communities with NPDES permits the TMDL plan should address the issue that improvement costs cannot be absorbed on the backs of local users alone. As an example the City of Montpelier upgrade to meet the TMDL plan guidance is estimated to cost $20 million. City ratepayers would not be able to cover this cost via user fees alone.

Consolidated Response:
As the NPDES permit authority for facilities in Massachusetts and New Hampshire, EPA fully appreciates issues related to cost and affordability when it comes to upgrading WWTFs. Section 6.1.1 of the TMDLs recognizes that compliance schedules will play an important role in providing adequate time for planning, engineering and municipal budgeting. EPA agrees with Burlington that EPA's November 24, 2014 "Financial Capability Assessment Framework for Municipal Clean Water Act Requirements" (Kopocis and Giles, 2014) memo provides a useful framework for Vermont DEC to apply when considering a community's financial capacity in the development of compliance schedules.

Other

Comment 6-39: [Patel]
I live in the town of Georgia, VT, and work at the Sheldon Elementary School. As we were teaching the students about water pollution in Lake Champlain last year, I was horrified to know that we are intentionally putting human waste into a source of water which provides us with drinking water. What sense does that make? Even though it is treated wastewater, it still has long-term impact on this critical source of water to the communities in Vermont.

This year the blue-green algae blooms caused the closure of the Georgia Town Beach and St. Albans Bay. I am afraid to let my 9-year-old son swim in Lake Champlain after it was reported a dog died after going into the lake this summer.

So, as we were watching the four-part documentary on Lake Champlain, "Bloom", I learned that innovative people have come up with solutions to these problems. Yesterday they have not been recognized and implemented on a large scale in Vermont. One of them is the Eco Machine which I visited at UVM. You can see it at http://youtu.be/_Od-DrUTxWQ and get more information on it at: http://www.toddecological.com. So why are we ignoring these environmentally friendly solutions and continuing to treat human wastewater the way we have for 50 years? I believe that we need to think about the future of all water bodies and adopt technologies that are innovative and provide long-term solutions to preserving water quality. After all, without clean water our species cannot survive.

In my opinion, the EPA should ban human wastewater from entering Lake Champlain. This is totally in our hands. The future of Vermont is dependent on the citizens having a clean source of water for ourselves and our children.

Response:
EPA applauds the commenter's efforts to educate students about water pollution and appreciates the commenter's concern for the quality of drinking water drawn from the lake. Under the framework of the Clean Water Act, water quality standards for Lake Champlain were established by Vermont with a goal

of maintaining its use as a source highly suited for public water supply, with disinfection, and filtration when necessary, as well as to protect aquatic life and recreational uses such as swimming. The phosphorus TMDLs will support these uses by reducing nutrient loadings into the water body. EPA agrees that reduction of nutrients will help reduce the potential for enrichment and algae growth. EPA and Vermont are open to and supportive of innovative, long-term solutions to preserving water quality.

Comment 6-40: [Anonymous 2]
A small allocation of phosphorus should be set aside for correction of public health hazards (~0.05 tons/year for up to 50,000 gpd discharge per lake segment) to expedite correction of health hazards. In the past 15 years, VT has found 3 municipalities which required the construction of wastewater treatment facilities to correct unpermitted discharges (straight pipes and failed septic systems) that were causing public health risks and environmental degradation. Since the proposed TMDL will allocate all available phosphorus, a new discharge will need to go through the wasteload allocation process to obtain a phosphorus allocation for a new wastewater treatment facility could be constructed. Requiring a new wastewater treatment facility that is being constructed to correct public health risks to obtain a phosphorus allocation via the wasteload allocation process will significantly slow down the correction of the public health problems. Therefore a small amount of phosphorus should be set aside in each lake segment for the correction of public health hazards.

Response:
EPA and VT DEC view the flexibility to reallocate WWTF allocations within a segment, as discussed in the response to Comments 6-18 – 6-23, as providing sufficient and appropriate flexibility for Vermont to provide for any new small system requiring an NPEDS permit. We disagree that the process of reallocation would significantly slow the correction of a public health problem.

Comment 6-41: [Anonymous 2]
Section 6.1.1 "Wastewater Treatment Facilities Wasteload Allocation" states that when implementing the TMDL VT DEC intends to require construction of upgraded phosphorus treatment facilities when the actual load approach 80% of the facilities' WLAs. There is no legal basis for this requirement and it is completely arbitrary. Neither EPA or VT DEC has the authority to require a facility construct upgraded treatment facilities when its discharge reaches 80% of a properly adopted water quality based effluent limitation expressed in a TMDL via a WLA. Specifically there are no provisions in the federal Clean Water Act, 40 CFR 122 etc., the Vermont Water Pollution Control Act (10 VSA Chapter 47), the Vermont Water Pollution Control Regulations, or VT ANR's Significant Non-Compliance Policy which grants authority to EPA or VT DEC to mandate construction of additional treatment facilities if dischargers are in full compliance their permitted effluent limitation(s). This requirement is completely arbitrary and unenforceable and must be removed from the TMDL and the Implementation Plan.

Additional point source phosphorus removal in the Missisquoi basin is not cost efficient. The cost of upgrading the Swanton, Enosburg, Richford, and North Troy WWTFs will be over $6 million and only remove 1.69 tons of phosphorus. Since non-point phosphorus reduction is much more cost efficient to remove phosphorus, approximately 10 to 20 tons of phosphorus could be removed for the same expenditure of tax payer monies. The requirement for the citizens of Vermont to pay construct additional phosphorus at these WWTFS is fiscally

irresponsible and these monies can be used to achieve a much greater return if these monies were used for non-point source control.

There is a significant inequity established by this TMDL. While the New York portion of the basin has significantly less WWTF discharges and less population, New York is allocated significantly more point source phosphorus than Vermont. Specifically New York WWTFs are allocated 31 metric tons per year of phosphorus and the draft TMDL allocates 25 metric ton per of phosphorus to Vermont WWTFs. Based on population, there is a 3.2 to 1 New York to VT ratio for phosphorus discharged from WWTFs. The draft TMDL also proposes that the citizens of Vermont pay at least $103 million to meet the phosphorus loadings reductions mandated by the draft TMDL while the citizens of New York will not be required to pay any additional cost. Therefore the draft TMDL establishes a competitive edge for New York to attract new business and is detrimental to the economic health of Vermont.

Response:
As to the 80% threshold, this is not a comment on the allocation but rather a question of how Vermont implements the NPDES permit program. Vermont has adequate authority to make sure that permit limits based on the wasteload allocations are met.

The scale of phosphorus reductions needed to meet the TMDL for Missisquoi Bay requires taking nearly every measure possible in every sector that contributes phosphorus to the Bay. EPA does not disagree that it will be expensive to achieve the WWTF allocations. However, adding even 1.69 tons to the required nonpoint reductions further strains what other commenters see as a herculean task.

There are some differences between Vermont and New York established by the new TMDLs because New York chose not to reopen its 2002 TMDL and EPA cannot unilaterally change New York's allocation. In comments of its own, New York has argued that EPA inequitably provided Vermont with all the additional assimilative capacity determined by the new modeling. As described in the response to Comment 6-4, Vermont and New York have completed an MOU that provides a path to resolving New York's concerns, as well as any other inequities that may exist, through the development of revised and new TMDLs for New York and Vermont, respectively, commencing within the next ten years.

Comment 6-42: [Boivin 2]
These rules will fail to reduce phosphorus in the lake for three reasons. 1/ they are driven by political exigency and not by data and science, 2/ they have the wrong target, and 3/ they ignore the actual technology available and depend on applying and enforcing arbitrary rules. The latter two are extensions of the first point.

From the beginning Secretary Mears stated the policy that everyone was "all in" for improving the lake water quality. Throughout he allowed no discussion of comparable culpability. Unfortunately this concept of "all in" is not reflected in the final product. The Conservation Law Foundation (CLF) lawsuit points to the State of Vermont's over allocation of waste water permits to waste water treatment facilities (WWTF) as a primary source of the lake not meeting standards. It also points to the added load from urban, suburban, and exurban development with the increase in impermeable surfaces as contributing causes. The EPA by its settlement acknowledged these facts. Nevertheless WWTF are given a free pass. The plan states that it does not allocate

any additional phosphorus reductions to wastewater treatment plants. *"Vermont subsequently indicated a policy preference on obtaining most if not all of the necessary reductions from nonpoint sources…"*

There are seventeen WWTF that have current permitted loads that exceed their design flow rates. In addition there are numerous and repeated overflows. The newspapers have reported that over 3.2 million gallons of raw sewage has flowed into the lake during between [sic] September 27 and September 30, 2015. In the Otter Creek watershed Vergennes, Middlebury, Brandon and Rutland are WWTF that have design flows larger than their permits allow. Nevertheless, each has had multiple spillages during the last year.

These are all point sources that the EPA has primary jurisdiction yet avoids its responsibility because it seeks to blackmail the State of Vermont to extend its jurisdiction to agricultural storm water discharges that it is specifically denied in statute.

Response:

EPA disagrees that the TMDL is not driven by data and science. EPA's contractor updated the lake model and developed a new watershed model to support the TMDL. The models were carefully calibrated and validated, utilizing a decade of data. The target – achieving the water quality criteria set by Vermont - is derived from requirements in the Clean Water Act. EPA and Vermont did consider available technologies/methods and it is quite likely that those methods will continue to evolve over the course of implementation of the TMDLs.

The assertions that WWTFs "are given a free pass" and that the plan does not allocate additional phosphorus reductions from WWTFs are incorrect. As described in Section 6.1.1.1 of the TMDLs and summarized in Table 9, 28 of 59 WWTFs have reduced allocations compared to the 2002 TMDL. In the five lake segments where EPA has targeted WWTF reductions, the reductions range from 51.9% to 66.7%.

Regarding the comment that there are 17 WWTFs with current permitted loads "that exceed their design flow rates," EPA notes that the commenter is apparently incorrectly equating loads with flows. Permitted phosphorus loads (typically expressed in metric tons/yr) can be met at a variety of flow levels, depending on the phosphorus concentration in the effluent. Accordingly, virtually any load can be met at design flow with a sufficiently low phosphorus concentration. Permitted flow rates by themselves don't limit permissible loads, they only govern flows. If the commenter intended to comment on permitted flows vs. design flows, EPA is not aware of any WWTFs with current permitted flows exceeding their design flows.

EPA acknowledges the commenter's concern about overflows and notes that DEC has embarked on a revision to its CSO policy which will be adopted as a regulation.

CSOs

Comment 6-43: [VT DEC, 3]
Combined sewer overflow (CSO) permitting
Text on pages 29 and 34 of the draft TMDL document indicates that the State must account for the wastewater phosphorus loads discharging from compliant CSOs within the allocations for the relevant wastewater treatment facilities. However, the allocations listed in Table 7 specifically indicate that all CSO allocations other than for the Burlington Main facility are included in the wasteload allocations for developed land. This appears to be internally contradictory. The Department does not intend to specify or include CSO allocations within the permitted wasteload allocations for the wastewater treatment facilities. As stated in the TMDL document (page 34 and Table 5), data are insufficient for calculating discharge volumes and phosphorus loads from the untreated CSOs. Investments in flow monitoring devices would be more cost-effectively spent on projects to minimize or eliminate CSO events. For these reasons, establishing numeric CSO allocations and monitoring for compliance would be impractical. The Department requests that the text in the TMDL document on pages 29 and 34 be changed to remove the expectation that the State will account for CSO loads within the permitted allocations for the wastewater treatment facilities. The Department will abate wastewater phosphorus loads from the untreated CSOs through implementation of our CSO policy currently undergoing revision.

Response:
After further consideration, EPA has revised the TMDLs such that CSO loads (with the exception of the treated CSO at the Burlington Main WWTF, as discussed in the response to comment 6-45, below) are now included solely in the developed land WLAs for each applicable lake segment watershed. EPA considers this a reasonable approach given that all CSO discharges are driven entirely by stormwater flows, i.e., both the wastewater and stormwater portions of the phosphorus in CSO discharges will be reduced as stormwater discharges are reduced, and if stormwater volume discharges are sufficiently reduced overflows will be completely eliminated (and no wastewater would bypass treatment). This is also consistent with the way baseloads were analyzed during the TMDL development process – CSO loads were accounted for in the loads from developed lands, as explained in the TMDL document. Pages 29 and 34 of the TMDL document have been revised to reflect this change.

Comment 6-44: [Green Mountain Water Environment Association, 11]
Confirm that Combined Sewer Overflows (CSOs) from WWTFs other than Burlington are included in the WLA. EPA should also clarify how CSO discharges from WWTFs will be accounted for within the WLA and how work to reduce/eliminate CSOs will result in P reduction credit to a facility.

Response:
As noted in the response to Comment 6-43 above, combined sewer overflows (apart from the partially treated CSO at Burlington Main) are now included in the developed land WLAs only. Credit for reduction or elimination should be possible once there are reliable estimates of phosphorus discharges, currently and after remediation. The tracking and accounting system being developed by VT DEC should provide the means to estimate and credit reductions or elimination of phosphorus from the CSO portion of the developed land allocation.

Comment 6-45: [Burlington, 7]

Ensure that all WWTFs with combined sewer impacts are treated the same under the TMDL with regard to wet weather related phosphorus loading, monitoring and compliance mechanisms.

Currently Burlington is the only WWTP CSO with a CSO-WLA. The City understands that through the existence of our wet weather treatment system at Main Plant and the monitoring required by our existing WWTF permit, there are data available to estimate a "CSO" WLA due to wet weather events at our Main Plant. We understand that this explicit data may not exist at other plants with combined sewer systems (such as Rutland and St. Albans). The EPA should extract the "combined sewer" area loading estimated by the SWAT model in areas without specific WWTF-CSO monitoring and put it (with a footnote indicating that it will be revised once monitoring is put in place at these plants) in the CSO-WLA column in Table 8 along with Burlington's solitary CSO-WLA. This will assist in communicating that the approach in those areas will be different than the rest of the Developed Lands during the implementation period, and that all combined sewer communities should be treated similarly.

Response:

EPA's approach to the CSO wasteload allocation was to make specific allocations to the extent there was sufficient information to do so, consistent with EPA's regulations and guidance (Sawyers and Best-Wong, 2014; Wayland and Hanlon, 2002). As there was sufficient information about Burlington's combined system, a specific CSO allocation was made for the partially treated CSO at Burlington Main. As noted in the proposed TMDLs, sufficient information does not exist for the other combined systems. Other than for the treated CSO at Burlington Main, the SWAT modeling did not allow for estimating the stormwater loads from CSOs based on drainage area. But even if the drainage areas were adequately mapped and modeled, it would not be feasible to estimate CSO loads because of the absence of data on the wastewater fraction of the CSO discharges. Such data are only currently available for the Burlington facility (which is the only CSO facility in the State that provides some level of treatment for CSO discharges). All combined system communities are subject to the same DEC policy, so there should be no concern about inconsistent treatment. Thus, EPA has not made the suggested changes.

Comment 6-46: [Burlington, 8]

Compliance should be determined primarily through implementation tracking/modeling of flow reduction practices. If combined sewer treatment system effluent monitoring is required as part of the compliance verification, allow the Burlington Main WWTP CSO percent reduction (Table 8) to be met using both implementation BMP tracking and monitoring-based compliance that leverages rolling annual averages (i.e. 10 years) to allow for the considerable variability that occurs with wet weather driven processes.

The City of Burlington seeks equity and flexibility in the implementation of compliance measures for WLA reductions in combined sewer areas. Therefore, compliance should be measured through flow reduction BMP implementation tracking and modeling. The current framework in the draft TMDL (with combined sewer areas included with the larger developed land WLA) seems to indicate that implementation in <u>other</u> combined sewer communities (Rutland, St. Albans etc.) will be tracked in the same way as the separate storm developed lands WLA – which we assume will be more of a model/BMP tracking based approach rather than through direct

monitoring and measurement. For the same reasons that compliance with the developed land/separate stormwater WLA is not anticipated to be determined through direct monitoring, we recommend that compliance for the CSO-WLA also not be determined entirely through direct monitoring. As EPA is aware, determining compliance via monitoring is often problematic because of the variability from year to year in loading. Achieving compliance through model/BMP tracking is generally MUCH more predictable and allows for communities to show overall success/progress through implementation tracking despite the variability in annual precipitation.

For Burlington, the current TMDL framework appears to set up a scenario where our only measure of compliance will be through direct monitoring of our CSO-WWTF Wet Weather. We request that our method of compliance in our combined sewer Wet Weather WLA (CSO-WLA) be the same as other combined sewer communities, and we strongly recommend that it be based on implementation BMP tracking and not strict annual load monitoring.

On this last point, the TMDL should explicitly recognize that the Burlington Bay CSO-WLA is derived from 10 years' worth of highly variable load data (dependent on each year's precipitation patterns) as this will lend support and flexibility to how compliance with the CSO-WLA will be represented in our NPDES permits (see above). Compliance, should it need to be verified through monitoring, could include some combination of Implementation BMP tracking and monitoring-based compliance that leverages rolling annual averages vs. discrete annual average. Compliance with the CSO-WLA should <u>not be</u> based solely on monitoring and individual annual averages.

Response:
The purpose of the TMDL is to set the allocation. Vermont DEC implements the WLAs in the TMDL through its NPDES permitting process. Effluent limits and the minimum flow to the WWTF required to use the CSO-WWTF outfall are established in the City's NPDES permit. Vermont DEC program staff make compliance evaluations. The TMDLs do not address the compliance method. There will be an opportunity for the City to discuss this issue with DEC at the time of permit development.

Comment 6-47: [Burlington, 9]
Change the terminology of CSO-WLA to CSS-WLA. The combined sewer related discharges at the Main WWTP are not a Combined Sewer Overflow (CSO), but rather a Combined Sewer System (CSS) related phosphorus load that is the result of the combined sewer only receiving partial treatment (solids removal and disinfection) without biological nutrient removal. This is not an untreated combined sewer overflow (CSO), which is being managed through compliance with state CSO policy. Clarity in terminology is critical, particularly around combined sewer issues.

Response:
While EPA understands that there are different types of CSOs in Vermont, EPA considers the CSO-related discharges at the Burlington Main WWTP to be a CSO because it is a combined sewer system with occasional overflows. Vermont's NPDES permit and fact sheet for the Burlington Main WWTP also refer to discharges from the "combined sewer overflow treatment process." The fact that the overflows receive partial treatment doesn't change the fact that there are still overflows. However, for

clarity purposes, EPA has noted in the TMDL document, where feasible, that the Burlington Main CSO receives partial treatment.

Comment 6-48: [Vermont Youth for Eco Action]
Sixteen municipalities in Vermont have combined sewer systems. And overflows that put sewage into the state's rivers and lakes are a regular occurrence.

Both Vergennes and Burlington have combined sewer systems, which treat sewage and wastewater through the same infrastructure. Combined sewer systems are allowed by state regulators to dump untreated sewage and stormwater when water is coming in faster than the plant can treat it. The overflows prevent sewage from backing up into local homes and businesses.

In Burlington, the city released an estimated 11,130 gallons of sewage near the Barge Canal in the city's south end over a four-and-a-half hour period in the middle of the day July 1. Wastewater treatment operators told regulators they prevented another 5,460 gallons of untreated sewage from overflowing from the city's system by re-routing the flow to a parallel sewer line.

In Vergennes, 75,200 gallons of untreated sewage and stormwater (15,040 gallons of which was sewage, according to city estimates) flowed into Otter Creek and ultimately Lake Champlain because of the heavy rains. The Vergennes overflow was the city's seventh of the year and brought the total volume of untreated water dumped to 2,487,980 gallons. Last year the city dumped 12,700 gallons of sewage in an **unauthorized** overflow.

From May 30 into June 1, more than a million gallons of sewage and stormwater from the Vergennes sewer system flowed untreated from a pump station into Otter Creek. The mix of human waste, household discharge and street runoff poured into the creek intermittently for 31 hours with no public notice until a day later, when town officials informed state regulators of the overflow.

Vermont Youth for Eco Action are a group of concerned kids and their parents who wish to express our deep concern about the negligence of care regarding the health of our lakes in Vermont. This kind of pollution is not sustainable. Please help our state reps to get off the bench and come up with a viable solution to reducing the amount of sewage that is being dumped into our lakes every year. We have got to do better than this.

Response:
EPA acknowledges the commenter's concerns about combined sewer system overflows. Vermont is currently revising its CSO policy, which will be adopted as a regulation, and EPA has provided input throughout the process. The State and local communities will need to prioritize capital investments to continuously make progress to reduce or eliminate these overflows.

Developed Land

Comment 6-49: [CLF-VNRC, 1c]
Achieving the new allocation for developed lands depends on stormwater permits that do not adequately address phosphorus loading.
To achieve the phosphorus reductions required by the draft 2015 TMDL developed lands allocation, the State is relying, in part, on stormwater permits. The State Stormwater Permit Program regulates discharges from impervious surfaces for new and redevelopment projects. In addition, the State is now required by Vermont law to develop stormwater permits for existing developed lands, municipal roads, and state roads. The 2002 Vermont State Stormwater Manual (Stormwater Manual) establishes the regulatory requirements and technical guidance for the management of stormwater.

However, to date current stormwater permits do not require phosphorus monitoring or pollution limits, and therefore do not address water quality impairment from phosphorus pollution. Nothing in the draft 2015 TMDL requires either monitoring or stringent enforceable phosphorus limits in state stormwater permits. All stormwater sources must be included in the wasteload allocation and the wasteload allocation must include both monitoring and stringent and effective phosphorus limits in stormwater permits.

In order to receive a stormwater permit, the State requires developers to implement specific treatments that address phosphorus, among other pollutants. The water quality standard *assumes* the removal of 40 percent of the total phosphorus load.[13] Specific practices are accepted as meeting this water quality standard based on the Center for Watershed Protection's *National Pollutant Removal Performance Database*.[14]

The database categorizes how efficient stormwater treatment practices are at removing pollutants based on 139 studies. For example, wet ponds are found to remove 49 percent of total phosphorus while infiltration trenches remove 100 percent of total phosphorus.[15] However, as noted, the performance of certain practices is highly variable.

During the stormwater permitting process, the State relies on this assumption – and on the choice of the applicant as to which practices to employ – to ensure the permitting standard is met rather than actually monitoring (or meeting) phosphorus loads and reductions. Therefore, the State accepts wet ponds as a stormwater treatment practice that meets the 40 percent removal requirement, despite a high degree of inconsistency in their performance.[16] How much phosphorus is removed by an individual practice such as a wet pond is never verified, nor are we aware of any follow up *in situ* verification of the assumptions the Stormwater Manual is based on.

While the State has committed to revising the Stormwater Manual, the fundamental process of how stormwater treatment practices are accepted is not likely to change. We are concerned the manual will not require increased phosphorus treatment based on statements made during public process of the manual revision. Specifically, Agency of Natural Resources staff have expressed that the burden of processing permits that must demonstrate whether infiltration techniques are or are not feasible at a site is too great to incorporate into revised requirements via the manual. Relying on a revised manual, then, and not verifying the actual pollutant removals is a precarious foundation upon which to assume reductions will occur.

The draft 2015 TMDL therefore sets a new allocation for developed lands based on an implementation plan that does not accurately or predictably reduce phosphorus. Implementing treatment practices based on a national database is insufficient to accurately address phosphorus runoff and Lake Champlain impairment. Further, the draft 2015 TMDL lacks assurances or requirements related to the outcome of the Stormwater Manual.

Footnotes in Comment

[13] Vermont Agency of Natural Resources, *The Vermont Stormwater Management Manual Volume I – Stormwater Treatment Standards*. April 2002, pg. 1-3.

[14] Center for Watershed Protection. *National Pollutant Removal Performance Database for Stormwater Treatment Practices* (2nd Edition). March 2000.

[15] Vermont Agency of Natural Resources, *The Vermont Stormwater Management Manual Volume II – Technical Guide.* April 2002, pg. 165.

[16] *Id*.

Response:

EPA has included all stormwater point sources from developed lands in the wasteload allocation portions of the TMDLs. The WLAs do not include monitoring and phosphorus limit requirements for stormwater, since it is the stormwater permits, not the WLAs themselves that impose conditions on stormwater to meet the WLAs. While the permitting process is an implementation matter beyond the scope of the TMDLs, EPA agrees that future stormwater permits should include necessary requirements, such as, for example, the development and implementation of a phosphorus control plan, to lead to ultimate achievement of phosphorus load reductions consistent with the applicable TMDL WLAs.

EPA acknowledges that the National Pollutant Removal Performance Database does have its limitations. However, scientifically rigorous stormwater practice performance data do exist for many practices in the northeast, such as that collected through the University of New Hampshire Stormwater Center. EPA expects VT DEC to develop a permitting program that will require the use of these types of regionally applicable performance data to demonstrate that required stormwater phosphorus control plans will achieve the phosphorus reductions needed to meet the applicable wasteload allocation. Follow-up compliance evaluations by VT DEC can ensure that stormwater practices are designed and maintained in accordance with design specifications.

EPA also notes that, contrary to the commenter's assertion, DEC's Stormwater Program currently requires that applicants demonstrate whether infiltration is feasible, and intends to continue to include the requirement in the revised Stormwater Manual. In addition, Act 64 calls for the State to develop new design criteria for stormwater retrofit projects that will be required by the new permit program for existing impervious surfaces. Given that this permit program is primarily intended for nutrient reduction, EPA expects that the design criteria will require the use of BMPs that have been demonstrated (via the type of regional performance data referenced above) to be especially effective for phosphorus control. Thus, EPA expects this new permit program to be significantly more effective with respect to phosphorus reduction than the current stormwater program for new development that relies on the existing stormwater manual.

Comment 6-50: [CLF-VNRC, 1d, 2a]

The draft 2015 TMDL developed land allocation is inadequate to account for the increase in phosphorus loading from this source category.

Developed land is the fastest increasing source category of phosphorus loading to Lake Champlain, and is now the largest source category in many lake segments. Yet, the draft 2015 TMDL continues to rely on very limited retrofit programs for existing, privately owned, paved areas and as a result fails to include an adequate wasteload allocation for this pollution source category.

The draft 2015 TMDL relies on an insufficient 24.1 percent reduction in phosphorus loading from developed lands across the Lake Champlain basin. To meet even this insufficient allocation, EPA has simulated a series of retrofit requirements for unpaved roads, paved roads, and other impervious areas. While the State of Vermont has the ultimate authority in determining how the 24.1 percent reduction requirement is achieved, the scenario simulated by EPA is impractical due to unrealistic expectations with regard to the capacity of municipalities to retrofit existing road systems while at the same time including only very limited requirements for pollution reductions from existing privately owned paved areas.

Within EPA's simulation, the developed land allocation is met by retrofitting roughly 9,600 acres of unpaved roads[17], 4,100 acres of paved roads, and 4,300 acres of non-road impervious areas. This acreage breaks down to 50 percent of unpaved roads, 14 percent of paved roads and 11 percent of other impervious areas.[18] The greatest reduction to phosphorus loading is expected to stem from retrofitting Vermont's back roads.

To achieve these cutbacks, the State of Vermont has devised new permitting schemes for municipal roads, the state highway system, and other developed lands. These permitting programs are currently being developed and are expected to come into effect in 2017 at the earliest.[19] The time lag is significant and indicates EPA's intention to approve allocations without any concrete program for implementation.

The responsibility of funding stormwater retrofits varies. Municipalities are responsible for implementing stormwater practices on unpaved roads while the state highway system is under the State's jurisdiction and will be publically funded. Non-road impervious area is mostly privately owned commercial real estate, such as parking lots and rooftops. The heaviest burden will therefore fall on small towns, while the lightest mandates are placed on private, for-profit businesses.

The expectation that municipalities can turn to their taxpayer base to fund retrofits of half of all back roads while profit-driven businesses are responsible for retrofitting a meager 11 percent of impervious areas is illogical and unfair. Many Vermont towns already struggle to balance their budgets and are also facing expensive wastewater treatment facility upgrades. On the other hand, privately owned businesses are not bearing their fair share of the load and, on a per acre basis, are among the largest source categories of phosphorus flowing into the lake.

Moreover, the draft 2015 TMDL takes a step back from the treatment of non-road impervious areas in the State of Vermont's Phase I Implementation Plan, which requires stormwater retrofits on all existing parcels greater than three acres.[20] The three-acre standard equates to a little over 4,900 acres in contrast to the 4,300 acres of retrofits expected under the draft 2015 TMDL.[21] The amount of expanded coverage is particularly important

since only 25 percent of the impervious surface area in the basin is currently subject to stormwater regulation.[22] The final TMDL must include a dramatic expansion of retrofit requirements for existing impervious developed land areas.

Further, the retrofits required are likely to occur under the auspices of an "engineering feasibility analysis" which balances site restraints with stormwater management requirements and is not focused on phosphorus controls in any case. Some treatment will therefore be achieved, but these projects will not be able to meet the current (or future) Stormwater Manual requirements in full, let alone include adequate treatment of phosphorus. Thus, the actual amount of impervious area that will receive stormwater treatment for phosphorus is likely to be overestimated in the draft 2015 TMDL, resulting in fewer reductions from this sector than modeled.

The draft 2015 TMDL allocation breakdown for developed lands is impractical and unfair. The permitting programs designed to implement the required reductions are still being developed while the current programs do not adequately address stormwater – 75 percent of the impervious surface in the Lake Champlain basin does not even currently require a state stormwater permit. Therefore, the path to achieving the level of on-the-ground changes required to meet the new allocation is unclear. Further, the solution offered in the draft 2015 TMDL demands municipalities retrofit nearly five times the amount of impervious surface than private businesses. While the overall load reduction from developed lands is essential, the method of attaining these reductions must be fully developed, practical, and fair to prove feasible.

Footnotes in Comment

[17] The unpaved roads allocation relies on a suspect, and unjustified, definition of "hydrologic connection" of roads to waters. The expansive determination that thousands of Vermont's road miles are not hydrologically connected to waters is not supported by the broad-brush approach employed in the draft 2015 TMDL. EPA is required to identify existing and future point sources and cannot rely on an unsupported, high-level analysis to affirmatively determine hydrologic connectivity. EPA must either, in fact, document the connection of these roads to waters or must acknowledge the limitations of the approach used and increase the margin of safety in the TMDL.

[18] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 36.

[19] State of Vermont. *Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan*. May 2014. pg. 80-82.

[20] State of Vermont. *Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan*. May 2014. pg. 82.

[21] Tetra Tech, Inc. *Vermont Nutrient Framework Technical Support: Stormwater Permit Threshold Analysis Results*. August 2015. pg. 10.

[22] *Id*. at pg. 1.

Response:

While developed land may be the fastest increasing source category, there are no lake segments where the developed land sector is the largest source category – either in the base loads or in the allocations in the TMDLs. The TMDLs call for an overall reduction of 21% from developed land, including a 24% reduction in the Burlington Bay segment (the most developed of all segments) and a 34% reduction in the Missisquoi Bay segment (the segment that needs the most overall phosphorus reduction). As the commenter acknowledges, Vermont has the ultimate authority in determining how the 21 percent reduction requirement for developed land is achieved. While the commenter may disagree with Vermont's policy choices on how best to achieve the wasteload allocation for "Developed Land" among existing land, new development and roads, Act 64 requires the creation of new stormwater permit programs that EPA's models indicate will collectively achieve the allocations. EPA does not agree with

the commenter that the path to achieving the phosphorus reductions from developed land is unclear. Act 64 and the Phase 1 Implementation Plan describe each new permit program clearly. EPA simulated a reasonable amount of phosphorus reduction via each of the permit programs, based on stormwater retrofit practices applicable to each permit category and specified areas, as described in Appendix B of the TMDLs. The lag time leading to permit program development is actually quite short – as summarized in Section 7 of the TMDL document, DEC is scheduled to complete the TS4 permit for State roads by the end of this year (2016) and the other new permit programs by the end of next year.

Regarding the commenter's observation that the draft TMDLs took a step back from the level of retrofit specified in the Phase 1 Implementation Plan, please note that EPA's updated simulations (March 2, 2016) in support of the final TMDLs now directly align with the level of non-road impervious parcel retrofits indicated in the Phase 1 Implementation Plan. EPA simulated treatment to 13% of non-road impervious parcels, which equates to the 4,900 acres referenced by the commenter and documented by Tetra Tech (2015c). Note also that Act 64 requires the State to develop new criteria and technical standards for such retrofits – the retrofits will not be guided by the current stormwater manual. And while it is correct that the engineering feasibility analysis may exclude some parcels from the average level of retrofit simulated, the State will have a variety of options to ensure that the overall amount of phosphorus reduction needed is achieved. These options include requiring practices that achieve a greater phosphorus reduction than EPA simulated for non-road impervious parcels, expanding the universe of impervious parcels to be covered by the retrofit permit, or making up the difference through reductions achieved from other developed land categories.

EPA notes the commenter's concern in Footnote 17 with how EPA approached determining what roads were "hydrologically connected" to waters. What EPA intended to identify were those road areas that drain via direct surface flow to streams and rivers tributary to Lake Champlain, as opposed to road areas that drain to pervious surfaces that allow for infiltration. EPA has substituted the phrase "connected via direct surface flow" in place of "hydrologically connected" in section 6.1.2.1 of the final TMDLs to more clearly describe the approach taken.

The proportion of road segments connected via direct surface flow was derived from Wemple (2013), who estimated that 50% of road segments are connected in this way. The use of the findings from this study is documented in the SWAT modeling report (Tetra Tech, 2015b) that describes how loads from roads were determined. The Wemple study was not a "high level" analysis – it included a case study of the Winooski watershed (a diverse watershed with the range of topographic and hydrographic characteristics common throughout the Lake Champlain basin), and represents the best available information on road connectivity in the basin. In any case, the analysis is consistent with EPA regulation (40 CFR 130.2(g)), which states "Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading."

Comment 6-50a: [CLF]
In a letter dated February 15, 2016, CLF provided further comments on the TMDLs. The portion of the letter addressing the Developed Land allocation is provided below.

In our previous comments submitted on October 15, 2015, CLF highlighted how the EPA's simulated scenarios to reach the developed lands allocation placed an infeasible and unfair burden on municipalities. According to the analysis in our October comment letter, the scenarios in the draft 2015 TMDL call for retrofitting approximately 50 percent of unpaved roads, 14 percent of paved roads, and 11 percent of other impervious areas. CLF did not take into consideration the future growth wasteload allocation in this analysis. However, given that the future growth allocation is a small fraction of the total phosphorus allocation for developed land, this omission does not change CLF's core concern that municipalities will shoulder an inconceivably high retrofit requirement for unpaved roads.[3] It also does not alter our concern that EPA is relying on permitting programs that do not yet exist to implement significant parts of the developed land allocation.[4]

EPA's reliance on gaining such massive phosphorous reductions from unpaved back roads is misguided for several reasons. First, municipalities will not be able to afford the required retrofits. According to recent testimony from Dr. Beverley Wemple before the Vermont House Committee on Fish, Wildlife, and Water Resources, it costs approximately $211,000 to retrofit one mile of back road.[5] With approximately 11,000 miles of municipally maintained roads in Vermont, it becomes clear what an infeasible financial cost municipalities will face under the scenario presented, especially given that two-thirds of these roads are unpaved gravel or unimproved roads, and nearly all require ditches and culverts for water drainage.[6]

The Clean Water Fund will potentially cover some costs of controlling stormwater runoff from municipal roads. Initial recommendations offered in November of 2015 set aside $4 million over the next two years to assist municipalities with stormwater management.[7] However, this amount is a far cry from the total cost that municipalities will bear for retrofits given the draft 2015 TMDL simulation. Moreover, these recommendations are still preliminary and will not be settled prior to EPA's final allocations.

Not only are the high retrofit requirements for unpaved roads impractical for municipalities to handle financially, but it is wholly unfair to make taxpayers pay for the lion's share of reaching this allocation when privately owned businesses are largely exempt from stormwater management. This choice appears to shelter private interests at the cost of cleaning up Lake Champlain as quickly as possible.

In sum, regardless of whether the future wasteload allocation for developed land is factored into our analysis, CLF has major concerns with the disproportionately high retrofit requirements for municipalities in the draft 2015 TMDL.

Footnotes in Comment

[3] The draft 2015 TMDL sets a future growth wasteload allocation for developed land at 3.90 metric tons per year. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 43, Table 7. In comparison, the total allocation for developed land is 90 metric tons per year. U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 47, Figure 7.

[4] The Municipal General Roads Permit requiring retrofits on unpaved back roads is not scheduled to come into effect until 2017-2036. VT Lake Champlain Phosphorus TMDL Phase I Implementation Plan Draft August 2015, pg. 85, available at http://www.epa.gov/sites/production/files/2015-09/documents/vt-lake-champlain-tmdl-phase1-ip.pdf. Further, the TS4 Stormwater General Permit to address runoff from Vermont's state operated transportation system is not scheduled to come into effect until 2017-2036. *Id.* at pg. 86.

[5] *Effects of Unpaved Roads on Water Quality in the Lake Champlain Basin: Hearing Before the H. Comm. on Fish,*

Wildlife, and Water Resources, 2015 Vt. General Assembly, (2015) (statement of Dr. Beverley Wemple, Department of Geography and Rubenstein School of Environment and Natural Resources, the University of Vermont). Powerpoint presentation available at: http://legislature.vermont.gov/committee/document/2016/12/Date/2-3-2016.
[6] VT Lake Champlain Phosphorus TMDL Phase I Implementation Plan Draft August 2015, pg. 86, available at http://www.epa.gov/sites/production/files/2015-09/documents/vt-lake-champlain-tmdl-phase1-ip.pdf.
[7] Fund Allocation Priorities for Clean Water Fund Board (November 9, 2015), available at http://goo.gl/8V81Gv.

Response:
As noted in response to Comment 6-50 above, EPA has determined the aggregate wasteload allocation for "developed land." Vermont has the authority and flexibility to meet that allocation through a variety of measures, and many of these programs are required by Act 64. EPA views Dr. Wemple's presentation before the legislature as reinforcing the point that poorly maintained back roads are a significant source of phosphorus and that focusing on high priority areas that directly contribute phosphorus loading to tributaries of Lake Champlain is a worthwhile investment. EPA does not agree that Vermont's proposed retrofit requirements are impractical to implement. The measures have already been implemented on some back roads. The commenter exaggerates the amount of roadways to be treated. Neither EPA nor Vermont expects that every mile of unpaved road would need to be treated. First, not all unpaved roads are connected to streams via surface flow. Based on Dr. Wemple's study (2013), EPA estimates that only approximately 50% of unpaved road mileage in the Lake Champlain Basin is connected to streams via surface flow. Second, as explained in the response to Comments 6-53 and 7-3, in EPA's updated simulations, EPA did not simulate retrofits to 100% of unpaved roads connected via surface flow for any lake segment other than Missisquoi Bay. For the remaining lake segments, EPA only simulated retrofits to 65% of unpaved roads connected via surface flow, except for South Lake B, where it simulated retrofits to 85% of the connected unpaved roads. This means that for all but two lake segment watershed, EPA only assumes retrofits to 65% of 50% of road mileage, which works out to 33% of all unpaved roads in those watersheds. Third, as a practical matter, EPA anticipates that a prioritization by municipalities would result in retrofits to somewhat less than 65% of the connected unpaved road mileage (or less than 33% of the overall unpaved road mileage in those watersheds). This is because some road segments connected to streams via surface flow are not significant phosphorus sources and others (typically with steeper slopes and less stable soils) are disproportionately large phosphorus sources. In addition, EPA notes that Dr. Wemple (2015, p. 18) concludes that investment in BMPs that stabilize roads and ditches can help municipalities reduce costly road repair expenses, stating "…a reallocation of resources from repair of damaged road segments to proactive implementation of BMPs will achieve both cost savings for towns and water quality improvements."

Regarding the commenter's concern that EPA is relying on permitting programs that do not yet exist, note that Act 64 specifically requires the creation of each permit program by dates certain. In addition, the accountability section of the TMDLs (Section 7) describes how EPA will be holding the State accountable for meeting the deadlines in the Act.

Comment 6-51: [Vermont League of Cities and Towns]
EPA declared that 100 percent of hydrologically connected unpaved road segments would have to be retrofitted in all parts of the lake. The percentage of other "developed lands" that will require retrofits varies from one lake segment to another. Do all unpaved roads contribute so much to phosphorus loads (5.6%) that

every one of them must be fixed? Who will pay for that? How will we know when we have done enough? This requirement needs to be refined and targeted specifically to evident problem areas.

Response:
Unpaved roads contribute an important phosphorus load to Lake Champlain – the best estimates are nearly twice as much load as currently discharged from WWTFs. While the TMDLs do not include sub-allocations for the developed land allocations, EPA has revised the level of retrofit treatment simulated for unpaved roads in the Scenario Tool for most watersheds as described in the response to Comment 7-3. However, even in the Missisquoi Bay watershed, where EPA simulated retrofits to 100% of road segments connected via direct surface flow to streams or tributaries to Lake Champlain, EPA is not expecting that all such segments will end up needing BMPs. The scenario tool simulation assumes average loadings across road segments, but in reality, most of the needed reductions will be achievable from a subset of highly eroding road segments. Vermont is targeting the approach to unpaved roads to focus on these highly eroding road segments - the 50% that are hydrologically connected to lake segments or their tributaries. Vermont's implementation approach envisions that communities will prioritize their unpaved roads that are connected via direct surface flow and work their way down the list over time. EPA notes that assistance required for municipal compliance with stormwater requirements for highways and roads is one of the explicit priorities for funding under the Clean Water Fund as established by Act 64. See also the response to Comment 6-50 immediately above.

EPA received comments from two municipalities regarding the retrofit requirements that are included in Vermont's Phase 1 Implementation Plan. A consolidated response follows Comment 6-53.

Comment 6-52: [Town of Williston]

Retrofit Requirements

Within the Otter Creek, Main Lake, Shelburne Bay, Burlington Bay, Malletts Bay and St. Albans Bay segments reductions achievable through retrofits equal to the combination of "*10% of non-road impervious area above A and B soils, 25% of paved roads on A and B soils, and 100% of hydrologically connected unpaved road segments*" is required.

By requiring such large reductions from both paved and unpaved roadways the TMDL is placing the majority of the burden on the municipalities responsible for the public road system. This favoring of the non-road impervious contributors (commercial, industrial and residential land uses) ensures that private enterprises avoid much of the phosphorus reduction burden in the basin. The value of 10% should be increased to require private entities to more appropriately contribute to the cleanup of the Lake.

Comment 6-53: [Village of Plainfield]
Under the draft TMDL, towns will bear a disproportionate amount of the costs for reaching the new developed land allocation. In the most developed areas in Vermont, commercial real estate has been tasked with retrofitting a mere 10 percent of parking lots and rooftops. In contrast, towns and municipalities are expected to retrofit 100 percent of hydrologically connected back roads.

We understand the State has some flexibility in achieving the 24.1 percent reduction in phosphorus loading mandated from developed lands and that the actions simulated by EPA represent only one possible path forward. However, the framing of the solution sets a dangerous precedent that forces a disproportionate burden on towns while letting commercial real estate off the hook.

The EPA is being clear about the pollution reduction targets. In addition the state is showcasing a slew of new mandates including having each municipality apply for a general road license based on storm water run off. However, no one is being forthright about the coming tidal wave of expense to the towns.

There is vague talk about low interest loans. In a Vermont Public Radio interview, Department of Environmental Conservation Commissioner Alyssa Schuren said the new rules are a "big ask" for municipalities. However, the requirement to retrofit roads is not the only financial responsibility being placed on towns. Many taxpayers will also be expected to fund expensive upgrades for wastewater treatment facilities. The village of Plainfield, for example, is facing a hundred thousand dollar re-fit on a facility that has 300 users. This does not include annual cost increases.

The entire cost discussion needs to be viewed in the lens of proportionality to the available municipal tax base, not arbitrary calculations of pollution sources. No town should be expected to incur expenses, or borrow funds, that equal exponential increases in specific line items in current budgets. There is no reasonable assurance that towns will be in a position to fund the asked for retrofits.

We recognize the need to step up to the challenge of cleaning up Lake Champlain, and are prepared to meet the overall developed land allocation. However, the burden of costs must not fall so unjustly on the backs of small towns. We can achieve our water goals only with the support of commercial interests.

Municipalities must not be singled out and left to drown in a tsunami of expensive mandates. We are in this together in that we all drink from the same well. Unfortunately, the current plan has some paying more than others for the water.

Response:

Vermont has the ultimate authority in determining how the 24.1 percent reduction requirement for developed land is achieved. While the commenter may disagree with Vermont's policy choices on how best to achieve the wasteload allocation for "Developed Land" among existing land, new development and roads, the State has proposed a mix of measures that EPA's models indicate will achieve the allocations. It is not true that "towns and municipalities are expected to retrofit 100 percent of hydrologically connected back roads." Vermont's implementation approach envisions that communities will prioritize their unpaved roads and work their way down the list over time. EPA notes that assistance required for municipal compliance with stormwater requirements for highways and roads is one of the explicit priorities for funding under the Clean Water Fund as established by Act 64. In addition, EPA made adjustments to the developed land phosphorus reduction simulations such that retrofit treatments in most cases are now only simulated for 65% of back road segments that are connected via direct surface flow to lake segments or their tributaries, and the percentage of non-road impervious area simulated for retrofit treatments increased from 10% to 13% for most lake segments. The reasons for these changes are explained in the response to Comment 7-3. Note that as a practical

matter, EPA anticipates that less than the full 65% of unpaved segments connected via direct surface flow will actually end up needing retrofits (some segments contribute much more phosphorus than others), as explained in the response to comment 6-50a.

Comment 6-54: [Essex Junction]
Table 5. The MS4 category notes that the 15 MS4 systems are not well mapped. Vermont ANR undertook extensive mapping efforts with the original 9 Vermont MS4 communities. As stated, this does not accurately reflect the extensive permit compliance work done by these communities.

Response:
EPA changed the description of the MS4 system mapping in Table 5 in the TMDLs from "not well mapped" to "not sufficiently mapped" to make the text in Table 5 consistent with the text in Section 6.1.2. As described in this section, while the State did indeed map the urban area, this mapping was not sufficient to separate out phosphorus loads associated with the various stormwater permit categories within the urban area.

Comment 6-55: [Essex Junction]
Integrated Permitting. The Village of Essex Junction supports integrated permitting to allow prioritization of limited capital funds to communities with WWTF's CSO and MS4 permit responsibilities. We further support the ANR approach of one MS4 permit umbrella. Integrated permitting and the MS4 permit umbrella allows maximum community flexibility in addressing the priorities developed under the TMDL. Integrated permitting for P reduction should be allowed for all MS4 permitted communities.

Response:
EPA acknowledges the commenter's support for integrated permitting and the approach to MS4 permitting identified in Vermont's Phase 1 Implementation Plan.

Comment 6-56: [Town of Williston]

Soil Type Exclusions

Within Missisquoi Bay and South Lake B segments non-road impervious cover located above D and paved roads above C and D soils are exempt from implementing stormwater retrofits. Within the Otter Creek, Main Lake, Shelburne Bay, Burlington Bay, Malletts Bay and St. Albans Bay segments non-road impervious cover and paved roads located above C and D soils are exempt from implementing stormwater retrofits.

While infiltration is limited above C and D soils there are many alternative stormwater retrofits which may achieve water quality volume and peak runoff volume reductions. Simply excluding the need for retrofits located above C and D soils is a lost opportunity for phosphorus reduction within the Lake Champlain Basin.

Response:
First, the description in the August 2015 Draft TMDL document of the BMP levels used in the scenario tool for developed land was incomplete with respect to the applicable soil types. In fact, EPA included

retrofits above C soils for the non-road impervious cover scenarios in all the watersheds referenced by the commenter, and the correction has been made to Appendix B. EPA agrees with the commenter that there are stormwater retrofit options for C and D soils, and some of these (such as biofiltration with underdrains) were simulated in the scenario tool as example practices. Second, if a soil group was not included in EPA's simulation of stormwater retrofits for road or non-road impervious areas, this does not necessarily exempt these areas from retrofit responsibilities. Through the permit process, VTDEC has the flexibility to identify the most efficient mix of retrofit applications to all categories of developed land (including roads or parcels over any soil type) that meet the overall developed land allocation. For reasonable assurance purposes, EPA simulated at least one option that would meet the allocations. But the option that EPA simulated is intended to serve only as an example of a mix of retrofit approaches that would meet the allocations. VTDEC may choose a different mix, perhaps including more retrofits above D soils, for example, when developing the various stormwater retrofit permits.

Comment 6-57: [Town of Williston]

Offsets

Those holding existing stormwater offset permits which are credited with sediment reductions should be provided with a phosphorus reduction credit equivalent to the sediment reduced.

Response:
In most cases it would not be appropriate to provide credit in this situation because these sediment reductions are offsetting new development discharges in order to achieve a net-zero increase in sediment. They do not represent net reductions of sediment or phosphorus. Other prior retrofit projects that are not part of the offset program would likely be appropriate for crediting, assuming they are documented to be properly functioning. However, such crediting questions actually pertain more to implementation than the TMDL itself, and VT DEC will ultimately be managing the crediting process.

Comment 6-58: [Burak, Anderson & Meloni]
Regulatory authorities should provide assurance as soon as possible that property owners retrofitting their sites now will receive credit for any retrofit when the TMDL allowance is eventually assigned for any property. I have at least one client that would like to begin retrofitting some of his properties as soon as possible. He may be willing to take a risk that he will eventually be required to do somewhat more, but he may be reluctant to take the risk that what he does will then become the baseline for measuring his TMDL obligation. A simple statement with regulatory authority that retrofit obligations will be determined based on the condition of properties as of, say, August 15, 2015 may be sufficient.

Response:
Reductions made since the base load was established (2010) may be counted towards meeting the allocation, with documentation that practices are still performing as designed. See also the response to Comment 6-9.

Comment 6-59: [Lawn and Horticultural Products Work Group]
The Lawn and Horticultural Products Work Group (LHWPG) on behalf of its members is pleased to submit comments to Region 1 of the Environmental Protection Agency, expressing our concerns about the scientific foundation of the proposed Phosphorus TMDL for Vermont Segments of Lake Champlain. While we were relieved to see that no additional restrictions were proposed for specialty fertilizer in Vermont at this time, we are concerned about the health of lawns without any P inputs. We wanted to make you aware of the negative impact that the P restrictions will have on water quality in the long term. We have funded research that documents the impact of P use and P restrictions and its impact on nutrient runoff. The LHPWG is also taking this opportunity to share some data/study results that we hope the agency will utilize in future decision making.

Statement of Interest
The LHPWG, operating under the auspices of the Research & Regulatory Management Council of the Consumer Specialty Products Association, Inc. (CSPA), provides a unified voice for companies engaged in the unique market of lawn and horticultural products. LHPWG member companies manufacture more than 75 percent of domestically produced conventional specialty fertilizers utilized in the United States; including consumer household, lawn and garden, golf courses and other professional turf and lawn care. These specialty fertilizer products are licensed; registered and sold to consumers and professional applicators in all 50 states. Our members rely on years of their own and independent scientific research to guide their product formulations and product decisions. Our members have a vested interest in any regulation of nutrients, in any jurisdiction.

General Comments:
According to your report; the total phosphorus load to Lake Champlain from all sources was estimated to be 922 metric tons per year (mt/yr) during the 2001-2010 modeling period. 68.4% or 630.6 metric tons of the phosphorus load comes from the state of Vermont. If we carefully examine the Vermont loading; we can see that 113.9 metric tons or 18.06% of the phosphorus comes from the Developed Non-Point source category.

It is this fraction of the phosphorus load that concerns the LHPWG. Specialty fertilizers formulated for lawns have been unfairly targeted by the environmental activists because they typically contained 3% phosphate (P2O5) or 1.38% phosphorus (P) by weight. These products were formulated based upon decades of nutrient research to deliver a small amount of phosphate to maintain plant health.

In 2011, Vermont passed legislation that forced the removal of phosphorus from specialty fertilizers because legislators were told there was an abundance or excess amount of phosphorus already in the soil, any additional applications of phosphorus in Vermont were deemed unnecessary.

According to tonnage data collected by the state of Vermont and disseminated by the American Association of Plant Food Control Officials (AAPFCO), Vermont used 1,846,000 Kg of P2O5 in 2011. This is 4,069,733 lbs. of P2O5 or 1,776,032 lbs. of P or 807 metric tons of P.

Prior to the 2011 passage of phosphorus restriction legislation our members shipped and sold specialty fertilizer products in Vermont that contained approximately 7,000 lbs. or 3.18 metric tons of P. This means 3.18 metric tons of P are not being applied in Vermont and the Developed Non-Point source category could be theoretically adjusted to 113.9 – 3.18 = 110.72 metric tons.

Unfortunately, the amount of phosphorus applied to lawns has little to do with the amount of phosphorus that runs off these lawns. Peer reviewed University research documents that nutrient losses (TN & TP) and storm water runoff (gallons) from plots of poorly maintained unfertilized turf are greater than nutrient losses and storm water runoff from plots of thick, healthy fertilized turf grass. We are positive in our belief that over the long term the phosphorus restriction legislation passed in 2011 will result in more nutrient (TN & TP) loading to Lake Champlain.

For your consideration, we have attached a copy of the comments and the supporting background material we submitted to Mr. Newton Tedder concerning the Notice of Availability of a Draft National Pollutant Discharge Elimination System (NPDES) general permit for stormwater discharges from small Municipal Separate Storm Sewer Systems (MS4s) to certain waters of the Commonwealth of Massachusetts.

We urge you to review all of the references included in our comments to Mr. Tedder. It is our belief that once you have gained a better understanding of the many benefits healthy turf provides, you will recognize the importance of proper plant nutrition and important role phosphorus plays in maintaining thick healthy turf.

We applaud your call for an aggressive program to pave gravel road throughout the watershed. Gravel roads are a significant source of sediment. It has been thoroughly documented that an aggressive vacuum / street sweeping program is one of the most effective tools for removing nutrients from stormwater runoff.

Conclusion
In 2011; 3.18 metric tons of P were applied to lawns in Vermont. There were only 807 metric tons of P applied as fertilizer throughout the entire state. This means that specialty fertilizer use of phosphorus prior to the restrictions was only 0.39% [(3.18 / 807)*100] of the total. Specialty fertilizer was not a statistically significant source of P to Lake Champlain prior to the 2011 restrictions. Unfortunately, we know based upon university research on turf grass that Vermont soils will become phosphorus deficient in a few short years which will result in a significant increase in the volume of stormwater runoff. Ironically, the increased volume of stormwater will carry more sediments and nutrients to Lake Champlain, which is not the outcome we all desire.

Response:
EPA appreciates the commenter's thorough review and input on the phosphorus TMDL loading analysis including data on phosphorus fertilizer use in Vermont. In preparing this response, EPA has considered the information submitted by the commenter including the information submitted to Mr. Newton Tedder of EPA as part of the related comment package submitted on the draft Massachusetts MS4 permit. EPA had already considered much of this information during development of the TMDL and specifically in the process of estimating phosphorus loads from various source areas in the Lake Champlain watershed including pervious developed land areas. EPA acknowledges that excessive phosphorus fertilizer application to turf grasses is but one of many sources of phosphorus in developed land areas that can potentially contribute to loading to surface waters. Other likely phosphorus sources contributing to phosphorus export loads from developed lands include dust and dirt, leaf litter, pollen, organic debris, vehicle exhaust, soils, and atmospheric deposition. EPA also recognizes that healthy turf grass on soils without excess phosphorus levels are likely to generate the lowest phosphorus export rates when compared to unhealthy turf grasses (e.g., sparse growth with soils exposed) or healthy turf grasses on soils with excess phosphorus levels. EPA agrees that it will be important to maintain healthy turf grass growth through proper fertilizer management to minimize phosphorus export to Lake Champlain

including the practice of adding phosphorus fertilizers when needed (as allowed by the Vermont legislation) to support healthy growth.

The base loading analysis conducted for the TMDL represents conditions prior to Vermont enacting its fertilizer regulations and thus the baseline loads are representative of the pre-legislation conditions in which phosphorus containing fertilizers were more likely to be applied to turf grasses that did not need additional phosphorus to support healthy growth. As part of its analysis of phosphorus reductions achievable from all source sectors, EPA estimated that proper fertilizer management required by the Vermont legislation (i.e., eliminating excess phosphorus fertilizer applications and still supporting healthy turf grass growth) would ultimately result in an approximate phosphorus load reduction of 2.2 metric tons/year. This estimate is of similar magnitude to the commenter's reported value of 3.18 metric tons/year that was sold prior the fertilizer legislation. EPA reiterates that the focus of the load reduction estimate is for cases where turf grasses are on soils with **excessive** phosphorus levels that do not need additional phosphorus fertilizer to support healthy turf.

EPA disagrees with the commenter's assertion that the Vermont fertilizer restriction legislation will result in more phosphorous loading to the lake due to turf grasses becoming less healthy. EPA believes that proper implementation of Vermont's fertilizer regulations will result in proper fertilizer management that will support and maintains healthy turf grass growth though either adding phosphorus fertilizers when needed (based on soil test results) or avoiding unnecessary phosphorus fertilizer applications.

EPA notes also that the TMDL document does not call for "…an aggressive program to pave gravel road throughout the watershed," but the TMDL allocations and reasonable assurance analysis do factor in a significant phosphorus reduction from gravel roads based on Vermont's Phase 1 Plan and the commitment to a new permit program (as specified in Act 64) that will ensure proper maintenance of gravel roads and ditches to minimize phosphorus loading. EPA agrees that street cleaning of paved surfaces can be an important component of a phosphorus load reduction program. However, street cleaning is not sufficient by itself to achieve the TMDLs' developed land phosphorus WLAs. Additional controls (including the stormwater retrofits that will be required through the new permit programs included in Act 64) will be needed to achieve the developed land phosphorus WLAs for most lake segment watersheds.

Future Growth

Comment 6-60: [VT DEC, 2]
Developed land future growth allocations
The Department's Stormwater Management Program has updated its analysis of "Future Growth from Developed Lands in the Lake Champlain Basin." The Department's updated analysis, dated October 8, 2015, is attached. This revised analysis took into account the fact that much of the future permitted development in the highly urbanized Burlington Bay watershed will be redevelopment of existing sites, rather than new development. Redevelopment of impervious surface should not result in increased phosphorus loads, so the future growth allocation should be lower here. The revised analysis also corrected some database errors involving the watersheds in which certain permitted sites were located. Please replace the "Future Growth from Developed Lands in the Lake Champlain Basin" report in Appendix A of the TMDL document with the revised version of the analysis dated October 8, 2015.

Based on this revised analysis, the Department requests that the TMDL be changed to incorporate the future growth allocations listed in the table below. These allocations represent the projected increases in phosphorus loading from both permitted and unregulated new impervious areas over the next 20 years, using the more conservative BMP efficiency assumption of 71.2% average phosphorus removal. The developed land and future growth allocations and reduction percentages in Tables 7 and 8 of the TMDL should be modified accordingly.

Lake Segment	Future Growth WLA (mt/yr)
01. South Lake B	0.042
02. South Lake A	0.000
03. Port Henry	0.000
04. Otter Creek	0.434
05. Main Lake	1.437
06. Shelburne Bay	0.337
07. Burlington Bay	0.097
09. Malletts Bay	0.681
10. Northeast Arm	0.034
11. St. Albans Bay	0.358
12. Missisquoi Bay	0.339
13. Isle La Motte	0.018
TOTAL	3.776

Response:
EPA has made the revisions provided by Vermont DEC in Tables 7 and 8 of the final TMDLs and has replaced the future growth report in Appendix A of the TMDLs with the October 8, 2015 version. The updated future growth allocations resulted in generally very small adjustments to the overall developed land WLAs for each lake segment.

Comment 6-61: [Burlington, 3]
Given the known inaccuracies of the estimates used as the basis for the Future Growth WLAs in the Draft TMDL, the Future Growth estimates should be informational and non-binding in the TMDL. As such, the future growth allocations should be removed from the official "Table 8: Percent reductions needed to meet TMDL allocations." At a minimum, the TMDL should specifically address how updated analyses and local policies and growth tracking can be used to revised Future Growth WLA estimates.
While the City understands the need to consider future growth in the implementation of the TMDL, the analyses used to derive the future growth numbers were very theoretical and coarse, and in some cases, likely incorrect. As such a future growth WLA should not be hardcoded into the TMDL. This could present compliance challenges for communities that demonstrate, through data, that 1) growth is not occurring at rates predicted by the document "Future Growth from Developed Lands in the Lake Champlain Basin" (VT DEC, June 23, 2015), or 2) growth is not generating the phosphorus loads predicted due to stringent local regulations.
The City requests that the EPA not include future growth allocations in the official "Table 8: Percent reductions needed to meet TMDL allocations" (page 44). Future Growth should be presented in some way that reflects that it is an estimate – even more of an estimate than the developed lands WLA itself – so that it can be revised without re-opening the TMDL or causing compliance debates in Vermont.

At a minimum, the City requests evidence of how Future Growth WLAs have been included in other TMDLs and how the EPA or State Agencies have navigated the inaccuracies of these WLAs during implementation and compliance verification.

Response:
Vermont DEC has provided revisions to the future growth analysis and allocations [see response to Comment 6-60 above] and these have been incorporated in the final TMDLs. The binding numbers in the TMDLs are the overall allocations for each sector in Table 7. The updated analysis conducted by VTDEC represents the best available information on future growth. The approach to factoring in future growth is consistent with the way future growth was factored into the wasteload allocations for other TMDLs developed for the 12 Vermont streams impaired by stormwater sources.

Comment 6-62: [Strobridge]
We keep pointing our fingers @ the farmers as #1 but have we stopped ALL the waste from all the buildings that line the lake???

Response:
The TMDLs do not seek to stop all the phosphorus from every possible source. The focus is on the major sources of phosphorus that are delivered to the lake either through point source discharges or nonpoint discharges over the surface of the land. The buildings that line the lake are connected either to sewer systems or to an on-site septic system. Phosphorus loads from the sewer systems are covered by the WWTF wasteload allocations. On-site septic systems typically discharge below the surface where a significant portion of the phosphorus is bound up in the soil. The load from septic systems was judged to be insignificant compared to the major sectors identified in the TMDLs. There are undoubtedly some cases of failing or failed septic systems adjacent to the lake or tributaries and these are best addressed by local government or in some cases the VT DEC. Under the TMDLs, failed septic systems are not provided an allocation, because such sources are illegal.

Load Allocation

Comment 6-63: [Lake Champlain Committee]
The TMDL calls for phosphorus load reductions of 60% from forested land, 82.8% from agricultural fields, and 65.3% from streams in the Missisquoi Bay Basin. The scale of needed reductions is astounding. EPA was forced to abandon their general procedure of setting the forest and streambank loads first, and then setting the agricultural load based on the remaining capacity, because of the magnitude of needed load reductions. We cannot envision any realistic way such incredibly lofty targets can be met, and we are not convinced that the approach presented will lead to attainment of water quality standards as they currently exist.

Response:
As noted in the response to Comment 6-3, EPA disagrees with the commenter's suggestion that there is no way the Missisquoi Bay targets can be met. EPA went to significant effort, in collaboration with the State of Vermont, to identify a set of actions, which when implemented, will have a high likelihood of achieving standards in the lake. Act 64 and the Phase 1 Implementation Plan provide assurance that these actions will be implemented. The level of analysis that went into establishing the link between committed actions and resulting phosphorus reductions may be unprecedented among lake TMDLs nationally. This overall comment is discussed in greater detail in responses to Comments 6-65, 6-85 and 6-87.

Comment 6-64: [Anonymous 2]
The non-point source reductions have no scientific basis. They are inflated and not reliably supported by research. The "best case" scenarios of selected research have been used for the projected non-point reductions introducing bias into the modeling and projecting unattainable phosphorus reductions. More realistic non-point source reductions with must be used and achievable non-point source reductions derived.

Response:
EPA disagrees with the commenter. EPA has used the best information available from BMP effectiveness research and modeling in estimating nonpoint source reductions. EPA did not select the "best case" scenarios, but rather chose values that typically represented the midpoint in the range of studies that were evaluated. As better research results on the effectiveness of various practices become available (especially from Vermont studies currently underway) this information may be incorporated into the State's tactical basin plans and adjustments made when appropriate. While the overall load allocation targets will remain (these are needed to meet in-lake phosphorus criteria) the tactical planning process will allow for adjustments to assumptions used in EPA's Scenario Tool that affect estimates of load reductions achievable from the various source sub-categories, such as, for example, pasture or cropland within the agricultural sector.

Comment 6-65: [Lake Champlain Committee]
In the Missisquoi Bay Basin the TMDL also requires an 82.8% reduction from agricultural fields. The proposed revised decision by the Secretary of Agriculture for the Missisquoi Basin represents a significant step forward in managing agricultural phosphorus loading. The proposal requires on-farm assessments, identification of needed best management practices, and an implementation plan. Such farm by farm assessments, planning and implementation offer the greatest potential opportunity for phosphorus reductions. To model phosphorus reductions EPA relied upon best management practices including buffers on streams and ditches, gully erosion control, livestock exclusion, and reduced field erosion tolerance. Each of these techniques is designed to keep phosphorus on the fields, but none address reducing imports or increasing exports of phosphorus. What is EPA's recourse if the assessments Vermont proposes do not support the conclusion that an 82.8% reduction from farmlands is possible? The pollution budget and associated implementation plan acknowledges that some farms may need to be bought out. We believe buy-outs are necessary however, there is nowhere near enough attention to this possibility to achieve required reductions. Even with massive buyouts, the fields would still generate phosphorus, although the loading would just be placed in a different land-use category.

Response:
As noted in the response to Comment 7-1, EPA agrees that measures beyond what will be required in most lake segments are necessary in the Missisquoi Bay watershed. On February 3, 2016, the Vermont Secretary of Agriculture, Food and Markets, in a revised decision, determined that BMPs are generally necessary on farms in the Missisquoi Bay watershed to achieve compliance with state water quality goals (Vermont AAFM, 2016). The revised decision provides a framework for outreach, education and assessment of farms in the watershed and a process for farm-specific development and implementation of a Farm Plan to address identified water quality resource concerns, where needed. Farm assessments may conclude that practices required by the RAPs are sufficient to protect water quality and that BMPs may not be required due to a farm's specific characteristics or management. Regarding the comment that the practices modeled did not address phosphorus imports, note that EPA did simulate the effects of the "reduced phosphorus manure" practice which can be implemented through several different actions – one way to reduce the amount of phosphorus applied to fields via manure is to import grain containing less phosphorus. But EPA agrees that the majority of practices modeled are indeed those focused on keeping phosphorus on the fields and not in the waterways.

EPA notes that the comment does not suggest that the load allocation for agricultural land in the Missisquoi Bay segment is incorrect. Instead, the comment seems to reflect a concern about whether measures identified to date can achieve the reductions necessary to meet the allocation. EPA is confident that, with the addition of the new program identified in the revised Secretary's decision, sufficient measures exist. That optimism is supported by CLF's statement that : "The new program outlined in the *Revised Secretary's Decision* offers reasonable assurances the State of Vermont is addressing agricultural non-point source pollution in the Missisquoi Bay Basin." (See Comment 7-1a.)

The comment regarding "buy outs" is an implementation option that the commenter should raise directly with the State of Vermont. If, in the future, Vermont determines that it is not possible to meet the load allocation for agricultural land in the Missisquoi Bay segment then EPA and Vermont will have to consider revising the TMDL for the Missisquoi Bay segment.

Comment 6-66: [Dennett]
As you know, residents of north central Vermont are very concerned that the wastewater from the Cabot/Agri-Mark plant is heavily ladened with phosphorous from cleaning chemicals and is not treated. Depending on soil absorption for "treatment" does not take into account torrential rainfall and flooded fields in this age of climate change in Vermont. As a result, the discharge is running off into nearby streams and rivers, such as the Winooski River and the Lamoille River, which in turn feed into Lake Champlain.

> **Response:**
> Since discharge from the Cabot/Agri-Mark facility is not from a point source to a surface water – it is discharged to the ground via spraying on agricultural fields - it was not provided a specific wasteload allocation. To the extent that any indirect discharge of phosphorus attributable to the Cabot/Agri-Mark facility ultimately reaches a surface water, it is accounted for in the base load for the Main Lake and Lamoille segments.

EPA received two comments from the same individual that address many similar points. A consolidated response follows the second comment.

Comment 6-67: [Maroney 1]
1) The three greatest sources of pollution entering Lake Champlain are:
a) The 40,000 tons of NPK fertilizer Vermont's conventional dairy farmers import into the state every year, which brings along with it about 5% phosphorus or 2,000 tons
b) The 200,000 tons of high phosphorus feed supplements Vermont's conventional dairy farmers import into the state every year, which brings along about 1% phosphorus or about 2,000 tons
c) The high stocking rates on Vermont's CAFOs, which typically house more than one cow per three acres of land on which that cow's feed is harvested and her manure is spread.
2) These practices are all unnecessary to Vermont dairy farming and are, in fact, not permitted under the National Organic Program
3) Vermont's new "Clean Water Law" does not mention or attempt to regulate any of these practices.
4) Vermont's new "Clean Water Law" does not even mention phosphorus or nitrogen, the substances that are contributing 317 or 38% of the 817 tons of pollution entering the lake.
5) Vermont cannot clean up Lake Champlain unless and until it reforms conventional dairy.

Comment 6-68: [Maroney 2]
Your approval of Vermont's new TMDL inspires the following comments.

First, the state has done a remarkably good job quantifying the problem of pollution in the lake and identifying its various sources, chief among them at 40% — or 20% higher if you add what is ambiguously categorized as "stream bank erosion," which is not a unique "source" but was probably deposited by "agriculture." But that said, the state is resolutely indifferent to what it is exactly that "agriculture" does to produce its share of the problem; and/or the Agency of Agriculture disseminates disinformation of various sorts in an effort to shift attention away from the conventional dairy industry.

To state the obvious, the lake is polluted because Vermonters collectively put into it 316 tons more of the nutrients—mainly phosphorus and nitrogen—that blue-green algae requires for growth. The state says it has remedies for reducing inflows from storm water, MWW and "agriculture." But by ignoring the inputs imported into the watershed by conventional dairy farmers, the state renders its plans for storm water and MWW moot.

I am fully aware that the EPA has no authority to dictate to Vermont how its farmers should farm. But the agency's insistence that "agriculture's" contribution is attributable exclusively to manure, ignores the fact that in 1955, Vermont dairy farmers housed 283,000 cows, or more than twice as many cows—on twelve times as many farms—and the lake did not bloom with acres and acres of algae. What has changed?

> The introduction of the conventional agricultural model, the gradual adoption of which between 1950, when it was new in Vermont and applied but sparsely, and 1980, when except for a handful of certified organic farmers, it had become near universal.

The fundamental premise underlying Vermont's plan to clean up the lake is that conventional agriculture is benign, except there are a few farmers out there—very few— who are not following the AAPs. Secretary Ross says Vermont has 7,000 farms and the governor claimed recently that 99.99% of them are "doing the right thing." But 99.99% of 7,000 is 6,999.03, which means there is out there somewhere 7/10th of one farmer who is polluting the whole lake. This absurdity is the justification for the $7.5M the legislature has allocated to the agency, which will hire a cadre of inspectors to go out and look for this miscreant, fractional farmer.

In another example of how the agency deflects attention away from conventional dairy, the secretary urges Vermonters to be "all in" for the lake. "We've all been part of this problem, we must all share in the clean up. And it's going to take twenty years."

Yes, all 620,000 Vermonters, including farmers, use the bathroom and drive or depend upon cars; we must all *per stirpes* pay to have these necessary systems upgraded, and that will take lots of money and maybe twenty years. But only one half of the problem is attributable to MWW and storm water. The other half is attributable to just 700 conventional dairy farmers, or 1/10th of 1% of the population. And while no one is suggesting that we stop driving or using the bathroom, the state will not acknowledge that conventional farming—not farming *per se* but *conventional* farming—is both voluntary and unnecessary; the agency could ban the industry practices that cause the problem tomorrow and within one year dramatically mitigate its effects. But VAAFM and DEC insist that AAP rule compliant and NPDES permitted farmers can freely apply toxins to their corn land, much of it in riparian corridors, and water will miraculously no longer run downhill. Vermont has spent 50 years and hundreds of millions trying to make this premise true; it is empirically false and the TMDL is but the latest iteration of the effort.

After WWII, conventional agriculture replaced, with toxic chemicals, two benign farm practices for achieving weed control and soil fertility, in place for thousands of years. The miracle of American agricultural technology was that it would boost yields and lower costs, and it does. But the technology achieves its efficiencies by externalizing the residues of these toxins into the environment, and the costs of cleaning them up, onto society. This is not an accidental side effect of the protocol to be ignored or managed as Vermont has tried for two generations to do: it is the protocol's fundamental, economic premise. DEC and ANR personnel surely know that post WWII gains in agricultural yields are attributable to the application of chemical toxins. But

externalization is not alienable from the protocol; if the farmer is not applying toxins, he/she is not farming for maximal efficiency and maximal production, *i.e.*, conventionally.

Secretary Ross and [David Mears until recently, the commissioner of Environmental Conservation] both regularly state that "agriculture" is responsible for 40% of the pollution in the lake. But Vermont agriculture is 80% dairy and Vermont dairy is 80% conventional. Of the 135,000 cows in the state, [about] 95% of them, or 128,250 are managed conventionally, while [about] 13,500 or 5% are managed organically. Surely they know that as recently as 1993 there were only three or four certified organic dairies in the state managing [about] 250 cows and lake pollution had already been a problem for thirty years. Nor can the problem be attributable, as the agency now suggests, to the thousands of horses, sheep, goats, chickens, fallow deer, alpacas, pigs, turkeys and lamas etc., standing on Vermont's small farms. These farms are well distributed, their stocking rates are generally low and small farmers mostly spread their manure as a solid, often by hand, because there is insufficient volume to justify the expense of a liquid system. It is, clearly, not "agriculture" *per se* that is the cause of the problem; it is *conventional dairy*.

I put "agriculture" in quotes because today, there are two agricultural modalities, conventional and organic, and only conventional is responsible for the problem in the lake.

The tenets of organic agriculture are:

- Organic dairy farmers do not use GMOs, antibiotics, artificial NPK fertilizer or herbicides, both derived from petroleum;
- They achieve soil fertility by crop rotation *i.e.*, rotating grains with nitrogen fixing legumes;
- They cultivate weeds mechanically;
- They balance their cows' ration with forages instead of grain;
- Their cows must go onto pasture to feed themselves during the grazing season.

These practices were adopted in the 1950s as an antidote to the environmental damage built into the conventional protocol, the main tenets of which are:

- Vermont conventional farmers import 40,000 TONS of NPK fertilizer, which bring along about 5% or 2,000 tons of phosphorus and I don't know how many tons of herbicides;
- They also import 200,000 TONS of feed supplements, which bring along approximately 1% or another 2,000 TONS of phosphorus;
- They stock their farms with more—sometimes many more—than one cow for every three acres of land on which that cow's feed is harvested and her manure is spread;
- Their cows are confined in the barn day and night;
- They balance their cows' ration with imported grain instead of forage.

The problem in the lake and the state's refusal to regulate it are captured concisely in three statements appearing in the Lake Champlain Basin Program's 2015 "State of the Lake, and Ecosystem indicators Report," page 11:

To defray the cost of the new "Clean Water Law," the Senate Agricultural Committee had before it a proposal

1. Fertilizer sold in retail stores and by large agricultural feed and fertilizer suppliers are *major contributors of nonpoint source phosphorus pollution in Lake Champlain*
2. Commercial phosphorus fertilizers sold to the public for non-agricultural use will be subject to a new tax
3. There is no new tax on agricultural fertilizers

from Fish & Wildlife to raise the tax on agricultural fertilizer from its present rate of $0.75/ton, which is essentially meaningless, to $25/ton, which might actually begin a trend to discourage use of it. But the Senate Agricultural Committee voted the proposal down, recommending instead a tax on non-agricultural fertilizer, which, as a remedy for lake pollution, is akin to proposing that Vermonters install window boxes to combat global warming.

Rush Limbaugh likes to remind his audience that when government subsidizes something, we get more of it. But what, for the money they lavish on conventional dairy, Vermont taxpayers get more of is not farming, which they arguably want, but farm attrition and water pollution, which they arguably do not. Indeed, the national milk supply is so much in surplus that dairy farmers all across the country are dumping milk because there is no market for it. Even with state support, Vermont agriculture produces barely 1% of the national milk supply and no material part of the nation's supply of meat, fish, grain, fruit or vegetables. In fact, were all of Vermont's farmers to go suddenly out of business, no one would notice; consumers would still find plenty of milk on the grocer's shelf made at a loss by farmers in other states. The USDA is unconcerned about whether or not Vermont farmers stay in business since milk is fungible.

The EPA classifies Confined Animal Feeding Operations or CAFOs as point sources, over which the agency has a modicum of control. Vermont has nineteen farms that fit the classification. Yet, Vermont CAFOs are classified merely as large farms, not CAFOs, which means that Vermont's "agricultural" runoff can be categorized as non-point source runoff, over which the EPA has no control. Vermont's few dozen large dairy farms eek out razor thin profit margins when the FMMO price is depressed. But at present, and at very regular intervals during the past three decades, the milk price falls to $12-14/cwt, which is $1-8 below the median Vermont dairy farmer's cost of production. The cause of this fluctuation is that the nation's dairy farmers (now about 45,000 from 4M after WWII, an attrition of 90%) deploy the conventional protocol because they want before anything else to make more milk every year. But because they sell in the aggregate, they continuously over supply their markets, driving small and medium sized farms—the kind Vermont allegedly wants to preserve—out of business.

This pattern, in effect for four decades, would not concern anyone who is not in the dairy industry if it were not for the economic, ecological and social consequences of conventional agriculture's business model, which are stagnant farm incomes, which drive farm attrition and rural economic decay, and the concentration of more and more animals onto fewer and fewer farms, which drives the quest for the efficiencies provided by the conventional model, which drives lake pollution. These consequences are intolerable to Vermont society, which makes the practices employed by conventional dairy farmers society's and the state's business. The state, which represents the people, professes to have a plan to reduce phosphorus in the lake by 316 TONS, two thirds of which must come from "agriculture."

But there is no mention of NPK fertilizer and the phosphorus in imported feed supplements in the new "Clean Water Law," or in the new TMDL. What is more, they are not mentioned or regulated by the Accepted Agricultural Practices, and they will apparently not be mentioned or regulated in the new Required Agricultural Practices.

The justification for farming conventionally is to boost production and lower costs; no one needs to be told that this is sound business. But since Vermonters spend 95% of their grocery money for food grown out-of-state, in Vermont we do not farm for food but for appearances; why then must we pollute the lake to do it?

If these are not reasons enough to look critically at the conventional dairy industry, consumers have been cutting back on fluid milk for forty years; why does the state continue to allocate $60/80M to help conventional dairy farmers make more of a product for which consumer demand is shrinking?

According to the CWA, NPS run off enters the lake from general not particular sources. And even though we can't always trace NPS pollution to a particular source, we can easily detect the application of the conventional protocol by its results: Since its introduction in 1945, Vermont's dairy farms have dwindled from 11,200 to fewer than 900 today, an attrition of 93%. By itself, this might not be so important, except as the number of farms in Vermont **decreased**, lake pollution **increased**. In the 1950s, farmers began to adopt the miraculous technologies of modern farming; antibiotics, artificial insemination, in vitro fertilization, GMOs, all of which increased milk production per cow, from 8,000 lbs in Calvin Coolidge's day to 23,000 lbs today.

But milk surpluses drove farm prices down and farms began to consolidate and house more cows; total cow numbers began to drop. By itself, this might not be important to society, except as the number of cows per farm increased, lake pollution **increased**; as the number of cows in Vermont decreased, lake pollution **increased**. As milk production per cow increased, lake pollution **increased**; as total milk production in Vermont increased, lake pollution **increased**. In the 1970s, pollution in the lake was to be mitigated by installing manure lagoons. But as more liquid manure lagoons were built—mostly paid for by taxpayers—lake pollution **increased**; after the introduction of the Accepted Agricultural Practices rules in 1995, including the so-called "winter spreading ban," lake pollution **increased**; as more and more farms adopted free-stall, confinement, center feed alley barns, lake pollution **increased**; after NMPs and buffers were imposed, lake pollution **increased.**

No one in Vermont disputes that these trends are taking place. But these are the tenets of the conventional paradigm, and no one in Vermont disputes the environmental consequences of the paradigm's near-universal adoption, either.

Instead, the Vermont legislature built an elaborate legal edifice of programs to "save agriculture and protect the lake:"

- Land Use Regulation (1967)
- VT Anti-Degradation Implementation Procedures (1968)
- Act 250 (1970)

- Vermont Land Trust (1977)
- Use Value Appraisal (1978)
- Vermont Housing & Conservation Board (1987)
- Act 200 (1989)
- Lake Champlain Special Designation Act (1990)
- Vermont Milk Commission (1991)
- Accepted Agricultural Practices rules (1995)
- Clean and Clear (2003)
- Act 115, 10 V.S.A. 6025(d)(5) (2004)
- Act 183, Sec. 1, 24 V.S.A. § 2790(d) (2006)
- Farm to Plate (2009)
- Act 142, VWLEIP, (2010)
- Act 138, Water Quality Remediation & Implementation (2012)
- H. 586 Small Farm Certification (2014)
- Act 64 (Clean Water Act, 2015)

These programs all have two things in common: (i) they accept the primacy of the conventional paradigm and (ii) they don't meet either goal. They have cost the taxpayers $60/80M/year for at least thirty years, plus I don't know how much federal money, or in the aggregate, $1B. They have not achieved their stated goals because legislators believe they are acting to preserve farming, or more precisely, the scenery farms provide to the tourist industry. Tourists come here to enjoy what they believe are Vermont's family farms, our pure air and clean lakes; tourists spend money here. But since the state is agnostic to the environmental, economic and social damage designed into the conventional dairy industry's business model, the state is actually feeding with one hand the farm attrition and lake pollution it charges taxpayers with the other to stanch.

The AAPs, for example, introduced Nutrient Management Plans, buffers and the so-called "winter spreading ban," said in 1995 to be overly stringent; lake pollution has **increased** every year since. The Anti-Degradation Implementation Procedures, enacted into law in 1968, have never been implemented; nor do they, in 38 pages, even once *mention* agriculture. The state's Land Use Regulations were enacted in 1967 and Act 250 in 1970; both, on their very first pages, exempt agriculture, even then the state's largest and most dedicated polluter.

There are only three plausible explanations for the empirical failure of these programs to meet their goals:
1. Special interests duped the legislature again and again over a period of fifty years
2. The legislature has tried to save "agriculture" and reduce pollution in the lake but the policies it enacted did not somehow produce the intended results or
3. The legislature is complicit in subordinating clean water to the protocols of conventional dairy and, therefore, has no incentive to inquire if its policies are working.

The answer is #3:

> Legislators and agency personnel have consistently esteemed the business model applied by conventional dairy farmers, now down to 700 or 1/10th of 1% of the population, above the interests of 620,000 Vermonters, who want and deserve to have clean water.

At VLS, they teach us that environmental law is written to stop polluters, be they smelters in Georgia, oil drillers in Louisiana, loggers in Washington, tanners in Maine or strip miners in Wyoming. These industries cut costs by externalizing their wastes into the environment, which is to say they off-load them onto society. We are taught that it is no good asking polluters to stop or imploring them to stop. Polluters must be hauled into court, prosecuted, fined or jailed to force them to stop.

This, however, is not what we do in Vermont. Vermont corrupts the purpose of the NPDES program of the CWA, which was intended to protect essential industries, in order to classify all our farms as non-point sources regardless of their size. We then generously subsidize them and shield them from prescriptive regulation.

> What all this means is that Vermont agriculture is not ecologically, socially or economically sustainable, and the agency has no plans to make it so.

There is, for example, no mention of global warming in the present debate about how to clean up the lake. Yet conventional agriculture is the nation's second largest contributor to global greenhouse gases, behind only electrical and heat generation and ahead of the entire transportation sector. Vermont has what it proudly refers to as a Comprehensive Energy Plan (CEP); but rather than reining in conventional dairy's profligate use of fossil fuels, the plan actually encourages the industry on the justification that the manure it generates can be used as a feedstock for methane digesters. Sounds good! But methane digesters do not remove phosphorus, the root cause of blue-green algae contamination in Lake Champlain. What is worse, manure digesters were not designed to protect water quality but to lower the farmer's electrical bills. They are paid for by subsidies, which farmers convert to new capacity to expand production, thereby driving the principal cause of the problem.

Worse yet, the agency of agriculture puts virtually all available resources into saving conventional dairy's mid-twentieth century business model, when 40M of the world's richest demographic living in upscale urban markets only a few hundred miles away are shifting their food purchases from conventional to products that are not made with artificial fertilizers and herbicides, that are not made with hormones and GMOs, that return a fair share of market value to producers and whose benefits accrue to Vermont farmland values and Vermont tourism into the bargain. Vermont has but a paltry share in this now twenty-year-old market trend and has no plans to get a bigger share anytime soon.

The Organic Foods Production Act of 1990, written by Senator Patrick Leahy required the USDA to develop national standards for organic products. The final rule establishing the National Organic Program was first published in the Federal Register in 2000 and is codified at 7 C.F.R. 205. The NOP forbids the application of synthetic fertilizers and herbicides, antibiotics and GMOs. The state pays lip service to organic farmers but is perfectly agnostic to the differences between the two methodologies, which means that by default, conventional

dairy gets the lion's share of the $60/80M the Vermont legislature allocates to "save farms" and "protect the lake."

In sum, Vermont professes to care deeply about meeting its water quality standards but for five decades, the legislature has refused to regulate the fundamentals of the conventional dairy model, and it is the fundamentals of the conventional dairy model that are the major source of the pollution in the lake. Again, I know that your authority does not extend to dictating how Vermont should farm; but it does extend to rejecting a plan that is not written to clean up the lake but to shield the industry that pollutes it from regulations that would. The people of Vermont trust that you will require the state to explain the deficiency in its TMDL and that you will withdraw your approval of it until the deficiency is addressed.

Consolidated Response:
EPA understands the commenter's larger points to be that conventional dairy farming is phosphorus-intense; that dairy farming under the National Organic Program would be less so; and that Lake Champlain cannot be cleaned up unless the conventional farming approach is reformed.

As the commenter acknowledges, EPA has no authority to dictate to Vermont how its farmers should farm. The TMDLs indicate the amount of phosphorus reduction needed from the agricultural sector, but they don't dictate the method to be used to achieve the reduction. In order to confirm that there is reasonable assurance that the reductions can be achieved, EPA simulated reductions that could be achieved using at least one approach. Given that the current predominant paradigm is conventional farming, EPA chose a reduction scenario that achieved the needed reductions through the extensive application of conservation practices that could be applied within the context of conventional farming methods. The type of practices and extent of application simulated goes well beyond the level of past BMP/AAP application in the basin, so it is inappropriate to draw conclusions about the effectiveness of this approach based on past experience in Vermont. EPA disagrees with the commenter's premise that cleaning up Lake Champlain is not possible without a fundamental reform in the form of dairy farming in Vermont. It may be difficult and it may be costly to achieve the TMDL allocations in a few lake segments under the prevailing farming paradigm, but EPA does not believe it is impossible. Conversion to a more organic model of farming may well be an approach for Vermont dairy farmers and state government to discuss in the years to come, but it is beyond the scope of a TMDL. Again, the TMDLs indicate the amount of reduction needed, and one path to achieving the reduction. But nothing in the TMDLs precludes the State's transition to a different approach (through the tactical basin planning process) to achieving reductions, as long as the new approach can be demonstrated to be sufficiently effective.

Contrary to the commenter's assertion, Vermont's "Clean Water Law" requires reporting the annual amounts of feed which is distributed within the state and intended for use within the state. The law also makes use of the more generic term "nutrients," which is commonly understood to refer to phosphorus and/or nitrogen. The word "nutrient" appears 24 times in the law.

EPA also disagrees with the commenter's assertion that the agency has insisted "that agriculture's contribution is attributable exclusively to manure." The TMDL is focused on phosphorus coming from agricultural fields and farmsteads regardless of whether the phosphorus is generated by manure, commercial fertilizer, soil erosion, or other sources.

Comment 6-69: [Smith]
The issue is not that the EPA has set water quality standards too high. The issue is that many animal production systems are not in balance with nature.

If anyone were to build a house anywhere in Vermont, near a body of water or not, they would have to put in an expensive sewer disposal system. So why should any farmer be allowed to let huge numbers of animals' waste be allowed to runoff into streams and rivers and lakes without any system?!!! A human produces a whole lot less waste per day than a cow!

The Nordic Dairy in Shelburne collects their cow manure and turns it into methane gas as a byproduct and does not put toxic waste into the environment. Grass fed cows, given adequate acreage, do not pollute, as long as the fields are far enough from streams/waterways, because the land detoxifies their waste, and utilizes it to grow the grass they consume.

All animal waste should be the responsibility of the owner of the animal. And that goes for dogs, too.

If a farmer can't afford to do that, then they should go out of business. They should have been taking care of that problem decades ago.

Grass fed cows are healthier and their milk is healthier to drink anyway. Cows were not physically designed to eat grain. Over production and over-crowding leads to over manure pollution.

> **Response:**
> As noted in the consolidated response to Comments 6-67 and 6-68 immediately above, EPA has no authority to dictate to Vermont how its farmers should farm. Conversion to a different model of farming may well be an approach for Vermont dairy farmers and state government to discuss in the years to come, but it is beyond the scope of a TMDL. Please also note that Vermont's Required Agricultural Practices are intended to prevent the runoff of animal waste (and other pollutants) to surface waters, and Act 64 includes many new tools to help ensure that the requirements are sufficient and properly complied with.

EPA received the following two comments from the same organization. A consolidated response follows the second comment.

Comment 6-70: [Lake Carmi Camper's Association, Inc., 1]
This letter is in response to the recent hearing conducted in Vermont regarding the Lake Champlain TMDL. I represent the Lake Carmi Camper's Association (LCCA) that has a membership of more than 250 residents and friends of Lake Carmi located in Franklin, VT.

Lake Carmi is a Eutrophic 1402 acre lake. Its outlet flows into the Pike River and eventually the Missisquoi Bay at Lake Champlain. The lake is surrounded by agricultural activity. In 2009 your agency approved a TMDL for Lake Carmi primarily due to excessive nutrient loading from neighboring farms.

Despite the TMDL and exhaustive efforts of local non-profit community organizations (The LCCA and the Franklin Watershed Committee) the water quality of the lake has not improved. The Vermont Lay Monitoring Program 2014 Annual Report lists Lake Carmi with the highest concentrations of phosphorous and chlorophyll-a of all the fifty (50) Vermont inland lakes tested.

Small, Large and Medium size Farming Operations (SFOs, LFOs & MFOs) lease agricultural land in the Lake Carmi watershed and continue to spread nutrients despite the impaired status of the lake. Manure trucks continue to travel on lake shore roads en route to spreading nutrients in fields adjacent to the lake.

The overwhelming majority of activity to improve water quality has been spent on shoreline, culvert and outreach projects. Little has been done to improve farming practices and the enforcement of agricultural regulations is non-existent. If we cannot improve the water quality of Lake Carmi where only five or six agricultural landowners are involved, how can we hold hope for Lake Champlain?

We respectfully request that Lake Carmi be factored into the new TMDL and recognized as a key component in the process of reducing the flow of phosphorous into Lake Champlain.

Comment 6-71: [Lake Carmi Camper's Association 2]
I am the President of the Lake Carmi Campers Assoc. I am forwarding you a video that is self-explanatory. It depicts the deplorable condition of Lake Carmi in Franklin, VT. It was also the recent leading story on Thursday nights WVNY Local Channel 22 and WFFF Local 44 newscast. Despite many promises made to us last year by elected and agency officials little if anything has been done to clean up our lake. We have made repeated inquiries to agency officials about improvements to the Lake Carmi Watershed and have been told very little.

The outlet to Lake Carmi flows into the Pike River which empties into Missisquoi Bay at Lake Champlain. We strongly believe that if you cannot clean up Lake Carmi there is little hope for Lake Champlain.

Please help the residents of Lake Carmi and the Town of Franklin and get more involved with the process to clean up Lake Carmi. Please urge VT Gov. Shumlin, VT Secretary of Agriculture Chuck Ross and other agency heads to take meaningful actions to improve our watershed. The health of Lake Carmi and Lake Champlain depends on it. Please get more involved. Thank you.

Consolidated Response:
As noted by the commenter, there is already a TMDL in place for Lake Carmi and that TMDL is not being altered by the new TMDLs for Lake Champlain. The TMDL for Missisquoi Bay accounts for the base case flow of phosphorus from Lake Carmi into the Pike River and then into Missisquoi Bay. The new and revised agricultural programs that will follow from Act 64, the emphasis in the Phase 1 Implementation Plan on farms in Franklin County, and the Secretary of Agriculture's decision on CLF's petition for mandatory BMPs in the Missisquoi Basin (see response to Comment 7-1) will apply to the Lake Carmi watershed and should yield improved conditions in the coming years.

Comment 6-72: [Knight]
Thank you for this opportunity to comment on the TMDL plan for Lake Champlain. In my work I seek to understand the role of humans within Earth Community, especially regarding relationships between pesticides, their state-sanctioned uses and effects on ecological and human health. I have shared scientific articles about pesticides with the Vermont Pesticide Advisory Council and have urged them to consider effects on watersheds from herbicide permits for rights-of-way. The Council has nothing to do with agricultural pesticide uses.
I question whether Vermont can reach the TMDL goals for Missisquoi Bay, Burlington Bay and the South Lake without considering contributions of phosphorus from the increasing uses of glyphosate in Vermont. Let me share more detail on this issue.

1. Fifteen percent (15%) of glyphosate is available as phosphorus, according to EPA scientists in Ohio, and can contribute to algal blooms in receiving waters. Researchers find an immediate correlation between use on land and algae blooms in Lake Erie. Ohio Lake Erie Phosphorus Task Force Final Report.
epa.ohio.gov/portals/35/lakeerie/ptaskforce/Task_Force_Final_Report_April_2010.pdf

2. Reported glyphosate use in Vermont statewide has escalated significantly from approximately 6,500 pounds active ingredient (a.i.) in 2005 to 57,500 pounds in 2013. Increases are due to planting of Roundup-ready corn and soy, agricultural no-till practices, larger use in utility rights-of-way (ROWs), lawns and ornamental categories, indicated in pesticide use data posted by VT Agency of Agriculture Food & Markets (VAAFM). http://agriculture.vermont.gov/pesticide_regulation/pesticide_usage_reported The data is also summarized in the attached document, Reported Major Glyphosate Uses in Vermont 2005-2013. Because the land area of Vermont in Lake Champlain's watershed is so large in relationship to the Lake (18 to 1, LCBP State of the Lake 2015, p.8) and such a large portion of our state, such increases cannot be dismissed without consequence.

3. Every source of phosphorus for Missisquoi Bay and St. Albans Bay in Franklin County must be considered for reduction or removal. Glyphosate use can contribute to algae blooms in Missisquoi Bay. Consider the increases of glyphosate use in Franklin County from 2011 to 2012 alone:

	2011	2012	
Corn:	5,459 lbs a.i.	25,873 a.i (Buffers unpredictable)	
Highway:	334	1,880	This use is 2-10 ft from water.
Utility:	5,518	22,954	This use is 10 ft from water.

Railroad use in Franklin County 2-10 ft from water hovers just above a ton each year:

2011	2012
3,132 lbs a.i. x .15 = 469.8 lbs P	2608 lbs a.i. x .15 = 391.2 lbs P

4. Lawn use is stated as follows:

2011	2012
1941 lbs x .15 =approx. 290 lbs P	2404 lbs x .15 = 360 lbs P.

But these figures do not include uses of glyphosate purchased by individuals over the counter and used on their property. If all lawn uses of glyphosate around St. Albans Bay and Missisquoi Bay were eliminated, that could reduce P loading to those bodies of water.

5. Glyphosate used on corn fields may move into surface waters attached to soil particles, or may leach to drainage tile and contaminate ground and surface water sources. (Kjaer J et al, 2005. Leaching of glyphosate and amino-methylphosphonic acid from Danish agricultural field sites. Journal of Environmental Quality, Mar-Apr, 34(2):608-20.)

6. St. Albans and Missisquoi Bays have accumulated significant phosphorus in bottom sediment. Glyphosate runoff being added to this sediment can increase available P; therefore its use in the watershed should be significantly reduced or eliminated altogether.

7. The glyphosate contribution of phosphorus to waters of the State through drain tile must be considered in the rulemaking process for drain tile use in agriculture.

8. Table 8 of the TMDL document indicates significant reductions of P are required for Shelburne Bay, Burlington Bay, St. Albans Bay and Missisquoi Bay. These targets will be difficult to reach without considering all contributions. Unfortunately, developed lands in Chittenden County are still treated with glyphosate and phosphorus by individuals and by lawn treatment corporations without soil tests, in spite of legislation requiring soil tests prior to application of phosphorus. USGS found glyphosate and its degradate AMPA in surface waters at higher amounts *downstream* of wastewater treatment facilities (WWTFs) compared to *upstream* of the WWTFs (Kolpin D et al 2006: Urban contributions of glyphosate and its degradate AMPA to streams in the U.S. Science of the Total Environment 354, 191-197). This indicates that P sources including Roundup from lawns combine with stormwater and enter WWTFs through sewers and overflow events. Companies like Chemlawn are pushing their services on untutored citizens and corporations through direct mail.

9. Vermont Railway treats its railyard in Burlington Bay with glyphosate. Weekly spray reports would help ascertain how much is used there. Does it fall within the 5% MOS?

10. Will the 5% Margin of Safety (MOS) in the TMDL (p.40) be "explicit"? Will the glyphosate contributions be included in that MOS? What else would be included?

I have brought the glyphosate "story" to the TMDL discussion before, and I still believe that in the strategic locations mentioned above glyphosate use is a factor to be included in the TMDL calculations.

It appears to me that our state is continuing to force intense, expanded land uses in agriculture and in suburbs that the Earth simply cannot support without troubling consequences. We have turned a deaf ear to prophets like Aldo Leopold and Wendell Berry who advocate for cooperating with Earth's systems and staying within her capacity. And we are reaping the consequences.

Note: The comment included two attachments: Reported Major Glyphosate Uses in Vermont 2005-2013; and Reported Glyphosate Use in Franklin County 2011-13

Response:
EPA considered the potential impact of glyphosate early in the development of the TMDLs. An analysis of published research (including Perez et al., 2007 and Ilikchiyan, 2009) on glyphosate by the University of Vermont Sea Grant Program (Homziak, 2012) concluded that only the smallest fraction of the cyanobacteria in freshwater lake plankton (pico plankton) can utilize phosphonate-derived phosphorus from glyphosate, and only in waters very low in phosphorus. These cyanobacteria have not been important components of past algal blooms in Lake Champlain, and if they were, the research indicates glyphosate would not increase their growth in phosphorus rich areas of the lake such as Missisquoi Bay, St. Albans Bay, and the South Lake. In addition, the research found that the presence of glyphosate actually inhibited growth of the main types of algae that make up Lake Champlain algal blooms. Lastly, based on the usage levels reported for corn crops (the main land use category receiving glyphosate), and the 15% phosphorus content of glyphosate cited in the Ohio EPA report (2010) referenced by the commenter, VT DEC determined that the application rate for the Lake Champlain basin works out to approximately 0.035 lbs. of phosphorus per acre of corn. The Ohio EPA report suggests this low an application rate would generate very little phosphorus runoff. Applications near streams could result in some glyphosate transport to the lake, but, based on the research findings reviewed by UVM Sea Grant (described above), the type of phosphorus in glyphosate is not expected to contribute to algal growth. Therefore, while glyphosate may be a concern in other contexts, EPA does not consider it a significant source of phosphorus to Lake Champlain.

As noted in Section 6.3, Margin of Safety, an explicit margin of safety of 5% is included in the TMDLs. The Margin of Safety does not specifically include the glyphosate source. The MOS is established to account for any scientific uncertainty in the lake modeling. See Section 6.3 of the TMDL document for a more complete discussion of the MOS.

Comment 6-73: [Ford]
I am writing to express my concern about the proposed Lake Champlain TMDL as it pertains to agricultural sources of phosphorus in the Missisquoi Bay Watershed. I believe the proposed plan will fail to achieve the desired reductions in non-point source phosphorus because it fails to anticipate predictable changes in dairy farming over the next several decades.

As I understand the new proposed EPA TMDL it is based on modeling that recognizes human demographics but not similar changes in agriculture – it take into account that more people may place bigger loads into wastewater treatment facilities. It does not account for similar changes in outputs from the dairy industry. Milk output per cow has increased steadily for many decades, and continues to increase due to improved genetics and feeding practices. This increased milk output is accompanied by increases in both phosphorus-rich feed concentrates imported from outside the watershed (to meet the protein and caloric needs of the cows), and increases in forage (especially corn) grown in the watershed. The result is an increased load of phosphorus accumulating in agricultural soils and leaching into waterways.

The acreage planted in corn in Franklin County was about the same in 2012 (25,758 acres) as in 2007 (25,976 acres). By comparison in 1982 the county had 14, 716 acres in corn. In 1954 it was 7,163 acres. The yield per

acre has more than doubled. Franklin County encompasses the majority of Vermont's share of the Missisquoi Bay Watershed.

The number of milk cows in the county has stayed pretty constant since the 1930s, between 35,000 and 42,000 in every census year. The 2012 count was 35,736, at the low end of that range. Of course, a dairy cow in 2015 produces more milk, eats more grain, and has a higher phosphorus footprint than an older cow ever did. With the continued consolidation of dairy farming those cows spend less and less time outside. Most of those cows are living in free-stall barns and are never on pasture during lactation. There are fewer cows crapping in streams than there were 20 or 40 years ago – we have shifted to mechanically harvesting all forage and bringing it to the cow, rather than sending the cow outside to forage. Riparian exclusion of cows and vegetated buffers for cropland provide worthy benefits for biodiversity and wildlife movement, but they do not address the roots of our water quality problems in the Lake Champlain Basin.

The best estimates we have show that Vermont dairy farms are accumulating P at a rate of about 20 lbs/acre/year. That rate increases as milk production increases.

Fortunately it's a big lake, and when Missisquoi Bay is too gross to canoe with my kids we can just drive to Mallet's Bay instead. Or maybe over to the Adirondacks.

> **Response:**
> EPA is comfortable that changes in agriculture as well as changes in human demographics have been captured in the development of the TMDLs. EPA used 2000-2010 data in developing the base load for the TMDL. The data supplied by the commenter are consistent with that base load period and suggest that the acreage in corn in Franklin County didn't change much during the past 10 years nor has the number of cows varied greatly.

EPA received two comments principally concerning enforcement on farms. A consolidated response follows the second comment.

Comment 6-74: [Magnus]
I know from studies done that the bulk of the problem is coming from the farms. However they are treated as the sacred cow. We are going after the areas where there will be no public outcry, where we won't effect the vote, where there is no lobby. As a result we will throw tons of money at the problem, and not kill the main culprit, only dance around it. If we don't come down hard on the farms we might as well quit now and all the folks at EPA and other similar organizations mandated to protect our environment, go home. We are paying you guys for nothing. You are picking the low hanging fruit and seem not to have the guts, like the legislatures on all levels, to attack the problem. If this was another occupation we would close them down till they secured an adequate solution.

Funding has now arrived for some work on the lake in VT, however I am willing to bet the bulk of the money goes to people sitting behind a computer. Get them outdoors and especially in a hard rain and walk the edges of the river and find out first hand where the problems are. There is nothing like boots on the ground and visuals to bring the message home. I know this is not going to happen, nobody wants to get dirty or wet. So we will

continue to see the lake turn itself into a marsh and property owners and lake enthusiasts will take a back seat to the farm lobby. The EPA will require that we spend some money to change an almost non-existent P at the sewage treatment plants and no one will raise an eyebrow. Giddyup!

Comment 6-75: [Parizeau]
I will get right to the point. I do not trust the State of Vermont or any farm to implement any thing that will stop the flow of agriculture runoff (manure) into Lake Champlain. The State of Vermont has had over a decade to take action and they have failed miserably. And to ask farms to reduce runoff is a joke as well. Being in law enforcement for over 30 years I can tell you that no law, regulation, rule, or ordinance will be followed unless there is a consequence to it being broken. There needs to be a fines and or imprisonment if this pollution is to stop.

If the pollution that these farms are pumping into Lake Champlain was instead coming from some corporation or factory, there would have been criminal indictments years ago! The State of Vermont has turned a blind eye to it for decades now, coming up with other ridiculous causes. The changeover from grazing of the livestock, to the practice of penned livestock and liquefying and spreading of manure is the cause of this algae outbreak!! All other sources are a minimal impact to this outbreak. I'm on Missisquoi Bay and I can tell you from driving around Franklin County that the cornfields are tilled right to the edge of streams, rivers, and ditches that feed into the lake. If any of these farms cared about their runoff they would have had buffers in place years ago. And as for a 25 foot buffer, that might work in some areas but in other graded areas a 100 foot buffer of vegetation won't stop a downpour from washing into the streams.

We need strict enforcement and we need it now. To trust the State of Vermont and these farms to abide by any preventive matters is simply not going to happen. They have had ample time to do so and to date have simply refused.

I implore you to take action against the destruction of Lake Champlain by taking whatever action is necessary to stop these farms and the State of Vermont from continuing to allow agricultural runoff to destroy this once great lake.

Consolidated Response:
Act 64 has brought important changes to the Agency of Agriculture, Food, and Market's resources to address water quality concerns from agriculture. The agency's field staff was effectively doubled – from 4 to 8 – and additional enforcement authority was granted to the agency. Section 16 of Act 64 adds a new subchapter 10, captioned "Enforcement" to 6 V.S.A. chapter 215.10, providing the Secretary of Agriculture, Food, and Markets with additional authority to enforce the agricultural water quality requirements.

As described in more detail in the response to Comment 7-1, on February 3, 2016, the Vermont Secretary of Agriculture, Food, and Markets determined that BMPs are generally necessary on farms in the Missisquoi Bay watershed to achieve compliance with state water quality goals (Vermont AAFM, 2016). The revised decision provides a framework for outreach, education and assessment of farms in the watershed and a process for farm-specific development and implementation of a Farm Plan to address identified water quality resource concerns, where needed.

Comment 6-76: [Rose]
We need to do 2 things. We still want those VERY precious VT Franklin County farms!!! The costs related to new practices should be subsidized by us all as we all benefit from what VT farmers give us (and they share it, too! - unlike 2nd home owners who don't want anyone else sharing THEIR view!)

We also need to find a way to get around Fed. Legislation that allows farmers to grow hemp as buffer zone crops along our streams and lakes. Creating buffer zones and helping farmers to be more sustainable in practice, is good for everyone.

We don't have a farm anymore. So many farmers are needing to sell out because the 8-6 job another family member has doesn't pay the farm bills anymore. Really, where else in the world do people have to have a second job to pay to grow food? Let's find a way to ASSIST and SUPPORT the changes in paradigm for farmers and blaming them for environmental issues in Lake Champlain serves no one. Clean up storm water, put a moratorium on commercial fertilizers and herbicides for golf courses, lake side and stream side dwellings. I'm sure that those tufty blue lawns we see might have a greater impact that we'd known.

And for dirt roads... keep them and make large swale areas as part of long term planning. Our environment and weather patterns are part of what ends up in our lakes and rivers, so let's stop blaming the farmers and educate EVERY ONE about new ways/old ways that work? To mitigate the flooding of our once lovely clean Lake (s) all over VT.

Response:
EPA is not singling out farmers in this TMDL. The TMDLs and Vermont's Phase 1 Implementation Plan are built on the finding that all sectors are contributing to the lake's problems and that reductions will need to be made by nearly everyone to achieve a clean lake. The TMDLs require reductions from Wastewater Treatment Facilities, developed land (e.g., parking lots, highways, back roads), forested lands and stream banks in addition to agricultural lands.

Comment 6-77: [Norris]
I feel that the blue/green algae problem really got in high gear when Farmers went to liquid manure! The lake has never been as bad as it is now! I refuse to swim in it! The farmers for sure are not the whole problem, but when they spread and spew out the liquid cow manure on the fields so heavy that the fields turn as brown as the river, it is over spreading!! and then we have heavy downpours of rain... it all runs off happily down river!!
I am not a scientist or anything, but it does not take a brain surgeon to figure out that liquid manure spreads and runs much easier then solid!! If they could go back to the solid manure practice, I think the lake and rivers would benefit quickly!! At least try it!!

Response:
While perhaps not returning to the days of spreading solid manure, Vermont's implementation plan and Act 64 address the commenter's concern about the practices of liquid manure application. Act 64 requires the Agency of Agriculture to address manure handling in the upcoming revisions of the Required Agricultural Practices. Section 16 of Act 64 also establishes a mandatory certification program for custom manure applicators.

Comment 6-78: [Swayze]
I have not studied the lake issues closely but would suggest that many of the phosphorus additions are being carried into the lake through runoff. My recommendation for a long term turnaround in this process is to pay those who have control over the land for increasing the water holding capacity of the soil. There are documented organic farms that have increased the water holding capacity from 1/2" per hour to 8"s per hour. Measuring capacity is fairly easy and increasing capacity would reduce runoff especially in extreme weather events. This would not take the place of much of the regulatory issues but increasing water holding would directly impact runoff. Practices for increasing of water holding organic matter could be best developed by managers of the land with some education and cross-fertilization of ideas facilitated by soil conservation services or extension. The pay for improvement would galvanize action. There would also be the side benefit of: improved crop production, improved drought tolerance and the sequestration of carbon out of the atmosphere.

Response:
EPA agrees that increasing the water holding capacity of soils is an important part of addressing the challenge of phosphorus runoff from agricultural lands. Soil health management is one of the core components of the Nutrient Management Plans that will be required under the revisions to the Required Agricultural Practices. The USDA's Natural Resources Conservation Service encourages and can assist farmers with the development of a Soil Health Management Plan.

Comment 6-79: [Boomhower]
We know that the federal government is subsidizing large farms with a lot of money, specifically to plant corn.

We know that corn is a primary pollution problem for the lake.

We know that the federal government is sending a lot of money into the state to fix a lake pollution problem that they, in a large degree, caused.

I just found out, and others probably already knew, that the state can't tell the federal government how to direct the subsidy money that they send into the state, so it goes to grow corn, when it should be directed to grow sod based crops, not corn.

We need to find a way to redirect the federal subsidy money away from corn and toward sod and grass development, or would this reveal that the subsidy money is not federal money but really corn and chemical lobby money. In one hand and out the other, as they say.

Granted, if manure is spread on a well sodded field and there is a heavy rain, the manure will probably run off, but it won't take the supporting soil with it.

Response:
As the commenter implies, the nation's policies regarding agricultural subsidies are driven by policy choices at a much larger scale than Lake Champlain. Given the likelihood of continued subsidy for corn production, the question becomes how corn can be grown in a less environmentally damaging way.

Vermont's Implementation Plan seeks to broaden the use of conservation practices such as crop rotation, cover cropping and no-till.

Comment 6-80: [Alexander]
The Vermont winter spreading ban came into being ~1995 in an effort to "clean up the lake" and has not had the desired results. Instead it has spurred the installation of manure pits on farms that have been ill informed on all the management changes needed to manage manure pits including the "hidden" costs associated with liquid manure management system. It has also created farm management systems for manure application which require farmers to empty their pits during what is typically Vermont's wettest times. Making the spreading ban more stringent would only compound the problem. Because these manure pits must be sized to not only hold the manure, milkhouse waste, runoff from barnyards, rain, snow, and in some cases silage leachate, they are always large and very expensive construction projects which have the high potential to create neighbor relation issues. Vermont does have a process which will allow some farms to spread during the winter spreading ban, but the only farms that receive this permission are those farms whose manure pits are either in danger of over topping or are over topping.

Instead, Vermont should allow manure to be spread on certain "pre-qualified" farm fields during the winter months. Vermont has many farm fields where manure could be spread without impacting water quality. Criteria for field selection could be very easily be implemented and would not require any special training to pre-qualify a field. The steps could be as simple as no winter spreading in fields which flood in the spring, increase a no manure zone to 150ft to top of bank, fields must have a current soil test using the Modified Morgans Extract and the soil test P not be above 12ppm, limit the amount of manure that could be spread in winter, and in order for an annually cropped field to receive winter manure it must have an established winter cover crop. It might be easier to not allow winter spreading on annually cropped fields. Conservation Districts have a long standing relationship with the agricultural sector and many are uniquely situated to provide this service.

The EPA and Vermont should not require non-CAFO farms to implement an NRCS 590 Standard Nutrient Management Plan for many reasons. First and foremost, there is a serious lack of staff that is trained to write the full Land Treatment Plan (LTP) that is needed for a 590 Plan, not to mention keep the LTP updated. Writing the full LTP as required by NRCS is a time consuming endeavor and it contains many steps that are not necessary for good nutrient management planning. There are also many items required in the LTP that have nothing to do with farming. Instead they smack of fishing expeditions for potential future contacting by NRCS. There are many small farms that do not do business with the NRCS and Farm Service Agency so they do not have the ability to access the few trained staff available. Nutrient management planning does not have to be based on complicated systems. It can be as simple as teaching farmers how to manage their manure to improve soil health while improving crop yield and to not apply manure and nutrients at rates that exceed crop removal. UVM Extension and some Conservation District are working diligently on teaching these concepts to farmers. I have found great success in providing farmers a list of fields that have high soil test P based on soil samples then recommending that they reduce or eliminate phosphorous in their corn starter fertilizer for those fields. Depending on the soil test results, there are times that I also recommend they reduce their manure application as well. Farmers understand that their manure is a valuable asset and not something to be used unwisely.

Lake Champlain did not reach its current state overnight. To think that major improvement can be made in five or seven years is unrealistic and a receipt for disaster.

Response:
EPA will share all comments received with the Vermont agencies. The specific points raised by the commenter regarding the winter spreading ban is one for the Agency of Agriculture, Food, and Markets to consider as it makes revisions to the Required Agricultural Practices. The TMDLs identify load allocations but they do not themselves impose any specific requirements to achieve the loads, such as the implementation of an NRCS 590 Standard Nutrient Management Plan. Vermont's current permits for Large and Medium Farm Operations do require nutrient management plans that meet the "590 standard." The August 2015 version of Vermont's Phase I Implementation Plan envisions the use of a range of factors in determining whether small farms will be required to complete plans to meet the "590 standard." The commenter is encouraged to participate in the Agency of Agriculture's development of the requirements for small farms.

EPA received two comments from the same individual that cover overlapping topics. A consolidated response is provided after the second comment.

Comment 6-81: [Boivin, 1]
The Ten-foot Buffer is Counterproductive.
Imposition of a ten foot setback on all agricultural drainages is arbitrary and capricious. It will result in more pollution rather than less. Most field ditches were designed and built under the supervision of the Soil Conservation Service, an Agency of the U.S.D.A. SCS was tasked with protection of the soil. And with reducing soil erosion. Soil conservation and clean water are congruent objectives; the more earth that is retained on the land the less goes into and pollutes the water. Over the years the SCS did more to improve the waters of the nation by assisting landowners in addressing local water control problems than the EPA will ever accomplish with all of its regulations.

Concentrated, high velocity, high volume water flows are the major cause of soil erosion and water degradation. Agricultural field ditches with engineered volumes, slopes and outlets were the SCS's major tools to address these problems. The SCS designed holding ponds and diversion ditches slow, control and reduce these water surges. Some ditches collect water flowing directly down a hill and diverted the flow laterally before the unimpeded water would scour the slope. Other ditches collected and redirected water away from outlets that had an excessive volume of water to those that had more capacity. Still others collected storm deluges and discharged the water over several days.

Although every ditch has a different function they all have the same goal; to keep the soil and its nutrients on the land and out of the water. This was accomplished by controlling the volume, speed and discharge rate of the water. Volume is managed by the size and spacing of the waterways. Speed is controlled by the slope of the channel. The discharge rate is regulated by changing the slope and width of the discharge area. Occasionally a restriction, like a culvert, is installed in the outlet to retain storm torrents and delay the discharge of water like those that occurred during Irene. This process should be familiar to anyone who has ever had their driveway culvert backup water onto their lawn. Many ditches end at either a stone lined or grass watercourse.

As they catch the water and slow the velocity agricultural ditches act as settling ponds. These waterways require regular maintenance. The soil that is captured must be returned to the field on a regular basis. The requirement of a ten foot buffer will prevent the cleaning and renewal of these water quality structures.

This new regulation will incentivize the destruction of previously constructed water quality structures. A ten foot buffer can in some cases remove more than 20% of some fields from production. Ironically these will be the fields that have the ditches the closest together because of a higher risk of erosion. Given this loss of usable land and the resulting economic loss, the landowners incentive is to till through the berms, destroy the water channel, and to let the water find its own high speed path straight downhill. Rill and sheet erosion will result.

Even if previously constructed watercourses are not destroyed, this regulation will created [sic] a strong incentive for landowners to not create more water management structures. For example the passage of the 1985 Clean Water Act with its accompanying regulations almost stopped construction of agricultural waterways in Vermont. This regulation will have the same chilling effect.

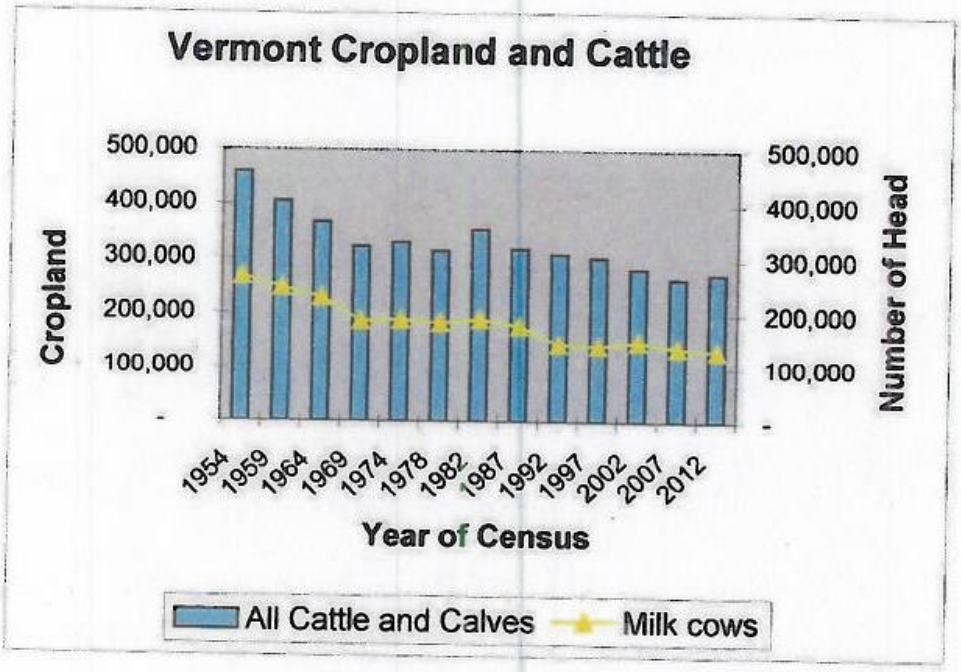
It will rain. The water will flow. Water will find its own course if not controlled. If it is not provided a safe outlet it will build up until it overflows its banks. The result will be flood surges and massive erosion. The question is do we want all that water to find its own path or do we provide a safe path thus improving water quality and reducing erosion. Agricultural ditches should be considered as a water quality improvement tool; as pollution abatement structures and not as a source of pollution.

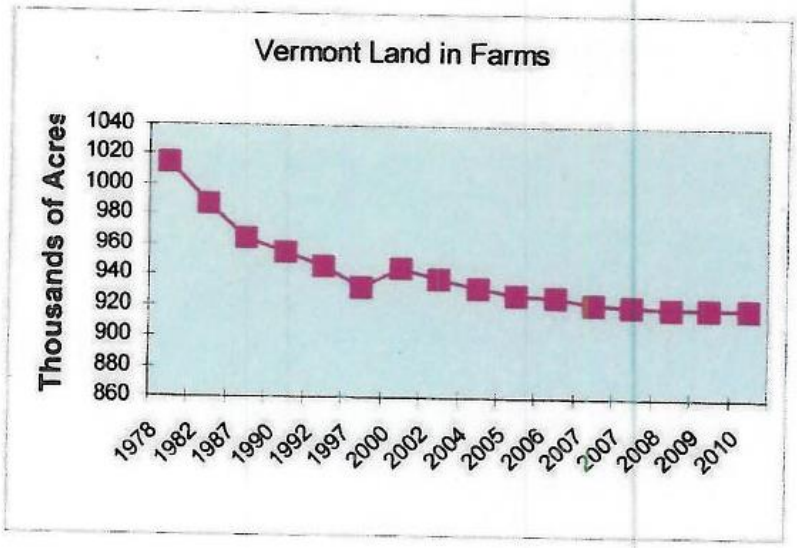
Imposition of a ten foot buffer for agricultural water control ditches and retention areas is contrary to the goal of improving water quality in Vermont. A simple requirement that the bottoms of all agricultural ditches have a vegetative or other non-erodible cover is a better solution.

Comment 6-82: [Boivin, 2]
Rather than addressing the most concentrated flows of pollutants into the lake the EPA/Vermont rules try to get the required reduction from agriculture. This will fail for the following reasons.

First there has been presented no scientific evidence that shows that the proposed policy of placing the burden on farms will reduce phosphorus into the lake.

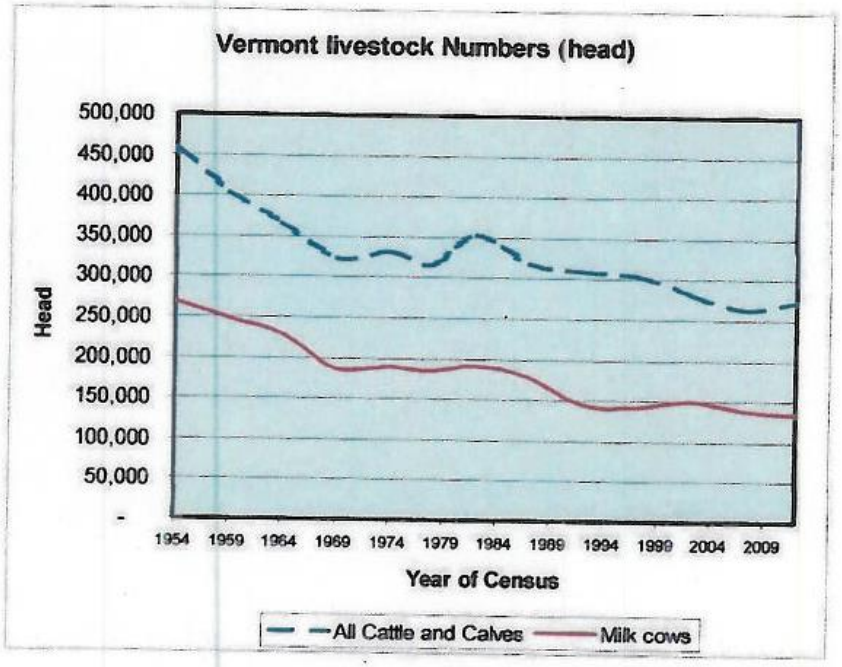
Since 1952 the number of farms, cattle and cropland has decreased.





Year	Vermont Land in Farms
1978	1015
1982	987
1987	964
1990	955
1992	946
1997	932
2000	945
2002	938
2004	932
2005	928
2006	926
2007	922
2007	921
2008	920
2009	920
2010	920

Year	All Cattle and Calves	Milk cows
1954	459,707	268,759
1959	405,546	247,903
1964	367,675	229,757
1969	323,707	187,251
1974	331,990	189,206
1978	316,984	184,860
1982	355,104	191,089
1987	320,189	178,967
1992	310,518	145,715
1997	304,639	142,916
2002	283,619	150,626
2007	264,823	139,719
2012	274,251	134,142

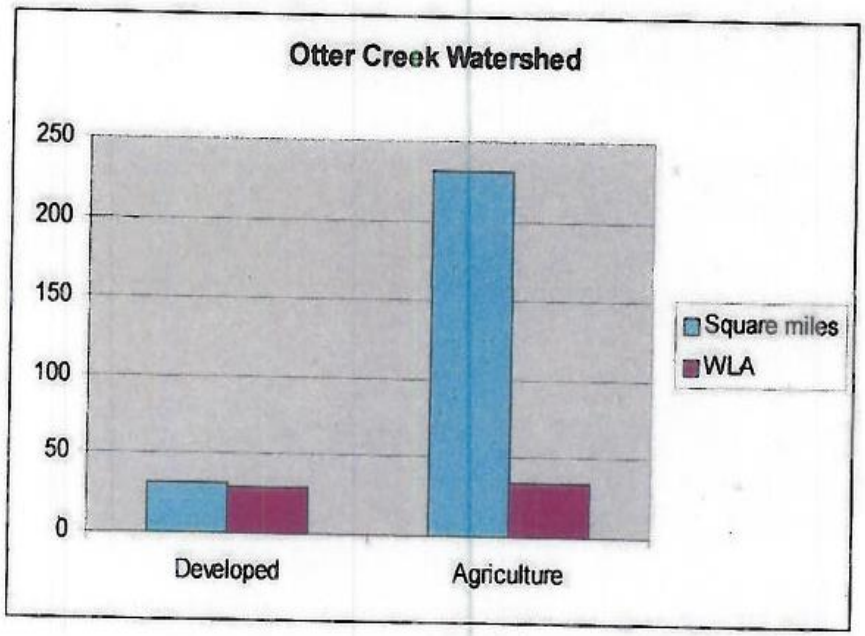


The data in your reports shows that phosphorus levels in the lake are increasing while agricultural land, cattle and crops are declining. It is logical that agricultural land use does not cause the higher phosphorus data points. During the same period the amount of developed land and forest land has increased. Since the original environment of this state was forest it is logical that forest is not the cause of increased phosphorus levels. Urban development has claimed a much larger share of the land area. In 1958 Flynn Avenue was the southern end of Burlington. Not all those farm fields between Burlington and Shelburne are characterized best as parking lots and car dealerships. The land where UVM dorms are was cornfields as was all the land to the east on Williston Road.

There is a direct correlation between the increase in impervious surfaces and water degradation. Increased phosphorus levels in the lake is not the problem, it is the consequence, the major symptom of the failure of controlling water runoff. Phosphorus is carried into the lake by water either dissolved or attached to soil or organic matter. High velocity, high volume, concentrated flows are the underlying problem creating the effect that we see in the lake. The most concentrated flows are from the WWTF. Overflows are the outcome of

inadequate capacity, design or restriction of the incoming water. The latter is the end result of substitution of impermeable surfaces for the naturally occurring landscape.

NOAA calculates land use data. Using Otter Creek as an example, NOAA has determined that the watershed was 3.38% developed with 1.09% impervious surface. A total of 31.9 square miles was developed. An additional 0.72 square miles were developed with an additional 0.26 square miles of impervious surfaces added between 1996 and 2010. The waste load allocation for this developed land on table 7 is 28.56. In contrast agriculture has 231.59 square miles and an allocation of 35.48.

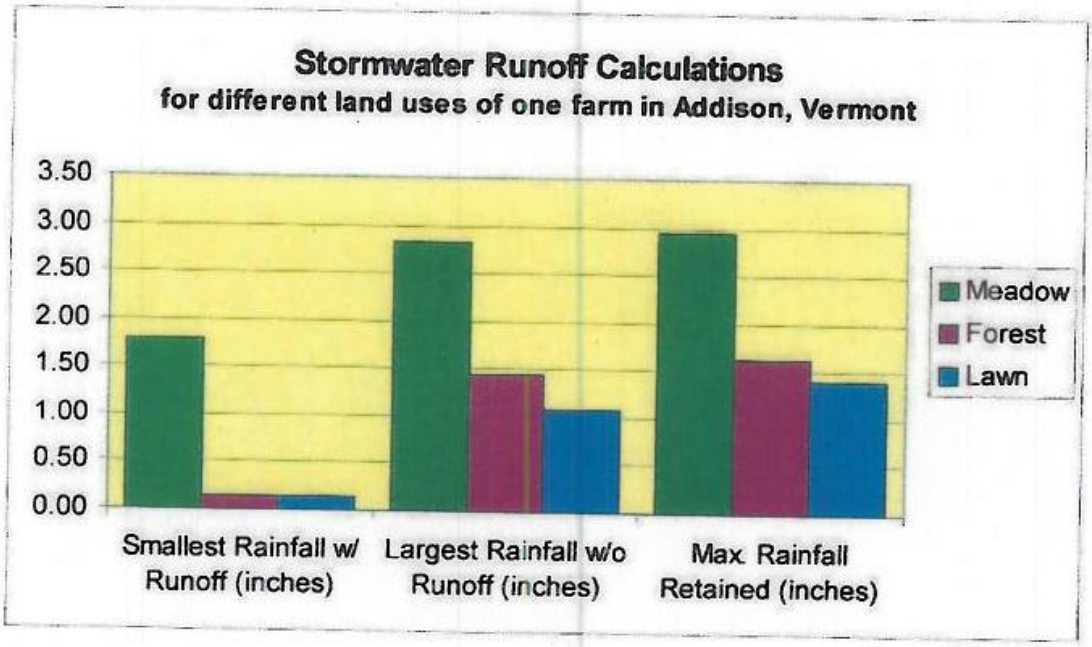


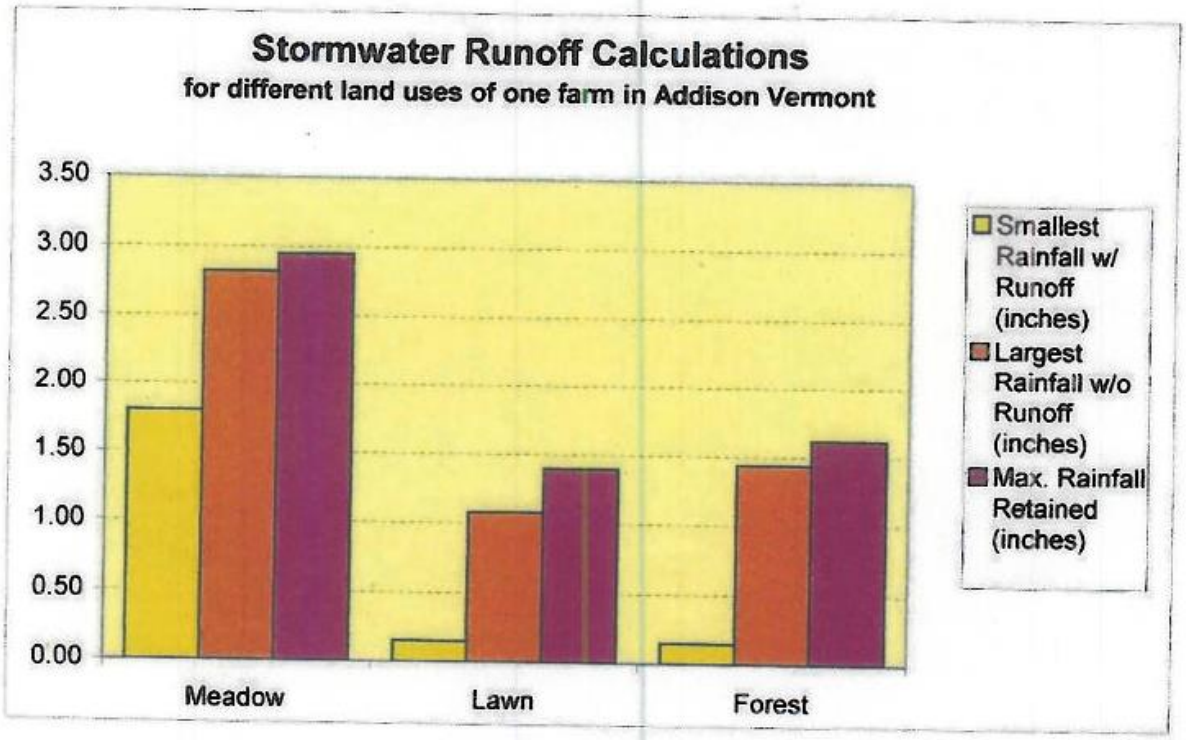
The above chart demonstrates that although agriculture is by far the larger area of land and produces less runoff it is allocated nearly the same Waste Load Allocation as the much smaller urban areas.

Using one of my fields as an example I calculated the stormwater runoff using the US EPA National Stormwater Calculator –Release 1.1.0.0. The soil type is Covington which is considered a hydric soil with a permeability of 0-0.06 inches per hour and a Kw of .49; Kf of .49 and a T value of 2. It is one of the densest soils in Vermont. The results of the calculation for the three different covers are below. The continued use as a meadow has the lowest rate of runoff. Meadow has the retains [sic] the largest amount of rainfall before runoff of all the uses and the maximum amount of rainfall retained. It therefore will lose the least amount of soil or phosphorus.

Addison Vermont

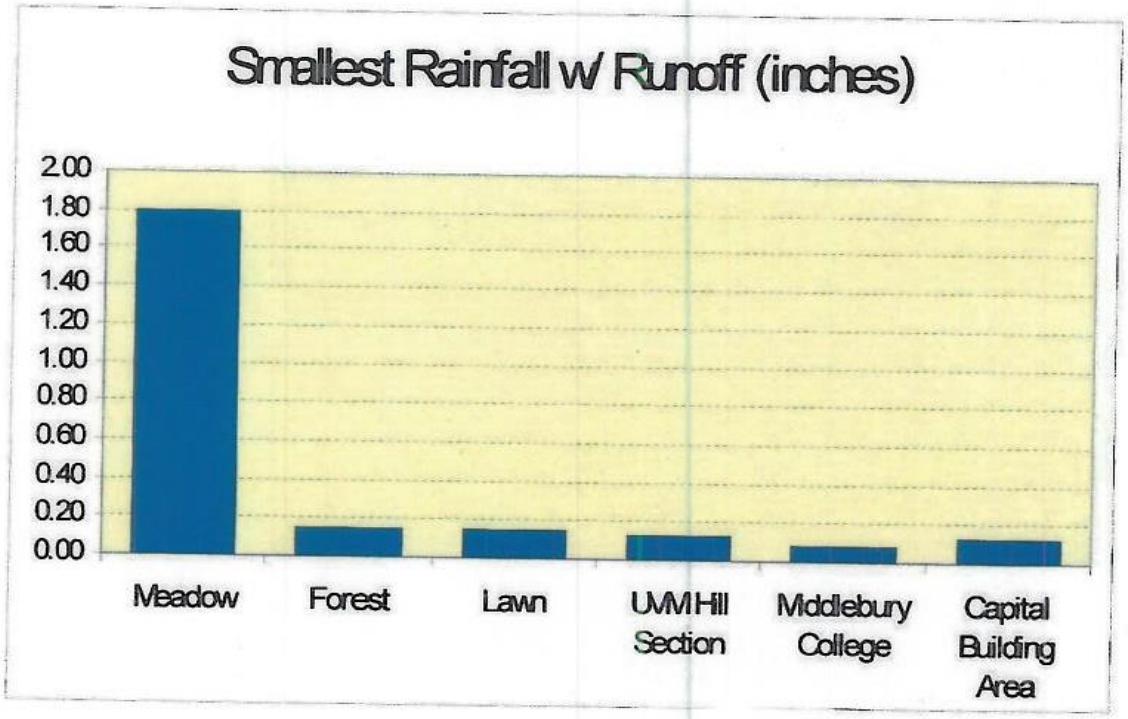
Field Cover	H23 Meadow	H23 Lawn	H23 Forest
Average Annual Rainfall (inches)	37.00	39.04	39.04
Average Annual Runoff (inches)	0.13	5.96	3.52
Days per Year with Rainfall	80.84	87.32	87.32
Days per Year with Runoff	0.35	12.49	7.49
Percent of Wet Days Retained	99.57	85.69	91.42
Smallest Rainfall w/ Runoff (inches)	1.80	0.15	0.15
Largest Rainfall w/o Runoff (inches)	2.82	1.08	1.44
Max. Rainfall Retained (inches)	2.95	1.40	1.62

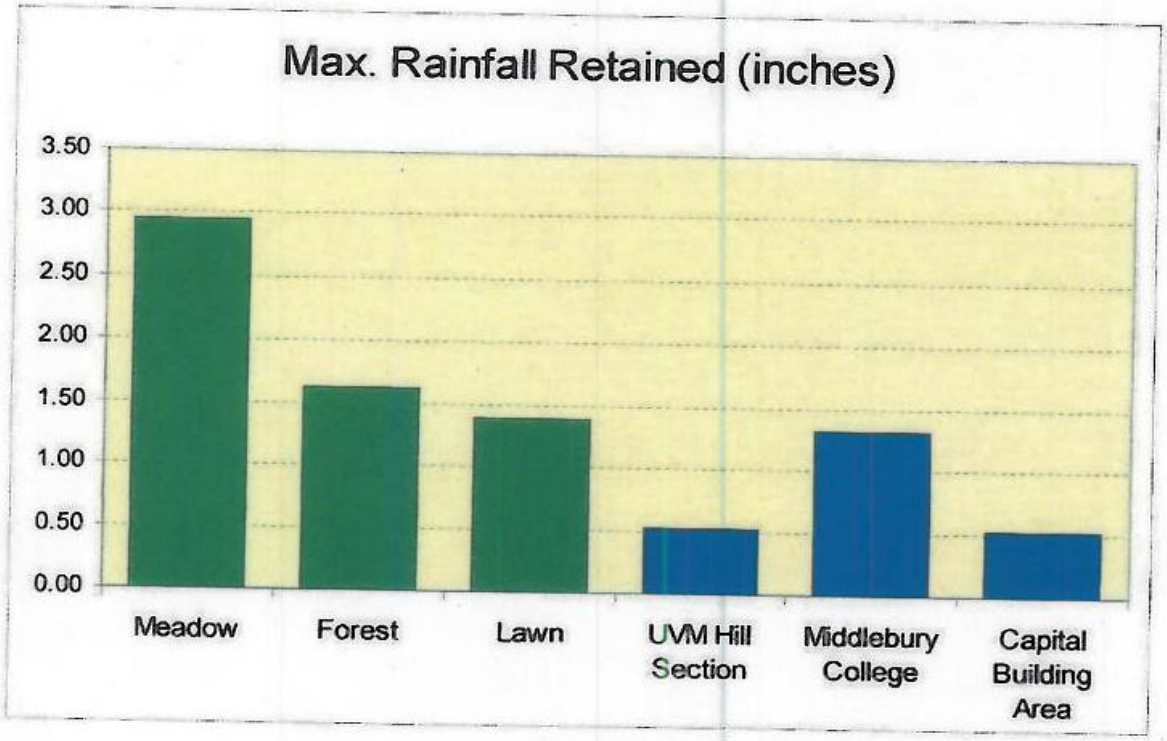


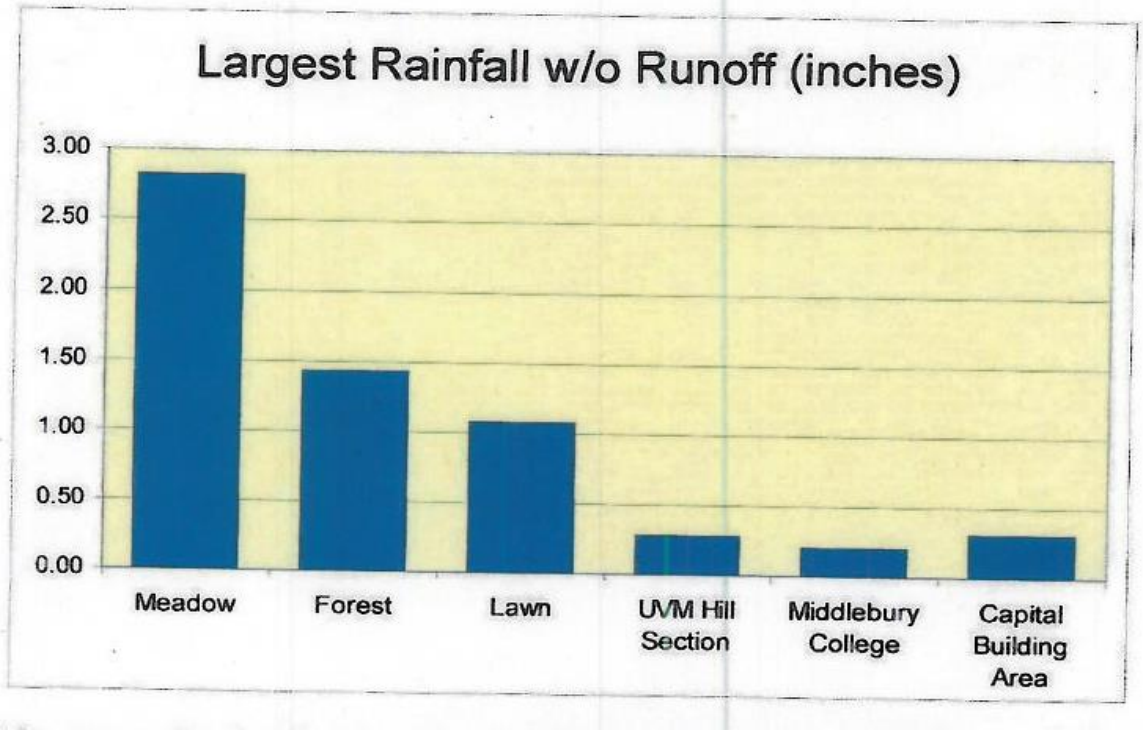


For comparison I repeated the analysis for the section of UVM that was mentioned above and for Middlebury College and the Capitol building in Montpelier.

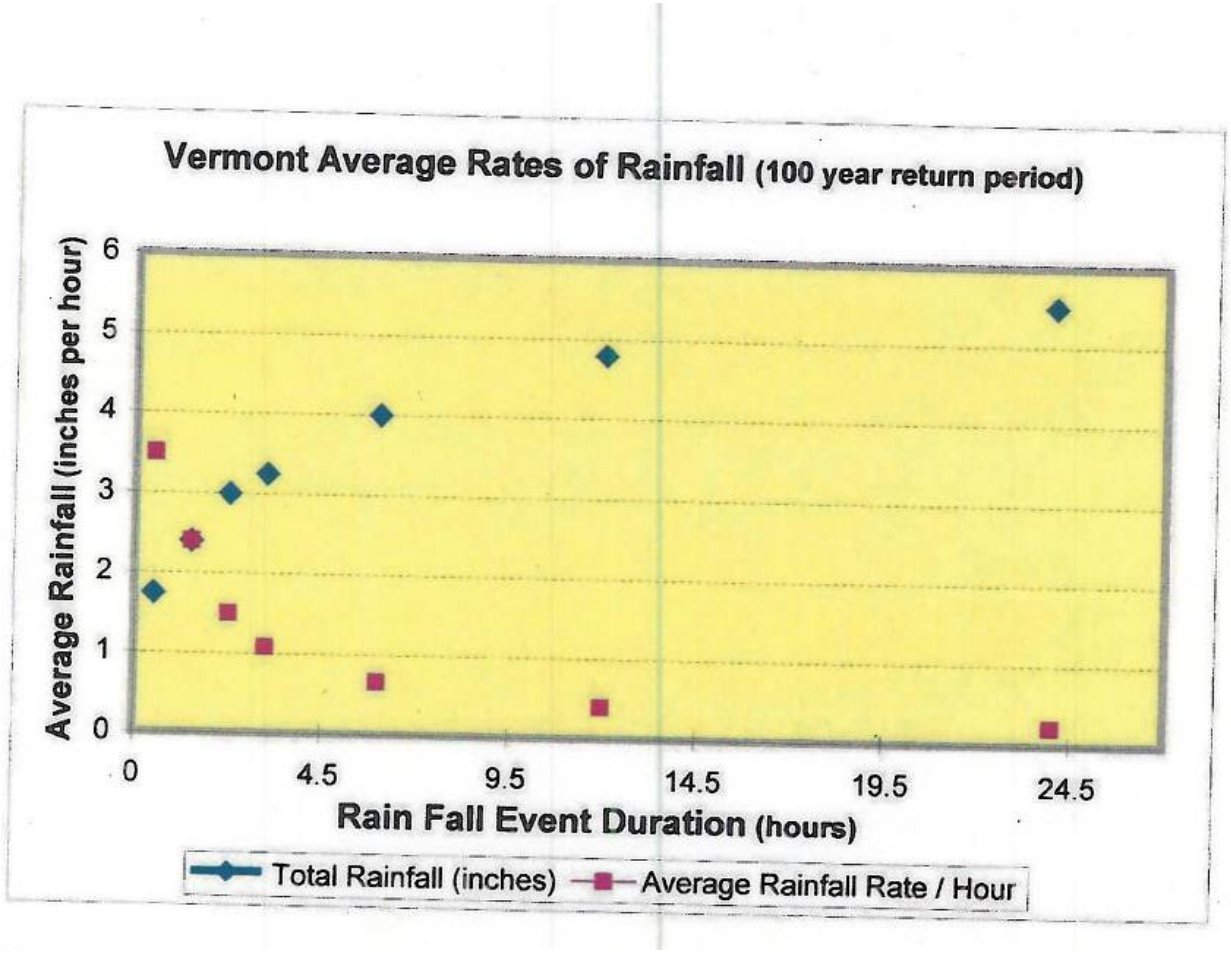
Cover	Smallest Rainfall w/ Runoff (inches)	Largest Rainfall w/o Runoff (inches)	Max. Rainfall Retained (inches)
Meadow	1.80	2.82	2.95
Lawn	0.15	1.08	1.40
Forest	0.15	1.44	1.62
UVM Hill Section	0.12	0.28	0.52
Middlebury College	0.08	0.20	1.32
Capital Building Area	0.12	0.31	0.53




Max. Rainfall Retained (inches)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Meadow
Forest
Lawn
UVM Hill Section
Middlebury College
Capital Building Area


Largest Rainfall w/o Runoff (inches)
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Meadow
Forest
Lawn
UVM Hill Section
Middlebury College
Capital Building Area

The reason for the disparity in runoff is that field crops transpire a lot of water and in fact [sic] deficient in water during the summer. The impervious surfaces of buildings, parking lots and roads quickly shed the rainfall. Examining the historical Vermont Rates of Rainfall we find that high rates are generally short lived. Irene had 10-12 inches over a 20 hour range and the 1927 flood had 27 inches over 48 hours.



The average was about one half an inch per hour. The great difference was that the duration and the resulting volume overwhelmed the environment. We know that Irene flushed a lot of phosphorus into the lake. It should be apparent that these large high velocity/volume flows are the greatest risk to the lake. They not only create a lot of erosion but they also overwhelm any WWTF. Buffer strips are quickly overwhelmed and amount to nothing. It is clear from the above data that slowing the rate of runoff will reduce erosion and the amount of phosphorus in the lake.

On page 145 one of the list of "climate ready strategies" is *Stormwater control structures that reduce erosion and nutrient transport."* What this means is that the EPA must adopt the old USDA Soil Conservation Service manual methods. The EPA mandated regulations stand in the way of these methods. One of the methods in the

manual is the creation of diversion ditches. The proposed mandate of a 10 foot buffer would make many of these ditches uneconomical for a landowner to create or maintain. Draining of hydric soils is another method. By lowering the high water level in agricultural fields the water absorption ability will be dramatically increased. Saturated soil acts as an impervious surface. Water will all run off and none will be absorbed. Field ditches will hold water and can be designed to discharge a large storm over a 30 hour period without adversely affecting the crops. The creation of settling basins and ponds will also reduce the speed of the stormwater discharge. The problem is that the EPA takes legal action against landowners that create them. See the attached article. Moreover the landowner runs the risk that a seasonal water run would be declared a navigable waterway and/or the outlet a point source.

The current grab for jurisdiction that this EPA/Vermont deal should make every landowner reluctant to do anything. The fact is that regulations will not make anyone do anything. The most normal result of regulations is to freeze everything in place. The current situation is "grand-fathered" and anything different is at risk. In conclusion, the decision to hold the WWTF sacrosanct is solely political to further the EPA agenda and to avoid the financial consequences of the truth for the State of Vermont. Secondly, agriculture is not the source of the phosphorus going into the lake, high volume, high velocity, concentrated stormwater is the cause. Thirdly, the rules being adopted are counter-productive and will only create an obstruction to clean water. Fourthly the EPA must reexamine its rules affecting farm fields and draining of agricultural soils.

Consolidated Response:

The main points offered by the commenter are summarized in the paragraph immediately above and are responded to here in the same order.

First, the assertions that WWTFs were held sacrosanct is incorrect. As described in Section 6.1.1.1 of the TMDLs and summarized in Table 9, of the 59 WWTFs, 28 have reduced allocations compared to the 2002 TMDL. In the five lake segments where EPA has targeted WWTF reductions, the reductions range from 51.9% to 66.7%. [In the five lake segments where EPA did not target reductions, the combined WWTF contribution was less than 3 % of the base load and the combined WWTF allocation is less than 9% of the total allocation.]

Second, EPA agrees that runoff from impervious surfaces is an important component of the precipitation driven phosphorus load, but disagrees with the assertion that agriculture is not a source. Agricultural lands are also an important source. While agricultural lands may have a lower loading rate - pounds of phosphorus per acre – compared to some impervious surfaces, there are many more acres of agricultural land than there are acres of impervious surface. The calculated base load from agriculture across the Vermont portion of the Lake Champlain basin is more than twice the load from the sum of developed lands and back roads (249.5 vs 113.1 metric tons/yr). The TMDL requires significant reductions from the developed lands, back roads and agricultural sectors.

As to the suggestion that declining numbers of farms, acres of cropland and numbers of cows means that agriculture's footprint is declining, these data tell only part of the story. For instance, the number of acres and yield of corn – a nutrient intensive crop - for feed in Vermont nearly doubled between 2007 and 2012 while the acres of forage crops remained nearly the same. [USDA Census of Agriculture, 2014]. And while the number of milking cows may be slightly declining over time, the output of those

cows continues to increase – up 5 – 8% per cow between 2002 and 2011- in part due to the increase in phosphorus containing inputs. [USDA New England Agricultural Statistics, 2011.]

Third, regarding the assertion that measures such as buffers are counter-productive, according to the U.S.D.A.'s Natural Resources Conservation Service, conservation buffers work environmentally because they:

- Control soil erosion by both wind and water.
- Improve soil quality.
- Improve water quality by removing sediment, fertilizers, pesticides, pathogens, and other potential contaminants from runoff.
- Enhance fish and wildlife habitat.
- Reduce flooding.
- Conserve energy.
- Protect buildings, roads, and livestock.
- Conserve biodiversity.

Conservation buffers work economically because of financial incentives available through USDA conservation programs--the continuous Conservation Reserve Program (CRP) sign-up, Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentives Program (WHIP), Wetlands Reserve Program (WRP), and Conservation Stewardship Program (CSP).

Consideration of buffer size was addressed by the General Assembly in Section 4 of Act 64 which requires the Secretary of Agriculture, Food and Markets to amend by rule the required agricultural practices in order to improve water quality in the State. Among other things, "the amendments to the required agricultural practices shall require a farm to comply with standards established by the Secretary for maintaining a vegetative buffer zone of perennial vegetation between annual croplands and the top of the bank of an adjoining water of the State. At a minimum the vegetative buffer standards established by the Secretary shall prohibit the application of manure on the farm within 25 feet of the top of the bank of an adjoining water of the State or within 10 feet of a ditch that is not a surface water under State law and that is not a water of the United States under federal law."

Forests

Comment 6-83: [Wood]
Attached to [below] this cover letter please find my comments on the Draft Lake Champlain TMDL.
Thank you for the opportunity to provide public comment on this very important document.

Please consider these comments carefully. My comments are made as a private citizen. I am not representing any organization or special interest. I am a private consulting forester working with forest land owners in the Lake Champlain Basin. I have worked in natural resource management for over 35 years, including many years actively managing forest harvesting operations. The Draft TMDL will need to be corrected. I have investigated the calculations, data and assumptions used by EPA in the TMDL development. The numbers generated for the

forest land sector dramatically over estimate the level of phosphorus contribution from forests and forest management activity.

This major inaccuracy was avoidable. During the Draft TMDL development many experts have repeatedly raised questions and/or identified problems. This is a matter of public record. The EPA has chosen to ignore and downplay these concerns. EPA has now issued a Draft TMDL that drastically over-estimates the pollution exports and achievable reduction targets for forests.

The calculation errors have been articulated, in writing, by the national experts consulted by the EPA and the issues have been repeatedly raised by staff from the Vermont Agency of Natural Resources. Foresters have consistently questioned the data and assumptions used.

When I spoke to EPA staff working on the TMDL about the inaccurate accounting and flawed reduction targets, the response was ?there is so much phosphorus in some parts of the lake we just had to spread the numbers around so it would work? ? (Perkins, EPA via phone on 8/20/2015). This is an irresponsible and illegal approach to such an important legal document.

The use of flawed metrics clearly violates the two major legal parameters that initiated the EPA TMDL process. Using over-inflated numbers, there can be no "reasonable assurance" that phosphorus reduction targets can be achieved. With the use of questionable data and false assumptions, there can be no "margin of safety" in plans for water quality improvement. If not corrected the Draft TMDL can, and will be, legally challenged.

The state of Vermont has enacted new laws and made funding investments based on the TMDL. The facts show that this is based, at least in part, on contrived information that is scientifically unjustified. Forest landowners and foresters are proud of the way we manage the forests of Vermont. We seek continuous improvement in our work. More can, and will be done, to improve the protection of water quality. Work to improve forest practices must be based on sound science. The Draft EPA TMDL is not a fair and reasonable measure of forests in Vermont. Vermonters and others cherish Lake Champlain. Please correct your work and provide us all with a reasonable assurance of accuracy and legal compliance.

[Attachment follows]

Introduction

The EPA Draft TMDL has been improperly calculated for forest land. These comments explain the most basic mistakes and problems. There are many other issues that are causing inaccurate estimations in the document. These are not small or insignificant discrepancies. These are major systematic over-estimations that dramatically exaggerate the phosphorus contribution of forest land and forest land management. The Draft Lake Champlain TMDL is wrong and unacceptable.

Incorrect Assumptions, Misuse of Data, Improper Calculations, False Conclusions.

Appendix B of the Lake Champlain TMDL prepared by EPA explains how the cited literature, and assumptions were used to calculate the estimated contribution of phosphorus into the lake.

Several sources were used by EPA to create the estimations. Many of the sources of data used by EPA were not developed in Vermont or even New England forests. Much of the data utilized is from areas with soils and forest harvesting technologies very unlike those typical in Vermont.

The use of geographically inconsistent and non-typical harvest type data sources could be a standalone challenge to the estimations made by EPA. However, the overestimations in the other parts of the calculations are so egregious in nature that they make challenging the basic inputs subordinate. The needed revisions to the Draft TMDL should make use of available local data. Vermont has recently completed a Timber Harvesting Assessment (VTHA) authorized by the Vermont Legislature. It was conducted by the Vermont Department of Forests, Parks and Recreation and is a systematic scientific sampling of harvesting operations in the state. The results of this assessment give us actual data that can be used to examine and compare the "assumptions" used by EPA. The VTHA shows that EPA's assumptions and calculations are clearly incorrect and arbitrary.

The EPA has been repeatedly challenged throughout the TMDL development process on the use of incorrect assumptions. National experts and Vermont forestry authorities have consistently pointed out issues with the calculations. There is a written record of these concerns.

Best Management Practice compliance is lacking? (False Assumption by EPA)
EPA makes the assumption throughout its calculations that Best Management Practices (BMPs) are not commonly used in forest management activities in Vermont. This is untrue. The VTHA shows that there is a very high level of compliance with and deployment of BMPs on harvesting operations in Vermont. A previous assessment in 1999 also showed a high level of compliance at that time. This assumption and the use of data from operations in other states with low or minimum BMP compliance levels is inappropriate and has helped lead to an overestimation of both Vermont's forest run-off outputs and the phosphorus reduction achievement potential.

Harvested acres are consistent across the state? (False assumption by EPA)
EPA has used a figure of 1% as the level of harvesting in the forests of the Lake Champlain basin. The VTHA showed a figure of .6% as a statewide figure. The fact is that the Champlain basin has the largest proportion of both developed land and agricultural land in the state. It also has the most parcelized and fragmented portions of Vermont. There is most likely less timber harvesting in the Champlain basin, as compared to other more rural areas of Vermont like the Northeast Kingdom and Connecticut River valley. The VTHA data shows this correlation.

Forest roads are the same as municipal roads? (False assumption by EPA)
When calculating the phosphorus exports from forest roads EPA has chosen to use the same level that was estimated for municipal roads. This is an unfair comparison. Municipal roads are both traveled and maintained (graded) on a far more regular basis than most forest roads. The vast majority of forest roads are stabilized and closed following use. Many are gated or blocked. The surface of these roads revegetates in many cases. Many roads are intentionally seeded down for long-term stabilization purposes. They are narrower than town roads and have required BMPs installed including turn outs, broad based dips and water bars. They are not comparable to town roads. When estimating the exports from forests EPA decided to take the areas estimated of forest roads, as a percentage of the forested area, and separate this from the formula. This means that the area estimated to be covered by roads (4.5 %) was allocated at the full municipal road export level regardless of the road size, condition or use. The use of the same output numbers as municipal roads results in an overestimation

of the output from forest roads and forest land. This also leads to a "double counting" for forest roads (see below).

Forest road phosphorus counted separately from the forest land data (Double counting)
EPA decided to use a figure derived from the literature cited for "undisturbed forests" these would be the "unharvested" forests. To estimate the outputs from "disturbed forests" they used data from literature that compared "harvested" forest areas to "undisturbed" forest areas. (Showing P exports 3 times for harvested areas). The study data used included the road systems to estimate exports. By including the roads in the data used, but then calculating and adding the road exports separately (at the municipal road rate) then adding them together, the road exports are being doubled at a minimum.

Harvested areas are 100% "disturbed" - (False assumption by EPA)
EPA also has decided that for their calculations a "harvested" forest area (the 1%) is to be calculated as 100% "disturbed" as if every inch of ground was impacted down to bare soil. This is completely untrue. The VTHA showed that for a typical Vermont harvest about 15% of the harvest area is actually "disturbed". The misuse of this information overestimates the output by some 85% on all of the forest land area included. The use of this incorrect assumption alone, dramatically overestimates the amount of phosphorus export from forest land.

Harvested areas export phosphorus for 3 years? (Exaggerated data use by EPA)
Incorrectly, EPA also used a "Rule Of Thumb"* that forest areas which are harvested continue to export phosphorus for a period of 3 years following a harvest. (There is some merit to this concept and some data to support a 3 year period). But, the export levels are not the same each year following a harvest, especially when BMPs are employed as they are in Vermont. They become less each year as the site and disturbed areas revegetate and regenerate over time. EPA decided to use the "Rule Of Thumb" and applied it to the entire harvested areas (The 1%). To do this EPA simply tripled the 1% area up to 3% to account for 3 years of full phosphorus export. By tripling the harvested area, assuming no BMP use, and assuming 85% more disturbance than what the data shows, the EPA has drastically overestimated the phosphorus export from harvested forest lands in the Lake Champlain basin.

*NOTE: The "Rule of Thumb" citation by EPA was: "Personal communication 2015" with the "Maine Department of Environmental Conservation". There is NO "Maine Department of Environmental Conservation", it does not exist.

What is the extent of overestimation?
Based on the above examples of the misuse of data and improper calculations it is nearly impossible to determine the degree of overestimation by EPA for the forest land numbers. They are clearly over-estimated many times at a minimum. When all of the incorrect factors are added to each other, the result is a multiplier effect resulting in multiple times what any reasonable estimation, would conclude.

Utilizing non-regional and data from more intensive harvesting exaggerates the metrics.

The use of the municipal road rate instead of a forest road rate produces an increase.

Double counting the road export data doubles, at a minimum, the major export factor.

The assumption of no or minimal BMP use multiplies the contribution and needed reductions.

Incorrectly assuming that harvested areas are 100% disturbed (the actual amount is 15%) magnifies the numbers by more than 5 times the Vermont Timber Harvesting Assessment data.

Multiplying the harvested area by 3 times (for 3 years of continued export) at the same rate as the first year is unfair and multiplies the "disturbed" area mistake again.

Combining the multiple incorrect assumptions and mistakes causes an extreme magnification effect. The Draft TMDL numbers are clearly many, many times any actual amount possible.

Conclusion
The fact that the TMDL estimations of phosphorus export from Vermont forest land are extremely inflated makes any assignment for reduction targets for forest land unrealistic and unachievable. This will place an unfair, unachievable and unreasonable burden on forest landowners, foresters, harvesting professionals and Vermont Legislators.

For example, the TMDL forest land reduction targets for Missisquoi Bay and South Lake B sections are at 60% of the current (Draft TMDL) amounts. This reduction target is impossible to achieve (even IF no BMP's were being used) because it is wrong. Given that we have studies that show high BMP compliance, this target is preposterous at best. Assigning the wrong targets to forests makes them unachievable no matter what new measures are implemented.

These outlandish calculations must be corrected. Major public policy decisions are being made based on the EPD TMDL. These will be made in error if the numbers are not corrected.

Scarce resources may be allocated where they will not make the reduction impacts they are intended to make. New and unnecessary regulatory initiatives may be imposed on the owners and managers of forest lands based on false information. This will make the ownership of forest land less attractive to landowners who may choose to convert their forest land into other more profitable uses. Any alternative land use will export more pollution into Lake Champlain.

Forest land is the best use of land to protect water quality. Maintaining and creating incentives for the long-term ownership and stewardship of forest land is one of the best tools available for improving Lake Champlain water quality. The improperly developed EPA Draft TMDL is a major impediment to that goal. It improperly characterizes forest land and forestry.

There are many experts and resources available to EPA that can help to correct the Draft TMDL.
The EPA must do a better job with the estimations. Please fix the Draft TMDL.

Response:
EPA considered the commenter's suggestions carefully and made a number of adjustments to the calculations of phosphorus reductions achievable from forest land. These adjustments are described below and reflected in the revised forest section Appendix B of the TMDLs. However, it is important to note for the record that EPA was not "…repeatedly challenged throughout the TMDL development

process on the use of incorrect assumptions." EPA received a comment letter early on in the TMDL process from this same commenter, stating that he believed the model estimates of phosphorus loads from the forest sector were too high. In the absence of measured phosphorus loading data from Vermont forest lands, EPA has continued to rely on the modeling estimates, which are in line with the loading rates reported in the literature for forest lands in other areas. In addition to this early comment, EPA received one other comment informally (much later in the process) from a national expert who reviewed EPA's calculations prior to the release of the draft TMDL document. The national expert supported EPA's analysis and approach, with the exception of one concern regarding the possible double-counting of road and harvest areas (Edwards, 2015). While this issue had little effect on phosphorus load estimates, the concern has been addressed in the final TMDLs, as described below.

In addition, the commenter mischaracterizes a phone conversation he had with EPA on 8/20/2015. On that call, EPA indicated that, due to the large amount of phosphorus reduction needed from some lake segment watersheds, EPA needed to look for phosphorus reduction opportunities from all major source sectors, including the forest land sector. EPA did not suggest that the Agency simply needed "to spread the numbers around to make it work." EPA carefully evaluated the loadings from all source sectors and established load allocations consistent with the attainment of water quality targets in each lake segment.

The commenter states that EPA's use of "flawed metrics" jeopardizes reasonable assurance and margin of safety provisions of the TMDLs. Thanks in part to the recommendations of the commenter, EPA has strengthened the analysis as described below. EPA believes the analysis is based on sound science and the best available information, and is an important component (together with the State's commitments in the Phase 1 Implementation Plan) of the reasonable assurance provisions for the forest sector. The revised analysis was reviewed by a national forestry expert (Edwards, 2016) and a Vermont State forestry expert (Sabourin, 2016).

Each of the main issues raised by the commenter regarding the analysis in Appendix B of the TMDLs are addressed below, organized by the headings in the commenter's letter, reproduced in italics.

Incorrect Assumptions, Misuse of Data, Improper Calculations, False Conclusions
The commenter advocates for the use of local Vermont data rather than data from other areas of the country. In particular, the commenter suggests use of the Vermont Timber Harvesting Assessment. In the revised calculations, EPA did make use of the Vermont Timber Harvesting Assessment for the types of information that it addresses, such as AMP compliance rates. However, EPA also made use of data from external sources for data categories not available in Vermont, such as forest BMP effectiveness for sediment and phosphorus reduction. EPA regulations acknowledge that use of site-specific information will not always be possible (40 CFR 130.7(c)(1)(i)). Until studies addressing data categories such as forest practice effectiveness are conducted in Vermont, carefully conducted watershed studies from other areas (such as those used in this case) represent the best source for this type of information. EPA only utilized effectiveness studies from the eastern U.S. to minimize potential watershed disparities.

Best Management Practice compliance is lacking? (False Assumption by EPA)
In the revised calculations, EPA made use of the Vermont Timber Harvesting Assessment data on sedimentation at stream crossings – a key avenue for phosphorus loading from forest roads. Two timber harvesting assessments have been completed in Vermont – one in 1990 and one in 2012. (The

commenter referred to a 1999 assessment, but EPA was unable to identify any assessment done in 1999.) In order to better approximate the level of compliance prior to the TMDL modeling period (which began in 2001) EPA used data from the 1990 timber harvesting assessment. EPA recognizes that compliance has improved since 1990. That is a very positive factor: Improved compliance with AMPs will allow the state to document substantial progress towards the phosphorus reduction targets in the TMDL.

Harvested acres are consistent across the state? (False assumption by EPA)
In the revised calculations, EPA no longer includes harvest areas as a source category, so the concern about geographic inconsistencies in harvest areas is no longer applicable.

Forest roads are the same as municipal roads? (False assumption by EPA)
EPA used the phosphorus loading data from unpaved municipal roads in Vermont as a surrogate for loadings from forest roads because, unfortunately, no phosphorus loading data have been collected for Vermont forest roads. Some well-established forest roads are gravel and are not that different from municipal unpaved roads. But EPA recognizes that forest roads also can be skid trails and access roads quite different from municipal unpaved roads. In light of this, EPA searched for data from other states on sediment or phosphorus loading specifically from forest haul roads and skid trails. Most studies of forest road loadings have been conducted in the western US, with watershed conditions very different from Vermont conditions. The closest applicable studies that EPA could locate reported on sediment loading rates from a variety of forest road types in Virginia. These studies (Brown et al., 2013; Sawyers et al., 2012) report sediment loading rates comparable (or greater than) the sediment loading rates found in the Vermont study of unpaved roads. While the parent soils in the study areas are different from Vermont's, a University of Vermont soil scientist suggested the differences with Vermont soils will likely balance each other out to some extent (i.e., the effect of the higher erodability factor in the VT soils may be balanced somewhat by the greater susceptibility to compaction and higher clay content of the VA soils) such that the net effect may lead to comparable phosphorus loading rates per unit of sediment loading (Ross, 2015). The results of these studies support the reasonableness of using the loading rates from the Vermont unpaved roads in this context.

Forest road phosphorus counted separately from the forest land data (Double counting)
EPA agrees with the commenter's concern on this issue and revised the analysis to avoid any double counting. Given that roads are a major part of the disturbed area within harvest areas, in the revised analysis EPA excluded harvest areas as a separate loading category. Instead, EPA divided the total forest area into just two categories: forest roads and non-road forest areas. This eliminates the possibility of double counting the load from roads within harvest areas. Note however, that the effect of such double counting was actually quite minimal, as the loading rate used for harvest areas was much lower than the loading rate for forest roads. Now that loads are partitioned into just two categories, loads from roads, skid trails and log landings are included in the "forest road" category, and loads from the remaining forest area (including any disturbances from harvest areas that are not associated with roads) are accounted for in the "non-road forest area" load.

Harvested areas are 100% "disturbed" - (False assumption by EPA)
This is now a moot point, as EPA is no longer calculating a separate loading rate for harvest areas.

Harvested areas export phosphorus for 3 years? (Exaggerated data use by EPA)
This is now a moot point, as EPA is no longer calculating a separate loading rate for harvest areas.

In addition, if new research significantly improves and alters our understanding of phosphorus loads from forest roads in the Lake Champlain basin, this information can be taken into account through the basin planning process. For example, if updated information shows that the base loads are lower than currently assumed, then the necessary percent reductions needed to meet the WLAs would also be lower. But in the meantime, EPA considers the present analysis to be a reasonable characterization of forest loads and reduction opportunities, and one that is based on sound science and best available information.

Lastly, the commenter expresses concern that the draft TMDL has already prompted new laws and funding investments intended to achieve phosphorus reductions from the forest sector. EPA views these as very positive developments. Given that the commenter acknowledges that "more can and will be done to improve the protection of water quality" and the clear recognition among forest professionals that there are further opportunities to reduce water quality impacts along forest roads and stream crossings, EPA hopes that the commenter will eventually also see these developments as positive factors, even if the magnitude of the reduction opportunities is challenging to characterize precisely and may need to be revised over time as better information becomes available.

Comment 6-84: [CLF-VNRC, 2c]
The control measures for streambank and forestland erosion are inadequate to achieve the new load allocations. To meet the load allocations for stream banks and forests, the State is inappropriately relying on voluntary measures and regulatory mechanisms that grandfather in current encroachments and other activities that produce phosphorus discharges.

Forests
The draft 2015 TMDL describes the forest allocations as "modest" but that in the South Lake B and Missisquoi segments the required reductions of 60 percent are significant.[31] In South Lake, stormwater runoff from agricultural and forested lands contributes approximately 75 percent of the load.[32] In St. Albans Bay, "agriculture, forested lands, and streambank instability account for 73 percent of the annual phosphorus loading."[33] Agricultural and forested lands, and streambank instability, contribute 88 percent of the base load of phosphorus to Missisquoi Bay.[34]

The ambitious targets set for phosphorus reductions from forested lands must be supported by a concrete implementation plan. We have strong concerns that the Phase I Implementation Plan relies too heavily on voluntary measures, especially the implementation of Acceptable Management Practices (AMPs) on lands that are not enrolled in the Current Use Program (only the Current Use Program requires the implementation of the AMPs). There is simply no accurate way to quantify the outcome of relying on AMP implementation – especially if they are not required on harvest operations that take place outside of the Current Use Program.[35]

The draft 2015 TMDL states, "the vast majority of the phosphorus load [within the forest sector] comes from erosion along forest roads and active harvest areas".[36] The draft 2015 TMDL (and the Phase I Implementation

Plan) rely heavily on two mechanisms to address forest contributions: the AMPs (with Technical Advisory Teams), and a voluntary portable skidder bridge initiative.

The AMPs are required via Act 64 to be revised by 2016. It's important to note that they are not currently mandatory (unless land is enrolled in the Current Use Program), though a report by the Agency is required as to how to implement the AMPs as mandatory practices and how the Department of Forests, Parks and Recreation will enforce them.

The draft 2015 TMDL relies on the AMPs to be revised, as articulated in the Phase I Implementation Plan, but the TMDL does not address whether the AMPs must be mandatory for all forest practices. The Phase I Implementation Plan explains that "AMPs or equivalent requirements are mandatory on nearly 60 percent of forest land in the state, and a similar percentage applies to forest land within the Lake Champlain basin in Vermont."[37] This means, about 40 percent of the remaining forest land remains vulnerable to harvest activities that may, or may not, comply with AMPs. Unless the AMPs are made mandatory, and adequate resources are identified and committed to make implementation effective, a large deficit will remain in the amount of land where implementation of the AMPs are actually occurring. This raises serious questions as to whether the reduction targets can be reached. EPA should clarify that it is expected that the revised AMPs will be made mandatory with adequate resources (e.g. staffing, outreach and education) to ensure implementation to meet the substantial phosphorous reduction targets required.

The draft 2015 TMDL references that there will be increased enforcement under the Forest Management Section of the Phase I Implementation Plan.[38] From our reading, the Implementation Plan does not actually call for increased enforcement under any of the strategies. EPA should articulate what increased enforcement it expects in the draft 2015 TMDL and implementation plan so it is clear to all parties what increased enforcement is necessary to decrease loading and meet pollutant target reductions.

While EPA may believe that "major enhancements to the Acceptable Management Practices (including in particular practices that address erosion and sedimentation at water crossings, forest roads, log landings and forest harvest sites)"[39] provides assurances, in reality there is nothing in Act 64, the draft 2015 TMDL or the Phase I Implementation Plan to compel or ensure a robust revision. Without further clarification in the draft 2015 TMDL that the revisions are necessary, the AMP revision process could actually lead to weakened standards due to pushback from the regulated community. The draft 2015 TMDL should outline in a clear manner which AMP improvements are necessary and required to meet load allocations.

We believe the Vermont Forestry Direct Link Loan Program and the Vermont NRCS Forest Trails and Landings Cost share Program are worthy initiatives to implement. They are, however, voluntary programs, and in order to bring measured results, they must have adequate funding and landowner enrollment.

Finally, we strongly support the initiatives outlined in the Healthy Forest Cover Strategy. A policy of "no net forest cover loss" is an ambitious and smart implementation strategy. There are many positive implementation steps outlined in the implementation plan, yet we did not see any of these referenced in the draft 2015 TMDL, nor are there any measures in the Phase I Implementation Plan to ensure implementation and the quantification of the success of whether these strategies are resulting in no net-loss of forest cover and, ultimately, decreases in phosphorus loading. The draft 2015 TMDL should clarify what specific steps are required to reduce phosphorous loadings under the Strategy, accompanied by measurable outcomes.

Footnotes in Comment

[31] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 24, 37.
[32] *Id*. at pg. 30.
[33] *Id*. at pg. 31.
[34] *Id*.
[35] County foresters must review landowner compliance with management plan requirements and AMP compliance at least once every ten years for lands enrolled in the Current Use Program. This provides some nominal oversight, but there is no such oversight on the 40 percent of forest lands that are not enrolled in the Current Use Program and where timber harvesting activity may be occurring.
[36] *Id*. at pg. 19.
[37] State of Vermont. *Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan*. May 2014. pg. 95.
[38] *Id*. at pg. 52.
[39] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 52.

Response:

The first concern raised by the commenter is that the implementation plan for the forest sector relies too much on voluntary measures. EPA acknowledges that the Phase 1 Implementation Plan does include some voluntary programs to address loads from forestland. However, EPA views the Acceptable Management Practices (AMP) program to be primarily a required program. There are two reasons for this view. First, the AMPs or equivalent requirements are required for the 60% of forest land in the Current Use and Forest Legacy Programs or in state or federal ownership, as of 2012. While this does indeed appear to leave out 40% of forestland, the amount of land enrolled in the Current Use program (which constitutes the vast majority of the 60%) has been growing steadily and rapidly – with a 12% increase between 2007 and 2012. If enrollment continues at this pace going forward (as has been affirmed through 2015, (Vermont Department of Taxes, 2016)), the AMPs or equivalent measures will be required for approximately 90% of forestland by the mid-point (2026) of the State's implementation schedule. Second, the State's water pollution control law (10 V.S.A. 1259(a)), which prohibits a discharge of sediment or phosphorus to State waters, applies to all forestland already. While this law does not require that all AMPs be complied with, it commonly results in enforcement of the AMPs most important for TMDL implementation, such as those addressing drainage near stream crossings, because these AMPs are an important means to prevent sediment discharges. The State's annual enforcement reports make clear that this law is regularly enforced on logging operations.

The commenter also points out that there is no guarantee that the revisions to the AMPs will actually include the enhancements cited by EPA, given that Act 64 does not speak to the specific changes needed. This issue, however, is now more clear because the proposed AMPs were issued for public comment in March, 2016 and the comment period has closed. EPA reviewed the changes proposed and confirmed that the key provisions cited in the August 2015 Phase 1 Implementation Plan and in the TMDLs are indeed included in the draft rule. While the AMPs are not yet final, EPA is encouraged, based on the draft AMPs and the nature of the public comments (i.e., limited comments objecting to the measures most relevant to the main phosphorus sources), that these provisions, or something very similar to them, will be in the final version. EPA also modified Section 7.3.1 (the Accountability section) of the TMDL document to make it clear that EPA will be evaluating the final versions of

programs such as the AMPs to ensure that they include comparable measures to those EPA simulated in determining that measures would be sufficient to achieve TMDL allocations.

The commenter also questions whether there is a commitment to increased enforcement in the Phase 1 Implementation Plan. Upon further review, EPA concurs with the commenter that there is no discussion of increased enforcement in the forest section of the Plan. EPA has removed the reference to this in the TMDLs. However, EPA notes that the commitment to add two foresters dedicated to outreach and assistance on forestry aspects of the Regional Conservation Partnership Program (RCPP) in the Missisquoi Bay watershed (the watershed with the greatest amount of phosphorus reduction called for in the TMDLs) should reasonably contribute to heightened compliance with AMPs in this watershed due to the additional outreach related to forest practices.

EPA agrees that the Healthy Forest Cover Strategy is an important initiative that should be referenced in the TMDLs. EPA notes that the August 2015 version of the Phase 1 Implementation Plan includes a detailed sequence of action steps (with schedules) for the Healthy Forest Cover Strategy. Given that many actions are already underway, and that some of these actions are clearly tied to phosphorus reductions, EPA has now included references to the strategy in the TMDLs.

Lastly, regarding the comment on meeting the allocations for streambank/stream corridors, please see the response to comment 6-86.

Comment 6-85: [Lake Champlain Committee]
The most problematic element is the call for a 60% reduction of phosphorus loading from forestlands. Page 19 of the TMDL states, "Within the forest sector, the vast majority of phosphorus load comes from erosion along forest roads and active harvest areas." Clearly harvest areas and roads are the areas that can best be managed, but what is the evidence that managing these limited areas will address "the vast majority of phosphorus load"? The Missisquoi Critical Source Model identified high elevation forest lands with high precipitation areas, shallow soils, steep slopes and high organic matter content as critical source areas, irrespective of management on these lands.

In the original TMDL, phosphorus loading from forests was, rightfully, considered the appropriate background load. The use of SWAT models required EPA to choose a value for background loads, 0.11 kg/ha/yr, but that decision hides the dramatic range of background load estimates in the literature. Forests comprise such a large part of the Champlain Basin that even a small difference in the estimated background load will have tremendous influence on the level of reductions anticipated. While a small reduction may be achievable from managed forest land, the potential for significant basin-wide reductions, let alone 60%, is unprecedented and implausible.

Response:
First, please note that EPA has revised the level of reduction needed from Missisquoi Bay forestland from 60% to 50%, following the adjustments described in the response to Comment 6-83. EPA acknowledges that this level of reduction still presents a significant challenge, even when recognizing that some of this reduction has likely already occurred (see discussion of the timing issue in the response to Comment 6-83). But EPA does not agree with the commenter that such a reduction amount is

"implausible." The commenter is correct that the 2002 TMDL did not call for any phosphorus reductions from the forest sector. However, that TMDL also did not call for any reductions from the stream channel system other than for the Missisquoi Bay watershed. Much smaller overall reductions were needed to meet the targets in the 2002 TMDL, and this situation allowed the State to choose to focus on source sectors that presented the most clearly understood opportunities for reductions (agricultural and developed land, and wastewater treatment plants). Much greater reductions are needed to meet the 2016 TMDLs for some lake segments, and EPA needed to consider the full suite of source sectors, including stream channels and forestland. Just because a 50% reduction from forestland is uncommon in TMDLs does not make it implausible. The literature is clear that forest roads and related disturbed areas are the primary source of sediment and phosphorus loading within the forest sector (Grayson et al., 1993; Endicott, 2008) and that BMPs applied to forest roads can achieve reductions significantly greater than 50% (Edwards, 2015). There are examples in Vermont of streams that were impaired solely due to loadings from forestland and were subsequently restored following improved implementation of BMPs along forest roads and at stream crossings, among other actions (USEPA, 2011a and 2011b). If the forestland in the Lake Champlain Basin was 100% undisturbed (or without roads), then EPA would agree that the forest sector should be considered "background" loading. But that is not the case.

The commenter notes that the Missisquoi Critical Source Areas study identified certain forest areas as generating higher loads (such as those with higher precipitation, shallow soils, steeper slopes, etc.). Given that the literature indicates disturbed areas (particularly roads) are the main source of loading overall, it follows that roads located within these critical source areas would likely be important areas to target for early implementation work. A pilot LIDAR project to identify the location of forest roads and areas of high erosion risk within the Missisquoi watershed is scheduled for 2016 (see Vermont's Phase 1 Implementation Plan). The results of this project should provide a better sense of the overlap of forest roads with these critical source areas, and help guide management efforts in this watershed. Finally, as addressed in the response to Comment 6-83, as better information becomes available on loading rates and BMP effectiveness within the Lake Champlain Basin forest sector, the assumptions pertaining to base loads and percent reductions needed may be revised through the State's Tactical Basin Planning process with minimal EPA involvement.

Streams

Comment 6-86: [CLF-VNRC, 2c]
The control measures for streambank and forestland erosion are inadequate to achieve the new load allocations.
To meet the load allocations for stream banks and forests, the State is inappropriately relying on voluntary measures and regulatory mechanisms that grandfather in current encroachments and other activities that produce phosphorus discharges.

Stream banks
The draft 2015 TMDL describes the streambank allocations as a "moderate reduction level" and that "reductions from stream banks are important, but are expected to take many decades to occur, as the restoration

strategy depends in part on actions that will facilitate natural stream evolution processes."[27] However, the phosphorus reductions required to achieve the streambank allocation are relatively stringent, while the control measures to implement these reductions are abstract and undeveloped.

Seven segments received streambank allocations in the draft 2015 TMDL: South Lake B, Otter Creek, Main Lake, Shelburne Bay, Malletts Bay, St. Albans Bay, and Missisquoi Bay. The phosphorus reductions required to achieve these allocations ranges from 29 to 65 percent. The total across all lake segments is 43.4 percent, a significant reduction requirement. In comparison, reduction requirements from other sectors include: 42.1 percent reduction from wastewater treatment facilities, 24.1 percent reduction from developed lands, 23.4 percent reduction from forests, and 51.5 percent reduction from agriculture.[28] Streambank reductions are the second most severe, preceded only by agriculture.

The ambitious targets set for phosphorus reductions from stream banks are not supported by a concrete implementation plan. The majority of streambank action items relate to mapping, training and outreach, and voluntary programs to incentivize floodplain, river corridor, and riparian buffer regulations at the municipal level. An important program that addresses current streambank erosion is the active removal of river, river corridor, and floodplain encroachments. However, these efforts are limited by financial considerations and the willingness of landowners.

EPA has recognized the insufficiency of voluntary measures to meet allocations. For the 2002 TMDL, EPA noted, "its weakness (in the reasonable assurances context) is that nearly all of the recommendations are just that – recommendations. Nearly all elements of the plan depend on both additional funding and entities' willingness to participate or cooperate voluntarily with the intent of the program."[29]

The regulatory components of the streambank implementation plan apply to new developments, but do little to mitigate existing streambank erosion. The Flood Hazard Area and River Corridor General Permit applies to development and substantial improvements to structures that are exempt from municipal regulation. Act 250 developments will also now be regulated to the higher standard of no adverse impact.[30] These are important steps to control phosphorus loading from future development within floodplains and river corridors. However, these actions are insufficient to address the existing stream bank erosion.

While cutting phosphorus loads from stream banks is important, the new allocations are ill supported. Voluntary measures coupled with regulatory programs that grandfather in existing encroachments are insufficient to address streambank erosion. The implementation plan does not provide reasonable assurances that nonpoint source pollution from stream banks will actually be reduced.

Footnotes in Comment

[27] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 38.
[28] *Id*. at pg. 44.
[29] U.S. Environmental Protection Agency. *Reconsideration of EPA's Approval of Vermont's 2002 Lake Champlain Phosphorus Total Maximum Daily Load ("TMDL") and Determination to Disapprove the TMDL*. January 2011. pg. 11.
[30] State of Vermont. *Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan*. May 2014. pg. 90.

Response:
The commenter is correct that the reasonable assurance provided for reductions from streambank/stream corridors is expressed somewhat differently from the way assurance is provided for other sectors. The streambank source is unique in that loads are expected to decrease over time even without significant additional interventions, due to natural stream evolution processes. Therefore, the reasonable assurance measures are generally focused on actions designed to facilitate these natural processes rather than on BMP-type interventions. In this case, the strong body of scientific data assembled by the State's geomorphic assessment program provides the assurance that most eroding stream reaches will eventually become stable if humans do not continue to further stress these systems with additional floodplain encroachments, etc. This is why the State's regulations that are designed to protect floodplains from further development and guard against stream channel alterations are key parts of the reasonable assurance provisions. Please note that there are also new regulatory measures in Act 64 and the Phase 1 Implementation Plan that will speed up the transition of stream reaches to a more stable condition. One example is the riparian buffer and livestock exclusion requirements to be included in the new RAPs. Both the 25 foot buffer requirement for agricultural lands and the livestock exclusion requirement will lead to more stable (well vegetated) streambanks and eliminate erosion caused by livestock trampling. In addition, the State's recently revised stream alteration regulations require that failed culverts be replaced typically with larger structures, meeting design requirements and performance standards that will minimize channel erosion – this is another requirement that will speed the transition to more stable channel conditions. While some other measures are voluntary, as the commenter indicates, such voluntary measures are not critical to achieving needed reductions. These measures may speed up the timing of reductions to some extent, but they won't affect whether or not allocations are met, for the reasons described above (streams are going to reach equilibrium conditions eventually, as long as further floodplain encroachment is minimized). Likewise, the grandfathering of prior encroachments (such as buildings and roads) is not a barrier to reaching equilibrium conditions in and of itself – though such encroachments could affect the timing of reductions (could slow them down) in some cases. EPA has expanded the discussion of streambank erosion in the reasonable assurance section of the TMDL to clarify these points.

Comment 6-87: [Lake Champlain Committee]
In order to meet the required 65.3% reduction from streambank erosion, EPA's modelling assumed phosphorus reductions from all stream reaches (pg. 38). In many cases, stream reach restoration will mean leaving the stream alone for decades while it establishes a new equilibrium. While this approach is realistic, it does allow EPA to defer reckoning with failure to make progress on other fronts. Meanwhile, EPA has expressed reasonable assurance that unidentified extra resources/effort and working with landowners will lead to implementation in every stream reach.

Response:
EPA appreciates the commenter's agreement that the approach to stream reach restoration is realistic. EPA disagrees that the time scale for stream reach restoration will defer reckoning on other fronts. EPA has made allocations for the "other fronts" and expects that VT will make expeditious efforts to meet those allocations. Achievement of those other allocations will yield significant progress in many sub-watersheds.

Margin of Safety

Comment 6-88: [Houriet, portion reproduced as received (parenthetical references not provided)]
The third contested area is the "margin of safety" or MOS - the EPA accords to the statistical variability of its TMDL's – due to unknown factors that enter its calculations. In MOS in 2007 was five per cent. Although CLF challenged it as too low, it remains at five per cent despite new evidence to the contrary.

The biggest and most threatening unknown is the rate at which soluble P is being released from the deeply sedimented bottom of Missisquoi and St. Albans Bays. The most recent tests can be found.in the appendix of the Implementation Plan, under **LimnoTech report (2015)**. It found that the column of sediment at the bottom of the bay, like the column of water above it, is above the sustainable limit, and releasing DRP at an unprecedented, exponential rate. Common sense would seem to dictate increasing the Margin of Safety, given that we don't know is a "time bomb, going tick, tick, tick, counting down to an ecological castrophe." (30)

Here is the logic Vermont used to dismiss this factor.

The phosphorus modeling analysis used to derive the total loading capacity for St. Albans Bay in the 2002 Lake Champlain TMDL assumed that net internal loading to the Bay would decline to zero over time once external watershed loads were reduced. This assumption was considered to be conservative since in most **other Lake Champlain segment**s, much more phosphorus is being transferred to the bottom sediment than is being returned to the water column.

The same sort of dismissive treatment is given to climate change factors – the increases frequency of flash floods, washing legacy P from eroded stream and river banks into the lake in a much greater ratio of DRP than many soil scientists thought possible. The argument is that the greater volume in the lake will dilute the concentration of P. The fallacy of flushing is that water levels fall, but P clings to sediment sinks and builds up.

In both instances, the facts of the matter have been not simply downplayed but falsified, not just to minimize the risks which are posed, but to deny there are risks all together. In this, the authors of the Limno-Tech would surely concur. This no-cause-for alarm sophistry put us further behind a curve potentially fatal to re-mediation that is economically or temporally feasible. (31)

Response:
The commenter asserts the margin of safety (MOS) remains at five percent despite new evidence to the contrary. In fact, there was an implicit, i.e., not specifically quantified, margin of safety in the 2002 TMDL. CLF challenged this aspect and upon reconsideration EPA concluded that the conservative assumptions implicit in the 2002 TMDL were adequate in some segments but inadequate in others. In the proposed TMDLs, EPA has allocated an explicit 5% margin of safety in each segment. As described in the TMDL document, EPA chose this level of MOS based on the uncertainty analysis completed as part of the lake modeling step. The uncertainty analysis indicated that the average area-weighted prediction error of the model was +4.15 percent. A positive prediction error value means that the model predicted higher phosphorus concentrations than monitored values, indicating that there is conservatism built into the model. Given this, EPA is confident that the 5% explicit MOS is adequate for these TMDLs.

7. Reasonable Assurance

General

Comment 7-1: [CLF-VNRC, 2d]
The Required Agricultural Practices are insufficient to meet new load allocations, and unless a Best Management Practices program is implemented, there are no reasonable assurances that actual phosphorus reductions will be achieved.

Agricultural contributions of phosphorus to Lake Champlain are significant. The draft 2015 TMDL calls for a 59 percent reduction of phosphorus loading from agricultural sources into South Lake B and a whopping 83 percent reduction into Missisquoi Bay.[40] However, the control measures outlined in the Phase I Implementation Plan are insufficient to meet the target reductions.

One of the many measures called for in the draft 2015 TMDL is the revision of the Required Agricultural Practices (RAPs). As with forest AMPs, revisions to the RAPs are called for in Act 64 by 2016. While Act 64 does specify the kinds of revisions envisioned, the list of required practices was developed in conjunction with the regulated (farming) community, not as the result of a public process. The draft 2015 TMDL must contain additional measures and guidance beyond those required in Act 64 to assure that the new RAPs are protective and will result in decreased pollution upon their implementation across all farms in Vermont.

Further, unless a program that mandates the implementation of Best Management Practices in the most impaired watersheds is adopted, EPA cannot find reasonable assurances that new allocations will be achieved. The target reductions established for Missisquoi Bay and South Lake B are unprecedented. Therefore, a new program that includes a specific implementation schedule, documentation that BMPs are actually being implemented consistent with plans, and a regulatory backstop in the case of noncompliance is legally obligatory to demonstrate reasonable assurances.

Footnote
[40] U.S. Environmental Protection Agency. *Phosphorus TMDLs for Vermont Segments of Lake Champlain*. August 2015. pg. 37.

Note: On May 9, 2016, EPA received a letter from CLF reiterating concerns with the proposed TMDLs. Although submitted well beyond the close of the comment period, EPA has included it as Comment 10-26 at the end of this document. The second numbered element of the May 9, 2016 letter overlaps somewhat with the comment above and the response below.

> **Response:**
> The package of agricultural measures EPA evaluated in determining that the load allocations for agriculture are sufficient to implement the water quality standards contains the measures required by Act 64 and is consistent with the proposed revisions to the RAPs. The revisions to the RAPs have already undergone several rounds of public input, including an opportunity for public comment on the May 13, 2016 draft.

EPA agrees that additional measures beyond what will be required in other lake segments are necessary to meet the agricultural load allocation in the Missisquoi Bay watershed. CLF petitioned the Secretary of Agriculture, Food and Markets to require mandatory BMPs in the Missisquoi Bay basin (CLF, 2014). While CLF's petition was denied by the Secretary in November 2014, a subsequent appeal of the decision by CLF led to a settlement with the Agency of Agriculture, Food and Markets. On February 3, 2016, the Secretary, in a revised decision, determined that BMPs are generally necessary on farms in the Missisquoi Bay Basin watershed to achieve compliance with state water quality goals (Vermont AAFM, 2016). The revised decision provides a framework for outreach, education and assessment of farms in the watershed and a process for farm-specific development and implementation of a Farm Plan to address identified water quality resource concerns, where needed. Farm assessments may conclude that practices required by the RAPs are sufficient to protect water quality and that BMPs may not be required due to a farm's specific characteristics or management, but in general, the presumption is that BMPs are required.

The BMPs required in the Secretary's revised decision provide the additional measures needed to support EPA's determination that the allocation for agriculture in Missisquoi Bay will be met. CLF offered a similar view in a letter sent to EPA on February 15, 2016. See Comment 7-1a, below.

EPA disagrees with the commenter's assertion that the control measures in the Phase 1 Implementation Plan are insufficient to meet the reduction target in South Lake B. EPA's scenario tool indicates that the measures identified in the Phase 1 Implementation Plan are sufficient to demonstrate that the water quality criterion will be met in this segment.

Comment 7-1a: [CLF]
EPA received supplemental comments in a letter from CLF, dated February 15, 2016 (CLF, 2016), that offered further comment on the Agricultural Best Management Practices Program. The relevant text is included below.

As stipulated by the settlement agreement (Docket #175-12-14 Vtec.) reached between Conservation Law Foundation (CLF) and the Vermont Secretary of Agriculture, Food and Markets, CLF submits the following comments on the methodology presented in the *Revised Secretary's Decision* on implementing Best Management Practices (BMPs) in the Missisquoi Basin.

The new program outlined in the *Revised Secretary's Decision* offers reasonable assurances the State of Vermont is addressing agricultural non-point source pollution in the Missisquoi Bay Basin. Farmers in the sub-watershed are required to implement the necessary BMPs that control phosphorus beyond the standards set in the Required Agricultural Practices. The new program provides a specific implementation schedule, documentation that BMPs are actually being implemented consistent with plans, and a regulatory backstop in the case of noncompliance.

Implementation of BMPs is necessary in Missisquoi Bay in order to achieve the nearly 83 percent reduction called for in the draft 2015 TMDL. CLF further believes similar programs must be implemented in South Lake, Otter Creek, and St. Albans in order to meet the target reductions for these sub-basins.

Response:
EPA appreciates the efforts of CLF and the Secretary to reach the agreement that is represented by the *Revised Secretary's Decision*. EPA agrees with the commenter, that the new program outlined in the *Revised Secretary's Decision* offers reasonable assurances that agricultural nonpoint sources will be adequately addressed in the Missisquoi Basin. While EPA agrees that a similar approach would help achieve greater reductions in the South Lake, Otter Creek and St. Albans Bay segments, EPA's analysis demonstrates that implementation of the agricultural provisions in Act 64 will be sufficient to meet the load allocations for agricultural land in those segments. While the proposed new Required Agricultural Practices (RAPs) are not yet final, Act 64 requires that they become final in 2016. Key phosphorus reduction provisions to be included in the RAPs are specified in Act 64, and EPA's analysis focused on these provisions. See the response to comment 6-2 for more information on the agricultural provisions required in Act 64.

Comment 7-2: [Lake Champlain International *et al*., 1]
First, and in keeping with the Government Accountability Office's (GAO) report to Congressional Requesters, "CLEAN WATER ACT: Changes Needed If Key EPA Program Is to Help Fulfill the Nation's Water Quality Goals," while EPA appears to be "reasonably assured" by Vermont Act 64, we remained unconvinced that the State has taken the necessary steps through the force of law to ensure nonpoint-source pollution runoff measures are effected. The overriding emphasis with respect to compliance from agricultural polluters throughout the act is one of "may" rather than "shall." While we appreciate the Agency's close partnership with the Administration and individuals within it, there is no evidence to suggest that the EPA will enjoy such a relationship with the next State Administration nor that the next Administration will be philosophically committed to the goals of the EPA with respect to clean water. We agree with the GAO findings when it states: "Without changes to the program's voluntary approach to implement projects in waters impaired by nonpoint source pollution, the act's goals are likely to remain unfulfilled." Likewise, we concur when GAO finds: "Furthermore, without the force of regulations …, TMDLs are likely to do little to attain water quality standards, particularly the designated uses of fishing, swimming, and drinking."

Response:
Many of the important elements of TMDL implementation are included in statute (Act 64) which in turn requires the Secretaries of Agriculture and of Natural Resources to revise or create regulations to effect the key nonpoint source reduction measures. Vermont's Phase 1 Implementation Plan is well aligned with Act 64 and with the TMDLs. EPA disagrees that the "overriding emphasis…is one of 'may' rather than 'shall.'" In the first 25 sections of Act 64, which contain nearly all the agricultural provisions, the word "shall" appears 175 times, compared to 50 appearances of "may." For example, the Secretaries "shall" promulgate or revise regulations, small farm operators "shall" certify compliance with a program that the Secretary of Agriculture "shall" establish, and the Clean Water fund "*is"* established. While the Secretaries are provided with discretion in their exercise of enforcement authority, this is not unusual, but rather typical of federal and state statutory language.

Comment 7-3: [VT DEC, 1]
Scenario Modeling for Missisquoi Bay
The Department is concerned with respect to the feasibility of the 64% overall load reduction assigned to Missisquoi Bay, including an 83% reduction targeted to agricultural sources. These watershed load reduction amounts are so large because it is necessary to address not only the many BMP needs in the watershed, but also the ongoing internal loading from the bay's sediments that is the result of both present-day and historical activities in the watershed.

While the Department believes that full implementation of Vermont's Phase 1 TMDL Implementation Plan over a sustained period of time, coupled with matching efforts by Quebec and New York, will eventually lead to the attainment of water quality standards in Missisquoi Bay and throughout Lake Champlain, we do not believe that the assumptions contained in the lake modeling and scenario analysis represent a feasible load reduction that can be implemented. This position is supported by EPA's analysis. The current BMP scenario analysis being used by EPA indicates a maximum feasible load reduction of 78% from agricultural sources in the Missisquoi Bay watershed. However, the lake modeling indicates additional reductions are needed to attain standards in the bay, and the draft TMDL assigns a load reduction of 83% to agricultural sources.

Further, the Department is concerned that the some of the model scenarios go beyond what is realistic for the Missisquoi Bay and South Lake watersheds. Assumptions involving the application of agricultural BMPs at 100% of sites are unrealistic where site constraints and weather limitations are involved. Similar concerns exist regarding some of the stormwater scenarios modeled. Retrofitting 100% of hydrologically-connected roads would require extraordinary measures and expense due to constraints including utilities, limited rights-of-way, and natural resources. This is especially true for paved roads with closed drainage systems. Managing 60% of non-road impervious surface would present similar challenges.

We suggest instead that EPA assign a load reduction to agricultural sources and developed land at no more than what is considered to be technically feasible based on BMP modeling. The remaining gap in required load reductions would need to be filled by additional implementation actions during a later phase of implementation, or by an internal lake treatment if that should become feasible in the future through new technologies. We think this would be the most transparent and technically defensible approach to take in the TMDL.

We are committed to learning while we implement our plan and will periodically revise the plan as experience is gained and new practices become available. Missisquoi Bay will remain a priority for enhanced attention and funding. While not all of the necessary implementation actions can be identified at this time, we are confident that a sustained commitment by Vermont to phosphorus reduction in Missisquoi Bay and throughout the Lake Champlain Basin will set us on a trajectory to achieve water quality standards.

Response:
EPA is pleased that the Department believes that full implementation of the Phase 1 Plan (together with reduction efforts from NY and Quebec) will eventually lead to attainment of water quality criteria

throughout the lake. Regarding the comment on EPA's analysis of the agricultural reductions in the Missisquoi Bay watershed, EPA has made some changes to address DEC's concern. As discussed in the response to Comments 7-1 and 7-1a, a February 3, 2016 settlement agreement between CLF and the Secretary of Agriculture, Food and Markets resulted in additional requirements for agricultural BMP implementation in the Missisquoi Bay watershed. In light of this development (which provides even stronger assurance that all practices needed to achieve water quality standards in the Bay will be implemented), EPA identified additional reduction opportunities from agricultural lands. In particular, EPA is now assuming both ditch buffers and riparian buffers will be implemented for all continuous hay cropland in the watershed. While EPA previously simulated both practices for other categories of cropland (along with many other practices), EPA had not simulated the effects of both riparian and ditch buffers on hayland. This adjustment provides a scenario for achieving the needed 83% reduction from agricultural land. With this change, the analysis now identifies feasible reduction options for all sectors in all segments.

EPA appreciates the State's commitment to learning during implementation and to making revisions to the plan as new practices become available. EPA expects that the incorporation of new technologies and new approaches (such as BMPs that use phosphorus-binding soil amendments to prevent phosphorus loss from agricultural fields), coupled with more detailed evaluations of where reductions will be most effective on the ground (through the tactical basin planning process) will lead to new methods of achieving the reductions that may be more efficient than those simulated in EPA's analysis to date. But the current analysis provides a strong starting point – indicating that the Phase 1 Plan, supplemented with the new settlement agreement for agricultural requirements in the Missisquoi Bay watershed, provides a path to achieving the needed reductions with practices that are available today.

EPA appreciates the concern that achieving reductions from 100% of unpaved road segments connected to streams via direct surface flow and 60% from certain other impervious areas may be very challenging. In the revised reduction analyses for all segments other than Missisquoi Bay and South Lake B, EPA changed the percentage of unpaved road segments (connected via direct surface flow) needing retrofits from 100% to 65%. Simulation of retrofits to all unpaved road segments connected via surface flow was retained for Missisquoi Bay because of the very large overall reduction needed for this lake segment. However, because most of the phosphorus load often comes from a small subset of highly eroding segments while other, well drained low gradient segments may generate very little phosphorus load, EPA recognizes that the simulated phosphorus reduction amount will often be able to be achieved with retrofits to only a portion of segments connected to streams via surface flow (see also response to comment 6-50a). In addition, the updated efficiency rate discussed at the end of this response provides additional support for this conclusion. . It is also important to keep in mind that these simulated reduction levels within the sub-categories of the developed land sector do not represent sub-allocations. The only applicable allocation for developed land in the Missisquoi Bay TMDL is the overall wasteload allocation of 29%. The State has the flexibility through the various stormwater permit programs created by Act 64 to adjust the effective reduction levels applied to each sub-category of developed land as long as the aggregate reduction is 29% (in the case of Missisquoi Bay). EPA simulated a certain level of reduction within each sub-category of developed land for purposes of demonstrating at least one possible combination of reductions among the sub-categories that would achieve the overall developed land wasteload allocation. Therefore if retrofitting 60% of non-road impervious area over well drained soils (A and B hydrologic soil groups) is found to not be feasible, the balance could be achieved through

requiring retrofits to a larger amount of area in another sub-category such as paved roads over C or D soils, for example, where much lower impervious area percentages were simulated for retrofits.

Lastly, EPA has updated the BMP efficiency for unpaved road erosion control practices based on newly available research conducted by the University of Vermont (Wemple and Ross, 2015). The new research indicates several commonly used practices, including stone lined ditches and check dam/turnout BMPs, are much more effective than previously thought (87% on average, versus the 50% used previously in EPA's Scenario Tool). EPA updated the efficiency used in the Missisquoi Bay reduction scenario (see Appendix B), but chose to use a conservative efficiency of 70%, which was the lowest efficiency found for these practices at all monitoring sites included in the new study. This means that a lower percentage of unpaved road segments will need to be treated, in all likelihood, because greater reductions will likely be achieved per segment than assumed in EPA's analysis. Note that EPA did not update the 50% efficiency rate for unpaved roads in other lake segment watersheds, but this change could be made through the Phase II basin planning process and the tracking and accounting process.

Comment 7-4: [VT Department of Forests, Parks and Recreation]

In reviewing the draft Lake Champlain phosphorus TMDL we noticed an omission on page 52. Edits provided through internal review at ANR are not reflected in this draft version. The narrative as written is not accurate. Please replace with the narrative provided.

7.2.1 Reasonable Assurance - Missisquoi Bay - Forests

For forests, beyond the updates to the Acceptable Management Practices and the increased enforcement described in the forest management section of the Phase 1 Implementation Plan, the State has committed to the following additional actions in the Missisquoi and South Lake watersheds: Two foresters with the Department of Forests, Parks and Recreation will lead a focused effort in these two lake segment watersheds to accelerate implementation of NRCS cost-share practices funded through the Regional Conservation Partnership Program (RCPP) to improve water quality and reduce phosphorus. These practices include erosion control on active forest trails and landings; installation of bridges, fords, and culverts at stream crossings; restoring forest riparian areas; and mulching. This effort, combined with the major enhancements to the Acceptable Management Practices (including in particular practices that address erosion and sedimentation at water crossings, forest roads, log landings, and forest harvest sites) provides assurance that the additional phosphorus reductions assumed from forest lands (in EPA's analysis for these watersheds) will be achieved.

Response:
EPA has replaced the paragraph at issue with the text provided above in the final TMDLs.

Comment 7-5: [VT EPSCoR]

Missisquoi Bay and St Albans Bay: We agree that aggressive management of the Missisquoi and St. Albans systems is warranted due to the influence of internal sediment-derived loading on P budgets and relatively heavy contamination of those sediments. However, in concert, it should also be made abundantly clear to the communities that are implementing BMPs in these catchments that bay recovery will not be swift in either bay - best case scenarios (that do not accurately capture climate change dynamics) suggest that even with aggressive BMP implementation, recovery of the Missisquoi system and achieving EPA target water column P concentrations will take decades. As we will demonstrate in subsequent discussion, climate change will only serve to exacerbate this problem. This timescale of recovery may be difficult to resolve in the context of the expectations and the politics of communities within the watersheds that are expected to implement (perceived dramatic) changes to their property and farming practices. We are concerned that the timescale of recovery is not being aggressively relayed to the public, which is a mistake. There needs to be direct outreach by the state so that it manages community expectations and maintains credibility in the long-term. Additionally, we would suggest considering geoengineering solutions for Missisquoi Bay once the watershed P reduction schemes have been implemented to expedite recovery. We would also recommend additional research around the St. Albans Bay system, as a fully coupled, spatially explicit hydrodynamic-biogeochemical model for this system is certainly warranted to implement effective internal remediation schemes for the system, and project temporal and spatial changes that would be achieved under such implementation. The so called 'bathtub' model, as well as existing empirical research on bay-wide system dynamics, are most certainly insufficient for these purposes. Indeed, aluminum-based P remediation only works under certain biogeochemical conditions, and existing monitoring data is insufficient to determine whether or not this would be successful in Lake Champlain systems.

Response:
EPA appreciates the commenter's concern about the need to communicate the likely slow pace of recovery in both bays. While the main focus of TMDLs is on the allocations and reductions needed rather than the implementation timeframe, EPA agrees that there is an important role for the State in communicating implementation progress and expectations with local communities.

EPA agrees that more research on the internal phosphorus dynamics (including potential complications caused by climate change) in both Missisquoi and St. Albans bays will be important to refine our understanding of these systems, their response to phosphorus reductions, and the feasibility of geoengineering approaches to contribute to the recovery. Note that both the TMDL document and the State's Phase 1 Implementation Plan are clear that additional feasibility analyses will be needed prior to moving forward with alum treatment in St. Albans Bay.

Comment 7-6: [Sparacino]
Why has the State determined that dredging or treatment of phosphorous sediment on the bottom of Missisqoui Bay cannot be accomplished based on the large size of the bay? Why can't the State treat and dredge phosphorus sediment in the areas where the rivers have overflowed into the bay? Why shouldn't the State dredge and treat Missisqoui Bay's recreational areas that are used by home and camp owners as well as

tourists? We ask the State not to consider Missisqoui Bay to be a lost cause. Please accelerate the processes for cleaning up for up the bay. Please reconsider the decision that the sediment in the bay cannot be dredged or treated.

Response:
Based on current knowledge and the limitations on where dredging or treatment might be possible, Vermont DEC does not consider these to be the most useful solutions in Missisquoi Bay in the near term. This is because of the extremely large area that would need to be dredged or treated and the constraints associated with much of the area being within a National Wildlife Refuge and outside of the United States. EPA agrees with this assessment. Application of a physical approach to phosphorus removal or capping may become feasible in the future, once phosphorus and sediment loading rates have been slowed. Vermont DEC is currently researching options for in-bay treatments to determine whether any practical strategies exist to alleviate cyanobacteria blooms while phosphorus inputs are reduced.

Accountability Framework

Comment 7-7: [CLF-VNRC, 3]
The accountability framework for the draft 2015 TMDL does not allow for revision as needed.
A third element of a successful TMDL is to allow for effective revision to assure appropriate modifications of programs to control the pollutant of concern. EPA is relying on an "accountability framework" that appears intended to backstop state failures to implement source-specific control programs.

Perhaps of greatest concern, EPA's accountability framework purports to reserve implementation of required regulatory programs to the future rather than requiring immediate use of these authorities to rectify the known problems in Lake Champlain. Where existing regulatory programs are available and required, they must be implemented aggressively now to assure near term phosphorus reductions. These programs cannot be held in abeyance for future action.

Additionally, the accountability framework cannot be implemented in a fashion that undermines the inclusion of legally enforceable water quality based effluent limitations in Clean Water Permits *at the time those permits are issued*. Water quality based effluent limitations are required by the Clean Water Act and sources cannot be permitted in a fashion that would continue, let alone expand, contributions to water quality standards violations based on an accountability framework in a TMDL. Such an approach would subvert the entire water quality based approach included in the statute by Congress.

Even if it were otherwise lawful, the accountability framework for the draft 2015 TMDL does not contain the necessary elements for modification, which are: (1) a plan to monitor a TMDL's effect on water quality and (2) an adaptive implementation approach where monitoring data is used to regularly assess progress towards attaining water quality standards.[41]

Instead, the draft 2015 TMDL accountability framework is based on the Phase I Implementation Plan, the Tactical Basin Plans (also referred to as the Phase II Implementation Plan), and EPA's commitment to track and

assess Vermont's progress and to take appropriate federal action if Vermont fails to meet key milestones. While these commitments are helpful by outlining specific implementation actions, they do not include phosphorus monitoring or assessments of whether water quality standards are being met.

The framework is centered on plans to implement specific practices. Therefore, EPA will consider the draft 2015 TMDL successful if the action items outlined by the State are put into practice regardless of their efficacy at reducing phosphorus loads. Without comprehensive monitoring, the actual impact of the draft 2015 TMDL on water quality will be unknown and ineffective implementation practices will continue.

Further, successful monitoring goes beyond the target pollutant. The GAO found a water temperature TMDL in Oregon to be insufficient because it tracked water temperature, but failed to monitor biological indications. The report found that "without tracking biological conditions affected by temperature, it would be impossible to assess whether progress was being made toward the water body's designated use."[42]

The framework does not include assessments on whether water quality standards are being achieved. Without the necessary phosphorus and biological indicator monitoring, EPA's report card process is based on surrogate measurements such as issuing permits and publishing guidance documents that do not adequately gauge water quality. In addition, the report card process does not specify a mechanism or timeframe for evaluating and modifying the draft 2015 TMDL.

Lastly, the milestones included in the plan are insufficient. Given the spotty track record of implementation to-date, the accountability framework must include annual milestones and oversight for the first 10 years of implementation. From years 10 to 16, the framework should include accountability documentation every 2 years. If all goes according to plan, timeframes for accountability determinations could be extended after year 16. Given the vagaries of funding, program development, and the tactical basin planning process along with the severity of the water pollution problem in the lake, the current accountability framework unlawfully withholds required regulatory actions and includes unreasonable timeframes and insufficient monitoring.

Footnotes in Comment

[41] U.S. Government Accountability Office. *Clean Water Act Changes Needed If Key EPA Program is to Help Fulfill the Nation's Water Quality Goals*. December 2013. pg. 38-39.

[42] U.S. Government Accountability Office. *Clean Water Act Changes Needed If Key EPA Program is to Help Fulfill the Nation's Water Quality Goals*. December 2013. pg. 43-44.

Note: On May 9, 2016, EPA received a letter from CLF reiterating concerns with the proposed TMDLs. Although submitted well beyond the close of the comment period, EPA has included it as Comment 10-26 at the end of this document. The third numbered element of the May 9, 2016 letter overlaps considerably with the comment above and the response below.

Response:

First and foremost, the accountability framework is intended to provide a clear yardstick against which Vermont's implementation efforts will be measured and a mechanism for transparent public reporting of this evaluation. EPA agrees with the commenter that it also is intended as a form of backstop in the event Vermont's progress doesn't measure up. EPA is being transparent about the types of actions that

would be considered, while leaving room to select interventions that are in proportion to any failures to implement promised measures.

EPA is not aware of regulatory programs being "held in abeyance" as the commenter states, but in any case EPA respectfully disagrees that it is obligated to require immediate use of all potential regulatory authorities in each lake segment. Vermont's implementation plan reflects choices made in how the allocations will be met and EPA's evaluation of those specific measures indicates that the allocations will be met. Neither EPA nor Vermont is obligated to exhaust particular point source regulatory authorities if there is reasonable assurance that the selected nonpoint source measures are adequate to meet the allocations.

EPA does not agree that implementation of the accountability framework would undermine the inclusion of legally enforceable water quality based effluent limitations in Clean Water Permits at the time those permits are issued. On the contrary, when DEC issues permits to the WWTFs, it must include WQBELs consistent with the WLAs in the TMDLs. EPA's permitting regulations state that when developing WQBELs, the permit authority must ensure that "[e]ffluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge…." 40 C.F.R. § 122.44(d)(1)(vii)(B). In the preamble to § 122.44(d)(1)(vii)(B), EPA explained that "The requirement to use approved wasteload allocations for water quality-based permit limits is implied in current § 122.44(d) because paragraph (d) requires effluent limits to meet water quality standards. Today's language clarifies EPA's existing regulations by stating that when WLAs are available, they must be used to translate water quality standards into NPDES permit limits." 54 FR 23868, 23879 (June 2, 1989). As discussed in the response to Comment 6-11 above, there is nothing in the CWA or EPA's regulations that precludes the establishment of WLAs that allows existing loads to continue to be discharged, or even increased, as long as the sum of all WLAs, and reasonably assured LAs, along with the margin of safety, will result in WQS being met. The accountability framework does not postpone or undermine the incorporation into permits of WQBELs based on the WLAs.

As to a plan to monitor the TMDLs' effect on water quality, the Lake Champlain Long-Term Water Quality and Biological Monitoring Program, operated by the Vermont DEC and New York State DEC and coordinated through the Lake Champlain Basin, has operated since 1992. This constitutes a robust water quality monitoring program throughout the basin – the lake and tributaries. This network, which covers more indicators than just phosphorus, will continue to provide regulators and all interested stakeholders with a clear indication of the trends in water quality in the various segments as the TMDL is implemented. Vermont's Phase 1 Implementation Plan also has numerous references to monitoring, particularly in describing the important role of VT DEC's Monitoring, Assessment and Planning Program (MAPP). The water resource planning process is closely linked to and dependent upon monitoring and assessment activities.

EPA agrees with the commenter that the proposed TMDLs did not include or explicitly reference a plan for monitoring the effect on water quality. Although monitoring plans are not a required part of TMDLs, EPA's "Guidance for Water Quality Based Decisions: The TMDL Process" (US EPA, 1991) recommends including a monitoring plan to track the effectiveness of a TMDL. A new section on

monitoring, reflecting the long-term program and some new elements (including the kinds of elements recommended by the commenter) has been added to Chapter 8 in the final TMDL document.

EPA disagrees with the assertion that "EPA will consider the draft 2015 TMDL successful if the action items actions outlined by the State are put into practice regardless of their efficacy at reducing phosphorus loads." Rather, EPA will evaluate both the form and substance of the required milestones in determining whether "satisfactory progress" has been made. EPA has stated this explicitly in the final TMDL document. For example, EPA will evaluate the final Required Agricultural Practices to ensure that they include all the measures EPA simulated in determining that measures would be sufficient to meet water quality standards.

As implementation shifts from adoption of basin scale regulations and programs, the Accountability Framework shifts to the finer resolution of the sub-basins. The Tactical Basin Plans (or Phase II implementation plans) provide the adaptive management framework that combines the water quality data in a sub-basin with the prioritization of phosphorus control measures. The second and subsequent phases of the Accountability Framework ensure that EPA keeps a watchful eye and reports to the public on progress to implement prioritized measures and their effect on water quality.

EPA has struck what it believes is a reasonable frequency of assessment and reporting in the Accountability Framework. In the first phase, where the foundational, large regulatory steps must be completed in order to launch full-scale implementation, EPA believes an annual reporting on progress is appropriate. As noted elsewhere, the second phase is keyed to the five year Tactical Basin Planning cycle. EPA believes that a check-in and reporting at the mid-point and ending of each cycle is sufficient to track progress and intervene if there is insufficient implementation in the first half of a cycle.

Vermont has provided EPA with a revised and expanded set of milestones for inclusion in the first phase of the accountability framework. See Comment 7-19 and response (VT DEC, 2016). EPA agrees that the revised set of milestones is more comprehensive and is a better reflection of the critical tasks that must be accomplished in 2016 and 2017.

Comment 7-8: [Vermont League of Cities and Towns]
Large portions of Lake Champlain are in bad shape, which was evident this past summer, and in those places the lake does not meet water quality standards. Clearly, Lake Champlain's health is vital to the Vermont economy. Equally clearly, Vermont municipalities are committed to doing their part to clean up the lake. Nonetheless, we need to ask if this plan is likely to be the most effective one at reducing phosphorus in the lake. How will progress toward phosphorus equilibrium in the lake be measured? How will we know when we have achieved a clean lake? We urge you to include clear benchmarks and measures of success in cleaning up the lake in the TMDL.

Response:
As described in Section 5.2 of the TMDL, EPA developed a lake spreadsheet model that allowed for the evaluation of different reduction scenarios. It is near impossible to determine whether any particular combination of measures is the "most effective one" in such a complex lake system with 13 different segments. Vermont provided EPA with significant input regarding policy choices that, in combination,

demonstrated that water quality standards would be met in each segment and in combination with other segments.

As described in the response to Comment 7-7 immediately above, between the robust water quality monitoring network in the lake and its major tributaries and the tracking of implementation steps in the Accountability Framework, there are clear benchmarks of success for both activities/outputs and outcomes/comparisons of water quality to the applicable criteria.

Comment 7-9: [Vermont League of Cities and Towns]
The draft TMDL anticipates that if other sectors responsible for enormous phosphorus discharges fail to meet their obligations, municipalities will be required to shoulder more expensive and onerous burdens for reducing phosphorus that are well beyond their proportional contributions and will not, by themselves, result in a clean lake. We are concerned that measurement of phosphorus reductions from developed land, streambank erosion, and other non-point sources is not clear in the TMDL. If those reductions are not accurately measured and accounted for, what will be the impact on municipal obligations?

Response:
As described in Section 7.3 of the TMDL, Vermont is developing the capability to track implementation of agricultural and non-agricultural BMPs. BMP implementation tracked by the Agencies of Natural Resources, Agriculture and Transportation will be unified in a system at DEC. The elements in the Accountability Framework are for the most part activity based and relatively clear to account for and track. If EPA finds it necessary to revise allocations in response to failure to implement, EPA will seek public input on a revised allocation including the basis for such a decision.

Comment 7-10: [Peters *et al.*]
Restoring Lake Champlain and polluted streams and rivers throughout the watershed is going to be a long, hard fight. Checking boxes isn't enough. We need real accountability throughout the cleanup process that is based on quantitative improvements in water quality. And while the new standards set the necessary goals for seeing improvements, how we reach these goals is going to require community input and commitment.

Response:
EPA agrees that an accountability system is important to success. See also the responses to Comments 7-7 through 7-9 above.

Comment 7-11: [Vermont Rural Water Association (VRWA)]
EPA Region 1 has clearly noted Vermont will need to demonstrate reasonable assurance on clean up initiatives and make some progress. This being noted VRWA hopes all involved with these clean-up efforts recognize it will take some time for measurable improvements to lake water quality. This is partly due to the legacy load issues as phosphorus is already deposited in the sediment in many locations. In addition it will take some time for implementation of new regulations, practices, and grassroots start up. VRWA supports the implementation timeline flexibility EPA Region 1 has noted in the plan.

Response:
EPA agrees that it will take some time to see measurable improvements in water quality. That is one of the reasons EPA included the activity-oriented Accountability Framework, particularly in the early years of implementation.

EPA received related comments from four entities concerning requiring further WWTF reductions if other sectors fail to meet their targets. A consolidated response follows the fourth comment.

Comment 7-12: [Green Mountain Water Environment Association, 9]
If other sectors fail to meet their P reduction targets it is inappropriate for EPA to require further reductions at WWTFs. Only 3% of the P load to the Lake is attributed to discharges from WWTFs and the cost to remove this remaining P is very expensive when compared to the cost of P reduction in other sectors. If other sectors fail to meet their P reduction requirements EPA must clearly demonstrate how requiring further reductions at WWTFs will enable the Lake segment to reach its P reduction target before imposing additional reductions. If this can't be demonstrated then EPA must make additional efforts within those underachieving sectors to reduce P loading to the Lake and meet the established P reduction targets. Whether or not this can be demonstrated, it is still likely to be more cost effective to work within the underachieving sectors to obtain P reductions. Proceeding as EPA has described in the TMDL will not address the root cause of Lake health issues (i.e. too much P loading to Lake Champlain) and put an inappropriate burden on wastewater ratepayers throughout the State.

Comment 7-13: [S. Burlington, WQD, 2-3]
If other sectors fail to meet their P reduction targets it is inappropriate for the EPA to require further reductions at WWTFs as this may increase overall P inputs. Although we fully understand the limitations of the EPA's authority under the Clean Water Act (CWA), **the mission of the EPA is "… to protect human health and the environment"**. As the EPA recognizes, only 3% of the P load to the Lake is attributed to discharges from WWTFs and the cost to remove this remaining P is very expensive when compared to the cost of P reduction in other sectors. If other sectors fail to meet their P reduction requirements, as happened in the previous TMDL, the EPA must clearly demonstrate how requiring further costly reductions at WWTFs will enable the Lake segment to reach its P reduction target before imposing additional reductions. The potential increase in non-point source P caused by costly upgrades to WWTFs should be accessed against the benefit. If the cost of wastewater treatment becomes excessive in the core service areas this will cause a dramatic increase in user rates and increase pressure on Vermonters to move out of the core service areas. The majority of Vermonters are already on septic systems, the highest percentage by population in the United States. Flight from the core service areas will increase forest defragmentation causing increased P runoff from the newly developed lands and roads. This is the opposite of the "Smart Growth" principles that the Vermont Smart Growth Collaborative promulgates and many municipalities use when preparing their planning documents. These properties would also utilize septic tank and leach field systems to dispose of their effluent. Typical effluent from a septic tank has a TSS of 155-330 mg/L, a BOD of 155-286 mg/L and a phosphorus residual of 6-12 mg/L. Also, "…between 10% and 20% of all onsite systems are not adequately treating waste". "Improperly constructed and poorly maintained septic systems are believed to cause substantial and widespread nutrient and microbial contamination to groundwater".

If other sectors fail to meet their P reduction targets then the EPA must make additional efforts within those underachieving sectors to reduce P loading to the Lake and meet the established P reduction targets. Whether or not this can be demonstrated, it is still likely to be more cost effective and effective at overall P reduction to work within the underachieving sectors to obtain P reductions. The cost for WWTFs to comply with a limit of 0.2 mg/L P is estimated at $67-$172 million dollars (targeted vs. all in Lake Champlain Basin). A discharge limit of 0.2 mg/L P is often possible to attain without major changes to the current processes or with the addition of microfiltration. A limit below 0.2 mg/L P, is basically the "limits of technology" and will trigger complete process changes with the resulting costs being estimated at "…at least $300 million." It may well be significantly higher as it can be difficult to estimate costs, as was seen in the original estimate from the EPA contractor TetraTech, which was revised upward by the DEC by a factor of five. **In the event that other sectors underperform and the P discharge limit is reduced for WWTFs this may cause many of the non-point source P increases listed under comment #2 (see above), due to the large increases in municipal sewer rates, if costs are exclusively passed on to the municipal rate payers. With the EPA then having exercised the limit of their authority under the CWA, we urge the DEC to then stop all work in other sectors and dedicate all funding and staff resources to WWTFs to assist in paying for the costly upgrades.**

Comment 7-14: [S. Burlington Stormwater Services, 4]

If other sectors within the same Lake Segment fail to meet their appropriately determined P reduction target it is inappropriate for EPA to require further reductions from other sectors within that Lake segment that are meeting their P reduction requirements. EPA and DEC should not impose additional P reduction requirements on regulated entities (i.e. WWTFs and MS4s) if other sectors (e.g., agriculture or forest land) within the same Lake segment fail to meet their required P reductions. If the scientific basis by which EPA has determined these required reductions is accurate and achievable it makes no sense to go back to the achieving sectors and require additional reductions. In fact, this could set up a situation where some sectors are rewarded for not meeting their reductions. The costs for P reduction would be passed on from the underachieving group to those that have already made the required investments. For example, if agricultural sources discharging to the Shelburne Bay Lake segment do not make sufficient progress towards, or are unable to achieve, their required 80% P reductions for Agriculture Production and/or 20% reduction from agricultural lands areas EPA has proposed to obtain the needed P reductions from WWTFs or developed land. The ratepayers and residents involved with these sectors will likely have already paid for investments in water quality improvement. It would be more appropriate for EPA and DEC to work within the underachieving sectors to improve P reductions. It would also be much more effective and cost efficient to work within these underachieving sectors to remove P than to complete additional projects in other sectors. Additionally, prior to re-allocating P reductions between sectors EPA must clearly demonstrate that by doing so the P target for that sector can be meet.

Comment 7-15: [Burlington, 11]

The accountability framework "backstops" (page 56) should not explicitly list the allocation of additional load reductions from non-point to point sources.

If non-point load reductions are not being met, the EPA should require VT DEC to take additional actions on non-point load sources. There must not be a shift of additional load reductions to the point source WLAs, a shift which would primarily burden municipalities and stakeholders paying into the Vermont Clean Water Fund (established by Act 64) at a tremendously high cost relative to marginal benefit versus non-point load compliance efforts. Municipal point source "operators" need to be able to develop compliance plans (including

financial capability assessments). Vermont has had a mutable regulatory landscape for too many years – in some cases resulting in the delay of phosphorus reduction efforts. The threat of a continued "changing regulatory landscape" will only serve to further delay necessary improvements in the point source arena. If the point source operators are complying with requirements laid out by the TMDL and its yet-to-be-fully-developed implementation plans, they should not be unfairly penalized for the failure of other responsible parties to deliver on non-point source reductions.

Consolidated Response:
EPA agrees that it is critical that all sectors take the necessary steps to implement the measures contained in the Phase 1 Implementation Plan and subsequently the priorities identified in the Tactical Basin Plans. EPA has constructed the Accountability Framework to provide clear signals whether critical implementation steps have been taken as promised.

If EPA finds it necessary to revise allocations in response to failure to implement nonpoint source measures, EPA will reconsider what nonpoint measures can be reasonably assured to be implemented and, where necessary, adjust the load allocations accordingly. If the load allocations must be increased, then the difference will have to be made up by a reduction in the wasteload allocations. If EPA revises the TMDLs to adjust allocations, EPA will seek public comment on such revised TMDLs before finalizing revisions.

Comment 7-16: [S. Burlington Stormwater Services, 5]
If other sectors outside of a Lake segment fail to meet their P reduction targets it is inappropriate for EPA to require further reductions from those sectors meeting their reduction requirements in another Lake Segment. EPA and DEC should confirm that additional or stricter regulations will not be placed on regulated entities (i.e. WWTFs and MS4s) if sectors in other Lake segments fail to meet their required P reductions. For example, if agricultural sources in the St. Albans Lake segment do not make sufficient progress towards, or are unable to achieve, their required 80% P reductions for Agriculture Production areas EPA should not require further reductions from WWTFs or Developed Land in the Shelburne Bay Lake segment. It would be more appropriate for EPA and DEC to work within the underachieving sector to improve P reductions. It would also be much more effective and cost efficient to work within these underachieving sectors within that same Lake segment to remove P rather than complete additional projects in other sectors outside that Lake segment.

Response:
EPA cannot provide categorical assurance that failure to meet allocations in one segment will never have an impact on allocations in adjacent or nearby segments. However, EPA believes that such a scenario is very unlikely. In any event, revision of an allocation in an adjacent segment would not be contemplated unless all measures had been exhausted in the segment that was not meeting its allocation.

Comment 7-17: [S. Burlington, WQD, 4]
If other sectors fail to meet their P reduction targets then the EPA and the DEC must not continue to disincentivize increases in water quality from WWTFs. The EPA Administrator Gina McCarthy has been "…a leading advocate for common sense strategies to protect public health and the environment." It is anything but common-sense for the EPA to make it a disincentive for a sector to reduce their P discharges below their target. In the 2002 TMDL, wastewater discharges were reduced from 78.1 metric tons a year (mt/yr) to 55.8

mt/yr which represented a 22.3 mt/yr reduction, a 29% reduction. In the 2015 TMDL, wastewater discharges are reduced from 55.8 mt/yr to 32.3 mt/yr, a 42% reduction compared to the WLAs established in the 2002 TMDL. The 2001-2010 average base load of phosphorus discharged from all Vermont WWTFs was 24.6 metric tons per year. This comprises 76% of the TMDLs' combined WWTF wasteload allocation of 32.3 mt/yr. The EPA's definitions of wasteload and load allocations refer to both future, as well as existing, point and nonpoint sources. The Vermont WLA Process requires that future population growth be considered in establishing wasteload allocations. Capacity for future growth in wastewater flows is built into the design and permitting of wastewater treatment facilities. The difference between current discharges and the limit in the new TMDL was mentioned at the Public Meeting on August 27, 2015, in South Burlington, as "the allocation for future growth." As the real and political costs to treat wastewater to a level beyond what is currently permitted increase so does the disincentive to treat at a level below what is permitted. The real costs are obvious, including (but not limited to): 1) increased chemical usage; 2) increased electrical usage; and 3) potential increased greenhouse gas emissions to produce the electricity. As these costs rise, this puts pressure on operators (or their employers may put pressure on them) to do the opposite of what they have all been trained to do and which they do inherently, which is to discharge the best effluent possible. WWTFs are highly complicated facilities and many use biological processes to treat the water. Highly skilled operators are necessary for the good operation of the facilities. If the incentive is to operate these facilities with only concern for the "bottom line" this may lead to use of "low bid" contract operators. These individuals may not be as diligent and forgo good maintenance practices. This would be damaging to the industry and potentially the environment. Politically the costs to the industry for "going above and beyond" the required limits are also obvious. When the TMDL was released to the public for comment, the lead story from Vermont Public Radio, after the first public outreach meeting, had only one section that had much larger font and was bolded. It was a quote from Chris Kilian of the Conservation Law Foundation: "We remain concerned that wastewater treatment plants throughout the basin will essentially be allowed to expand how much phosphorus they're permitted to put in the watershed for a significant period of time." **This clearly demonstrates once again how doing better than required has come back to hurt the industry as WWTFs actually have a 42% reduction in P in this TMDL compared to the 2002 TMDL.**

Response:

EPA disagrees that there is a real disincentive for WWTFs to further improve water quality. The important progress made in reducing WWTF discharges since 2002 (including especially reductions that went above and beyond what was required in 2002) has arguably saved many ratepayers significant new costs because most of those facilities are now discharging below the new load limits and may not need to incur additional costs unless and until flows approach design capacity. If EPA had established WWTF WLAs by limiting each facility's discharge to the current levels, that would have penalized high performing facilities and created a disincentive to go above and beyond requirements in the future. EPA instead established WWTF WLAs using uniform concentration and flow criteria that require more effort from facilities that were just barely meeting the 2002 allocations and little or no additional effort (at least in the short term) from those facilities that chose to operate plants in a fashion that achieved significantly greater reductions than required. If facility limits are consistently established in this way moving forward, there is a built in incentive for operators to continue to innovate and achieve further reductions as cost-effective opportunities arise.

Comment 7-18: [Dehner]
20 years is too long for implementation. While I understand that there are many steps I believe the target dates should be revisited and the state should have no more than 10 years to get this completed.

I believe the State needs to report to the EPA and the public annually on progress, not every 5 years. The states track record is not great on these problems. They should be held accountable for making this happen. An annual update should be required with penalties for non-performance.

Response:
EPA appreciates the commenter's encouragement to complete implementation quickly. The TMDLs do not have explicit time deadlines and EPA expects that implementation will occur expeditiously. EPA's interest is in seeing Vermont take a critical source approach – applying the most effective measures to the most significant sources that are readily remediable. In perhaps half of the segments, it may be possible to implement these measures within the first two Tactical Basin Plan cycles (i.e., 10 to 15 years). But in segments with large sediment loads in the stream or lake beds or high percent acreage in agricultural lands, many measures will have to be individually tailored and will likely take longer, and for many streambanks, some will best rely on long term natural processes rather than engineering.

As noted earlier, EPA has struck a reasonable balance in the frequency of assessment and reporting in the Accountability Framework. In the first phase, where the foundational, large regulatory steps must be completed in order to launch full scale implementation, an annual reporting on progress is appropriate. As the second phase is keyed to the five year Tactical Basin Planning cycle, a check-in and reporting at the mid-point and ending of each cycle is sufficient to track progress and intervene if there is insufficient implementation in the first half of a cycle.

Comment 7-19: [VT DEC]
On February 23, 2016, Alyssa Schuren, Commissioner of VT DEC, sent a letter proposing revisions to the milestones in the Accountability Framework in the proposed TMDLs. The relevant text of the letter is included below.

We are in the process of finalizing the draft Vermont Lake Champlain Phosphorus TMDL Phase I Implementation Plan (hereinafter referred to as the Phase I Plan) in preparation for the public meetings and comment period we anticipate holding later this year. We are writing you to recommend minor adjustments to the milestone deadlines of the TMDL's Accountability Framework to more accurately reflect the timing of the TMDL's release and expectations described in the Phase I Plan. We also would like to describe a number of elements in the Phase I Plan that are appropriate for inclusion in the Vermont Lake Champlain Phosphorus TMDL's accountability Framework.

The State of Vermont acknowledges that EPA is applying an "accountability framework" that contains successive milestone periods,[1] modeled after the Chesapeake Bay TMDL. We recognize that the purpose in using this framework is to ensure that the commitments made in the Phase I Plan and implementation actions described in the tactical basin plans will occur, thus meeting the TMDL's required "Reasonable Assurances" that nonpoint source phosphorus pollution reductions can be achieved.[2]

As you know, we submitted the first draft Phase I plan back in May, 2014. We later provided programmatic updates to that plan in the summer of 2015 to better coincide with Act 64 [3] – state clean water legislation enacted in June, 2015. However, the draft Phase I Plan assumed a 2015 release date for the TMDL. Thus, some of the deadlines listed in the Phase I Plan that are associated with commitments being used for the accountability framework are outdated.

The first milestone period focuses on the establishment of new programs, permits and funding. We request modification of the first milestone period from years 2015 - 2017 to years 2015 - 2018, and the filing deadline to EPA for the interim report card from the end of 2016 to the end of 2017. Although we have made significant accomplishments already, including the formation of a Clean Water Fund, the additional time will enable us to complete an Act 64 directive to pursue long-term financing of the Clean Water Fund, a critical element to support TMDL implementation. It will also enable us to complete the update to the Required Agricultural Practice Rule to include requirements to manage nutrient pollution from tile drains, as required by Act 64. Act 64 provided Vermont with new authorities and resources to implement the TMDL. Some of these actions are appropriate for inclusion in the TMDL's Accountability Framework. Acknowledging them explicitly will demonstrate Vermont's shared commitment with EPA to meet the TMDL's Reasonable Assurances.

We anticipate the accountability framework will include the development of a tracking system that can monitor our progress in achieving phosphorus pollution reductions. A tracking system is an Act 64 requirement and mentioned in Chapter 7 of the Plan. Vermont is committing resources to the development of a new comprehensive implementation tracking and reporting system that will help the State to track, evaluate and report our progress under the new TMDL. This system will also leverage the EPA's tracking and accounting system it has developed for monitoring progress.

Although we updated the draft Phase I Plan in the summer of 2015 to better align with the new authorities and resources specified in Act 64, some of these authorities and additional state policies underway were not identified in the TMDL's accountability framework. Therefore, we request EPA specify the following actions as part of the Accountability Framework's first milestone period:

1. As required by Act 64, an update to the 23 year old Memorandum of Understanding between the Agency of Natural Resources and the Agency of Agriculture, Food and Markets regarding the management of nonpoint source water pollutions. This update will enhance and clarify the coordination and management of enforcement for large, medium and small farm operation sand describe how the agencies will apply the anti-degradation policy to new sources of agricultural nonpoint source pollutants;
2. Update of the Vermont Water Quality Standards, including anti-degradation, by adding a new tier that will allow for an upward reclassification of designated uses to a new, more protective class.
3. A new State Combined Sewer Overflow (CSO) Rule, to replace Vermont's 1990 CSO Control Policy. This new rule clarifies federal and state requirements of remaining CSOs. Although CSOs are considered a small source of nutrient pollutions, the new rule is promoting green stormwater infrastructure wherever possible;
4. Establish long-term revenue source to support water quality improvement via the Clean Water Fund;
5. Remove reference to a "municipal stormwater technical assistance program." We have no plans of establishing such a program. However, we remain committed to providing technical assistance to municipalities in stormwater management. In the summer of 2015, following the passage of Act 64,

DEC reorganized the Ecosystem Restoration Program into the Vermont Clean Water Initiative Program. This program is responsible for coordinating the implementation of the TMDL, supporting the delivery of technical assistance across all sectors; and,

6. Revise MS4 general permit to require existing regulated municipalities to control discharges consistent with the TMDLs' wasteload allocations.

Footnotes in comment

[1]Stephen Perkins, EPA, Lake Champlain Total Maximum Daily Loads (TMDLs) presentation at the public outreach meetings, August, 2015.

[2]January 24, 2011 Letter from US EPA Region 1 to VT ANR Secretary D. Markowitz re: Lake Champlain Phosphorus TMDL disapproval, page 11.

[3]Act 64, referred to as the Vermont Clean Water Act is available at: http://legislature.vermont.gov/assets/Documents/2016/Docs/ACTS/ACT064/ACT064%As%Enacted.pdf

Response:

EPA appreciates that the lag in timing and the passage of Act 64 suggest that revisions should be made to the Accountability Framework, and particularly appreciates the suggestions of additional measures to add to the framework. EPA has removed the list of items due by the end of 2015 as they are in the past and were completed. EPA has added items 1 and 3 above, as well as the development of the tracking system described two paragraphs above the itemized list, to the list of items to be completed by December 30, 2016. EPA has also removed the "municipal stormwater technical assistance program" from the 2016 list. Items 2, 4 and 6 have been added to the list of items to be completed by December 30, 2017. EPA does not agree to extend this phase of the Accountability Framework thorough 2018, nor to delay the interim report card to the end of 2017. EPA continues to view the timely accomplishment of key milestones as critical to successful implementation of the TMDLs and believes an interim report on progress in early 2017 is an essential part of tracking and assessing progress.

8. Implementation

Comment 8-1: [CLF-VNRC, 2]
The draft 2015 TMDL does not ensure implementation is feasible.
The second element of a legally sufficient TMDL is to ensure implementation is feasible by not only identifying who is responsible for each implementation action, but by also demonstrating that these responsibilities are reasonable. However, the draft 2015 TMDL does not ensure implementation is feasible. It places an impractical burden on municipalities, it requires allocations be finalized before an implementation plan is fully established, and it includes nonpoint source controls that do not demonstrate reasonable assurances phosphorus loads will actually be reduced.

Response:
EPA notes that the commenter is characterizing language in a Government Accountability Office (GAO) report evaluating the overall TMDL program and not language in the CWA or EPA's TMDL regulations. EPA agrees that feasibility of implementation is an important element of reasonable assurance. As discussed elsewhere in this document, EPA disagrees that the implementation of the TMDLs is impracticable or infeasible, or that the TMDL is not supported by adequate reasonable assurance.

EPA is not prepared to substitute the commenter's assessment of the practicability of the burden on municipalities for the judgment of the Governor and the Vermont General Assembly. The outline and considerable detail of the state's implementation plan were known to the General Assembly as they deliberated and ultimately passed Act 64.

While the implementation plan is not yet final, a key reason it has not been finalized is that Act 64 requires the state to adjust it within 90 days of the final TMDLs to ensure that it is consistent with the final TMDLs. The commitments of the Governor in the very detailed August 2015 draft Phase 1 Implementation Plan and the authority granted and requirements for programs contained in Act 64 provides a robust implementation framework.

Regarding reasonable assurance, EPA refers the reader to the responses to Comments 7-1, 7-2 and 7-3 in the Reasonable Assurance section of this document and to the Reasonable Assurance section (Section 7.1) of the TMDLs for a thorough discussion of that subject.

EPA received two comments related to the use of grant and other funding mechanisms. A consolidated response follows the second comment.

Comment 8-2: [Vermont League of Cities and Towns]
As you well know, financial resources are currently an enormous concern for municipalities. As you have said on many occasions, how Vermont meets the requirements of the TMDL is not EPA's responsibility. However, we must note that the federal government – through EPA and the TMDL – is imposing enormous unfunded mandates on the state and local governments with very little in the way of new dollars to implement the required programs. At the least, we urge both EPA and the DEC to eliminate conflicting requirements of

various grant and loan programs that make it difficult to target funds from a variety of sources to one project. We also urge you and DEC to implement integrated planning so that municipal governments can prioritize their projects to address the most pressing water quality issues first.

Comment 8-3: [Essex Junction]
Additional Legislative Action. There will likely be additional legislative action required for communities to maximize capital investments made. With the LC TMDL, any construction is an opportunity to improve stormwater infrastructure at the least cost. Unfortunately not all grant or funding programs allow for concurrent work that does not specifically meet program definition even though the funds are from a separate source. Where these obstacles are met, they must be addressed for maximum cost effectiveness and fastest compliance with the TMDL.

Consolidated Response:
EPA will provide and encourage Vermont to take advantage of all the flexibilities available under statute, regulations and EPA guidance in the various grant and loan programs that may aid in targeting funding to priority implementation elements. As discussed in the Wasteload Allocation section of this document, EPA supports Vermont's commitment to employ flexible approaches such as integrated planning/permitting.

Comment 8-4: [Central Vermont Regional Planning Commission (CVRPC)]
The Central Vermont Regional Planning Commission (CVRPC) supports using a phased approach to achieving phosphorus reductions, which allows communities and businesses to prepare for new actions. Collaboration between the Vermont Agencies of Natural Resources, Agriculture, Food and Markets, and Transportation is essential to achieve TMDL results. Collaboration will help insure regulation, funding and financial incentives, and technical assistance are coordinated, and support affected parties to the extent possible.

In reviewing the Vermont Lake Champlain Phosphorus TMDL Phase 1 Implementation Plan, CVRPC has observed inequities between the base load sources of phosphorus and the Plan's actions and implementation schedule. The inequities suggest that Vermont's ability to enforce permits and certifications and to offer financial incentives to municipalities and the agriculture sector will determine its success in achieving clean water. The Plan would be more robust with a stronger correlation between base load sources and enforcement and financial incentives.

Response:
EPA agrees that collaboration between the Vermont agencies (and their federal partners) is essential to achieving success. EPA notes that the level of collaboration across the state agencies in the development of the Phase 1 Implementation Plan is unprecedented in New England.

EPA is unclear about the "observed inequities between the base load sources of phosphorus and the Plan's actions and implementation schedule" in the Phase 1 Implementation Plan. EPA will call this comment to Vermont's attention as it takes comment on the final version on the Phase 1 Implementation Plan. The commenter is encouraged to be more specific if similar comments are offered on Vermont's plan.

EPA received two identical and one nearly identical comments concerning the phosphorus tracking and accounting system. EPA's consolidated response follows the comments.

Comment 8-5: [Green Mountain Water Environment Association, 7 and S. Burlington WQD, 10]
Vermont DEC must establish a P load tracking and accounting system to guide permit requirements and eventually assess permit and WLA compliance. This system must be in place before DEC issues any new State or federally mandated permits with requirements related to the Lake P TMDL. The current TMDL and Implementation Plan documents indicate the required reductions from various P sources, but do not contain any specific information regarding how these reductions will be measured for sources other than wastewater.

a. There are no details regarding how P reductions will be calculated for developed land within the WLA. This information is necessary so that regulated entities (e.g. MS4s) can incorporate this into their planning. The regulated community is subject to multiple layers of regulation, and planning is already underway to comply with existing regulations (e.g. Stream Flow Based TMDLs in stormwater impaired watersheds). The sooner this information is provided the better able regulated entities will be able to incorporate it into their planning.

b. The TMDL and Implementation Plan documents contain no details regarding how P reductions will be calculated for addressing streambank erosion related inputs that are part of the Load Allocation (LA). This is critical since some lake segments must make large reductions in P contributions from this source (e.g. a 55% reduction is required from streams draining to Shelburne Bay). This information is necessary so that regulated entities can incorporate this into their planning and identify projects that will have an impact on P sources related to streambank erosion.

i. Streams are dynamic systems and projects implemented to reduce P loading from streambank erosion may take significant time to develop and have an impact. How will the P tracking and accounting system account for the longer time horizon associated with these projects? The EPA's assessment of State efforts must take this longer timeframe into account before taking further measures to reduce P from other sources (i.e. stricter limits on WWTFs).

c. Measurements or estimates of P reduction will be necessary under State programs (e.g. Ecosystems Restoration Program grants), due to regulatory requirements (e.g. MS4 permit, stormwater TMDLs and the Best Management Practice Decision Support System), and as part of TMDL Implementation (e.g. Tactical Basin Plans, P trading programs). Both EPA and DEC must ensure that the P tracking/accounting system used by these various programs uses similar methods.

d. Due to the wide ranging impacts that the P tracking and accounting system will have, this system must be developed through a public process that allows for public comment.

Comment 8-6: [S. Burlington Stormwater Services, 2]
EPA and DEC must provide more detail on the P load tracking and accounting system referenced in the TMDL and Implementation Plan documents prior to the issuance of any new or revised permits with requirements related to the Lake P TMDL. The TMDL and Implementation Plan documents specify the required P reductions by sector, but do not contain any specific information regarding how these reductions will be measured for sources other than wastewater.

a. There are no details regarding how P reductions will be calculated for developed land within the WLA. Implementation of stormwater BMPs (e.g., storm drain cleaning, street sweeping, etc) and construction of Stormwater Treatment Practices (STPs) (e.g., stormwater bio-retention areas, infiltration basins, detention ponds, etc) will remove P from the developed landscape. However, EPA and DEC have not provided any information regarding how these reductions will be measured. This information is necessary so that regulated entities (i.e. MS4s) can incorporate this information into their planning. The regulated community is subject to multiple layers of regulation, and planning is already underway to comply with existing regulations (e.g., streamflow based TMDLs in stormwater impaired watersheds). The TMDL and Phase 1 Implementation Plan should not be finalized until this information is provided and the public is provided with the opportunity to review and comment.

b. The TMDL and Implementation Plan documents contain no detail regarding how P reductions will be calculated for addressing the streambank erosion caused by channel instability that is part of the TMDL's Load Allocation (LA). Construction of infiltration and detention STPs has the potential to significantly reduce P delivered to the Lake due to streambank erosion. However, EPA and DEC have not provided any information regarding how these reductions will be measured or credited. The City of South Burlington discharges to the Main Lake and Shelburne Bay Lake segments, which will require a 28.9% and 55.0% reduction from stream P sources, respectively. This is a significant reduction requirement and due to the lack of information provided within the TMDL and Implementation Plan documents we are unable to assess our ability to achieve these reductions, nor can we determine what the TMDL would consider the most efficient and cost effective ways of doing so. The TMDL and Phase 1 Implementation Plan should not be finalized until this information is provided and the public is provided with the opportunity to review and comment.

i. Streams are dynamic systems and projects implemented to reduce P loading from streambank erosion may take significant time to develop and have an impact. How will the P tracking and accounting system account for the longer timeframe associated with projects intended to reduce this source of P to the Lake? EPA's assessment of State efforts must take this longer timeframe into account before taking additional measures to reduce P from other sources (i.e. stricter limits on WWTFs or further reduction requirements from developed land).

c. Measurements or estimates of P reduction will be necessary under State programs (e.g., ERP grant program), due to regulatory requirements (e.g., MS4 permit, stormwater TMDLs and BMP DSS tool), and as part of TMDL Implementation (e.g., Tactical Basin Plans, P trading programs). EPA and DEC must ensure that the P tracking/accounting system used by these various programs uses similar methods.

d. Due to the wide ranging impacts that the P tracking and accounting system will have, this system must be developed through a public process that allows for public comment.

Consolidated Response:
EPA agrees that a phosphorus load tracking and accounting system is important. Vermont DEC has committed to develop one and EPA is providing support to that effort. As discussed in the response to Comment 7-19, EPA has added a milestone to the TMDL accountability framework section that specifies completion of the tracking and accounting system by December 2016.

While the details of the system are still being developed at the time of the issuance of the final TMDLs, some indication of how stormwater reductions will likely be accounted for is included in the report describing the Lake Champlain Scenario Tool set-up and design specifications (Tetra Tech, 2015). The phosphorous reductions specified in this report for various stormwater treatment practices and runoff depths are being used as the starting point for the development of phosphorus reduction credits in the tracking and accounting system. However, the number of stormwater practices will likely be expanded, and the full spectrum of runoff depths (from the BMP performance curves) will likely be available for use in the tracking and accounting system. While it does not provide a complete picture, the Tetra Tech report provides a preview of some of the stormwater practice components.

VTDEC (with input from EPA) is still in the process of developing a method for tracking phosphorus reductions from stream corridor systems. The approach currently envisioned would require regular determinations by (or overseen by) VTDEC river scientists of how close each river reach is to equilibrium conditions. Using the base phosphorus loads estimated for each reach (from the SWAT model) and the stream corridor percent reduction called for in the TMDLs, progress toward the reduction target would be tracked via the progress toward equilibrium conditions. If a reach is found to be 30% of the way toward equilibrium conditions, for example, then 30% of the total load reduction expected from that reach would be credited (in the case of Shelburne Bay, it would be 30% of the 55% reduction). However, this approach is still being developed, so nothing is yet final.

DEC has informed EPA that it intends for its best management practice tracking and accounting process to be as transparent as possible. DEC will also solicit user input in developing the process for tracking and reporting on BMP implementation.

EPA received two related comments from three entities regarding use of Tactical Basin Plans as the Phase 2 TMDL Implementation Plans. EPA's consolidated response follows these comments.

Comment 8-7: [Green Mountain Water Environment Association, 8 and S. Burlington WQD, 11]
We support, but have some concerns regarding, Vermont DEC's plan to modify the existing Tactical Basin Plans (TBPs) so that they serve as the Phase 2 Lake P TMDL Implementation Plans. We also have some concerns regarding how these plans will be used by EPA. Vermont's TBPs will require significant modification to serve this purpose. Creation of Phase 2 plans will involve a level of effort and technical analysis not previously provided by TBPs.

a. How will DEC ensure that staff preparing the TBP are provided with the necessary technical knowledge to address, estimate, and track P sources and reductions from all sectors (i.e. wastewater, stormwater, agriculture, streambank erosion, etc)?

b. How will DEC ensure that TBPs are consistent between the various drainage areas and plans? The schedule for updates to the various TBPs stretches over multiple years. The process must acknowledge that decisions made regarding P accounting and tracking in those TBPs updated first (i.e. the Lamoille TBP in 2016) will have impacts for those that follow (updates to North Lake TBMP in 2017 or Winooski TBP in 2018). Therefore,

DEC must accept comment on the Lamoille TBP from outside the area that it covers. Alternatively, development of a template TBP to be used across all basins could be a Statewide public process.
c. P reduction benchmarks included in updated TBPs will be used by EPA to measure the success and sufficiency of Vermont's efforts to implement the Lake Champlain TMDL. The penalty for failing to meet these benchmarks could result in increased regulatory requirements. However, if P reduction benchmarks are not met under one TBP it would be inappropriate for EPA to impose increased regulatory requirements on P sources outside of that Lake segment.

Comment 8-8: [S. Burlington Stormwater Services, 3]
DEC's plan to use updated Tactical Basin Plans (TBPs) as Phase 2 Lake P TMDL Implementation Plans and EPA's plan to use these documents to assess Vermont's progress towards achieving Lake P TMDL goals needs to be more detailed before the TMDL is finalized. Vermont's TBPs are not currently set up to provide information related to P reduction estimates for proposed projects or actual P reductions from project's implemented. The TBPs will require significant modification and improvement if they are to be used for this purpose. Creation of Phase 2 plans will involve a level of effort and technical analysis not previously provided by TBPs. Additionally, EPA plans to use the TBPs to assess the State's progress towards achieving the required P reductions. It is difficult to understand how EPA will make this assessment when the format and content of these plans is still unknown.
a. How will EPA and DEC ensure that staff preparing the TBPs are provided with the necessary technical knowledge to address, estimate, and track P sources and reductions from all sectors (i.e. wastewater, stormwater, agriculture, streambank erosion, etc.)?
b. How will TBPs assess P reductions within a single Lake segment?
c. How will the TBPs assess P reductions between different sectors within the same Lake segment?
d. How will EPA and DEC ensure that the contents and format of TBPs are consistent between the various drainage areas and plans? The schedule for update of the various TBPs stretches over multiple years. The process must acknowledge that decisions made regarding P accounting and tracking in those TBPs updated first (i.e. the Lamoille TBP in 2016) will have impacts for those that follow (updates to North Lake TBP in 2017 or Winooski TBP in 2018). Therefore, DEC must accept comment on the Lamoille TBP from outside the area that it covers. Alternatively, development of a template TBP to be used across all basins could be a Statewide public process.

Consolidated Response:
EPA recognizes that the Tactical Basin Planning process used in the past was not set up to quantify phosphorus loads and phosphorus reductions associated with implementation measures. However, VT DEC has committed to substantial changes to the Tactical Basin Plans that, among other things, will allow for such phosphorus quantification.

As detailed in Section F of Chapter 5 of Vermont's Phase 1 Implementation Plan, VT DEC is "…committed to improving the tactical planning process in several ways, such that each *associated Lake subwatershed tactical basin plan serves as the Phase 2 Implementation Plan for the execution of the Champlain TMDL."* [emphasis in original] For instance, VT has committed to significantly expand the implementation table for each plan, and to periodically review the progress of implementation, including public outreach to highlight efforts, and to insert new priority items that are more recently identified through on-going assessments. The new implementation tables will outline the priorities of DEC and partner organizations for protection or restoration of specific stream, river or lake segments

and present a specific focus on BMP or other program implementation necessary to reduce phosphorus loading to the Lake. The table will present best-available estimates of likely phosphorus reductions by practice, aggregated at the appropriate geographic scale. The table will also serve to notify partner organizations of the types and locations of projects that DEC will support. EPA is confident that DEC is capable of evolving the Tactical Basin Planning process to serve the implementation planning process for Phase 2 and beyond.

Responses to the itemized elements in the commenter's letter are provided below:

a. DEC has already hired a watershed modeler specifically to provide the necessary technical support to the basin planning staff, and to help build the phosphorus quantification element into each Tactical Basin Plan (TBP). EPA has also provided DEC with some tools to serve as a consistent starting place for phosphorus budgeting and accounting for all sources – the Scenario Tool and the "HUC-12 Tool" as referenced in Chapter 5 (Section F) of the State's Phase 1 Implementation Plan. As described above, DEC is committed to expanding on the geographic specificity contained in these tools, but will use the information in the EPA tools as a starting point.
b. DEC will be tracking the implementation of all phosphorus BMPs (and the amount of phosphorus reduced with each practice) within each lake segment watershed, via the Lake Champlain Tracking and Accounting Tool currently under development, as well as through the TBP implementation tables.
c. The Tracking and Accounting Tool will provide a means of summing reductions by sector and by lake segment.
d. The EPA tools (Scenario Tool and HUC-12 Tool) provide a consistent starting place for all the new TBPs, and the Tracking and Accounting Tool will provide a consistent means of measuring reductions. In addition, the DEC watershed modeler will be providing consistent support on each TBP. Regarding the idea of DEC developing a state-wide template for public comment (or allowing broader comment on the first new TBP completed), EPA encourages the commenter to provide these suggestions to DEC during the upcoming public comment period for Vermont's Phase 1 Implementation Plan.

Comment 8-9: [Vermont Rural Water Association (VRWA)]
To repeat a point VRWA made early in the stakeholder process for the Lake Champlain TMDL topic, "the detailed costs associated with all possible strategies to reduce phosphorus loading should be included in the final TMDL plan. This information needs to illustrate what the costs for any given strategy will be and also what that given investment will provide in regards to total benefit, in this case reduction in phosphorus loading. This information could then be used to target and prioritize investments (using a cost-benefit analysis). For each dollar invested it should be made clear which investments provide the most reduction in phosphorus loading." It is our understanding the state has the control on this item now and VRWA encourages EPA Region 1 to direct the state to dedicate funding toward those projects that will yield the most phosphorous load reduction per dollar invested.

Response:
Throughout the development of the TMDLs and the Implementation Plan, EPA and Vermont have been very conscious of cost as an important component of making common-sense decisions. In designing an implementation strategy that works both at the basin-wide scale and the sub-watershed scale it is nearly

impossible for cost-benefit analysis to be the sole basis of prioritizing investments. Other factors, such as consistent application of general permit approaches across the basin, are also an important consideration. In sub-watershed scale settings, it may well make more sense to address a critical source first regardless of whether it has the best cost-benefit score. The State's broad scale choices are in full public view in the Phase 1 Implementation Plan, and there will still be one more public comment period on this Plan. Priority setting in Phase 2 (the Tactical Basin Plans) will be the subject of public input. EPA and the State have collected some information on phosphorus removal costs per pound for various practices, and this information will be available for use in the basin planning process. EPA also expects that relative costs will likely change over time as current technologies become more commonly implemented and new technologies are developed. EPA is confident that Vermont will continue to make common-sense decisions in setting priorities for implementation and that stakeholders will have the opportunity to share the best available data with the State, whether it be cost, effectiveness, availability, co-benefits, etc.

Comment 8-10: [Sparacino]
To the State of Vermont, we ask you to speed up the process of implementing procedures to clean up the bays.
Why do we have to wait until December 2016 to:
Adopt APP revisions?
Develop a Tactical Basin Plan for Missisquoi Bay?
Adopt the Small Farm Operation certification program rule?
Put the Livestock exclusion incentive program in place?
Develop a matrix and small farm template for nutrient management planning?
Develop Environmental Stewardship Incentive program in priority watersheds?
Mandate certification of custom manure applicators?
Develop requirements for farmer training programs?

Why do we have to wait to Dec 30, 2017 to:
Target funding for agricultural BMP and Nutrient Management Plan implementation provided in Missisquoi Bay and St. Albans Bay?

Response:
This comment is addressed to Vermont and can be most effectively responded to by the State in the upcoming public comment period for the Phase 1 Implementation Plan. In the interim EPA notes that there is ample evidence that the Agency of Agriculture already is hard at work in the development of the many programs it is required to put in place by Act 64. For instance, the Required Agricultural Practices – the foundation of the most important changes in agricultural practices - have undergone several rounds of public input, including the opportunity for public comment on the May 13, 2016 draft. The Agency is on track to complete the revisions by July 1, 2016.

Comment 8-11: [Adamson]
I am very pleased to read about the plan to reduce the amount of phosphorus entering the lake, but I have seen very little about what is being done to <u>remove</u> phosphorus from the lake. Our summer camp is in the Long Point community in North Ferrisburgh, Vermont. In our tiny cove off Town Farm Bay, a few of us neighbors have

been diligent about removing lake weeks that grow in our beach area and wash up on the shore. I'm guessing that we have removed tons of lake weeds over the last two summers, using them as mulch in our community garden. From basic internet research, it appears that every 100 pounds of lake weeds contains approximately .25 pounds of phosphorus. So it seems like there is some value to removing them from the lakeshore rather than leaving them on the shoreline to decompose and be pulled back into the lake with the spring high water - bringing the phosphorus with them.

I'm wondering if the EPA would consider funding local efforts like these to remove lake weeds and the phosphorus they contain.

Response:
EPA applauds the efforts of individuals and groups who take steps such as those described by the commenter. EPA generally does not have the funds or the means to directly support this type of local effort. EPA funding is provided to the Vermont DEC and to the Lake Champlain Basin Program and they in turn solicit and fund local scale projects. For example, The Lake Champlain Basin Program has allocated hundreds of thousands of dollars over the last two decades to remove water chestnut plants. Although harvesting does remove some phosphorus from the system, it is a small amount in comparison to reductions achieved by other methods. As a result, phosphorus reduction is not a criterion used by VTDEC when funds are awarded for aquatic plant harvest.

It's also important to note that aquatic plants have a critical role in the lake ecosystem. They provide habitat and compete actively with algae for bio-available phosphorus, reducing the likelihood of nuisance blooms. Removal of aquatic plant debris from the shoreline doesn't interfere with those roles, but VTDEC strives to find a balance between enhancing recreation, removing aquatic nuisance species, and protecting littoral habitat when awarding harvesting funds.

Comment 8-12: [LCI *et al*., 4]
Fourth, assuming our position is intellectually flawed and a plan based on dilution is in fact viable, the financial resources committed to the plan are woefully inadequate—a margin of 10 by conservative estimates. As outlined in the VT Agency of Natural Resources Act 138 Report to the Legislature, the funding the necessary to address water impairments stands at $156 million annually. While the source of the funding is a matter of reasonable debate as is whether all of those funds are necessary to address phosphorus impairment, there is still no identified sources that combine to reach this figure even remotely. Additionally, the lack of accountability with respect to one often cited source for funding, US Department of Agriculture (USDA), remains a matter of concern for both our organization and GAO. Our skepticism is warranted in light of the aforementioned GAO report, as well as when one considers the recent report from the senior economist at the USDA's Economic Research Service in which it is stated, "Despite billions of dollars of investment in conservation measures over the past several decades agricultural NPS policies do not appear to be enough to address landscape-scale water quality problems. … The voluntary approach has generally not led to an aggregation of conservation effort in impaired watersheds sufficient to produce measurable improvements in water quality."

Given EPA's identified reductions of 60 to 80 percent in P loads within Champlain segments dominated by agricultural activity, and this despite the millions of these types of dollars having been directed to those

segments in the past decade, we stand reasonably unassured, regrettably, that neither the State policies now in place or under consideration will be sufficient due to their voluntary nature and insufficient investment.

The lack of financial commitment to achieve the implementation plan closely parallels, if not represents, the lack of urgency associated with remediating a resource critical to public health and economic prosperity and flouts the EPA's mandate to achieved swimmable, drinkable, fishable waters throughout the Nation by July 1983 with the elimination of all pollutant discharges by 1985. It is unconscionable that the EPA or the State would have us accept a plan that suggests it will be 80 years in total for the people of the State to be able realize the public trust.

Response:

As the commenter acknowledges, the estimated annual need of $156 million cited from the Act 138 report to the legislature included all threats to water quality across Vermont. The report does not contain an estimate for the total annual cost of meeting the phosphorus water quality criteria in Lake Champlain. Still there is little argument that the costs to meet the allocations in the TMDLs are significant and that resources are finite.

EPA understands the commenter's concern about the achievability of the steep reductions from agricultural sources needed in some segment watersheds. However, EPA is very encouraged by the new approaches being pursued by the Vermont office of the USDA and the State Agency of Agriculture, and the new agricultural requirements in Act 64. Starting in 2015, the USDA is now targeting its significant resources to certain key Lake Champlain sub-watersheds with the highest phosphorus loading rates and is committed to addressing the full range of phosphorus reduction needs in these watersheds rather than simply responding to applications for assistance sprinkled around the state. New requirements in Act 64 and the new RAPs currently under development address challenges such as gully erosion that is a leading source of phosphorus loading from many agricultural fields. Other proposed RAP requirements addressing ditch buffers, riparian buffers, livestock exclusion from water bodies, cover crops, and nutrient management represent significant changes from past practice. And even before the RAPs are finalized, the implementation of USDA-supported practices such as cover cropping has increased dramatically in Champlain basin in recent years, from 281 acres in 2010 to 16,047 acres in 2015 (Potter, 2016). In addition, USDA is not just targeting substantial resources to priority watersheds -- the agency is also carefully evaluating the TMDL reduction targets in these watersheds and identifying the mix of practices needed to achieve the targets. The combination of new targeting, new requirements, and new resources add up to a major change from past practice.

In summary, while EPA understands skepticism based on past performance, EPA does not agree that the past is prologue for Lake Champlain. The difference in scope, specificity and scale of regulation between the implementation plan for the 2002 and 2016 TMDLs is vast. It is fair to characterize implementation of the 2002 TMDL, aside from the WWTF sector, as resting too much on voluntary measures and not being matched to the critical sources of phosphorus. Many lessons have been drawn from the past 10 years and the approach to implementation under the 2016 TMDLs will be much different. For developed lands, the state will issue general permits that mandate measures to reduce phosphorus discharges. Most notably, Act 64 significantly changed the mode of implementation for agriculture. There will be Required Agricultural Practices and new regulatory requirements for nearly all farms. This is very different from the approach under the 2002 TMDLs.

Comment 8-13: [LCI *et al*., 6]
Sixth and final, we strongly urge EPA to insist the State place an increased emphasis on natural infrastructure remediation and advanced biological nutrient removal systems coupled with biogas and electrical generation within both the agricultural and municipal sectors, swifter and sterner enforcement of environmental laws, and an incorporation of ecological services economics when considering the practicality and/or feasibility of implementation. It is imperative that our environmental policies function within a 21st Century economy that protects our waters rather than the current paradigm which prospers through their poisoning. We only have one Lake Champlain. Its remediation and protection are no doubt expensive. Not to be wholly unexpected when we consider the objective is priceless.

Response:
EPA appreciates the commenter's encouragement of increased emphasis on natural infrastructure remediation and advanced approaches to integrating waste treatment, energy and phosphorus recovery. EPA has and will continue to provide technical support to state environmental, agricultural and energy agencies for these approaches.

9. Public Participation

EPA received four requests from three entities to extend the original 30 day comment period. A consolidated response follows the fourth comment.

Comment 9-1: [City of Burlington]
The City of Burlington respectfully requests a 30-day extension for comments on the draft TMDL, issued on August 14th.

Comment 9-2: [NYS DEC]
By copy of this e-mail, the New York State Department of Environmental Conservation is requesting an additional 45 days to comment on the draft updated Lake Champlain Phosphorus TMDL.

Comment 9-3: [Boivin 1]
The 30 day commentary period is to [sic] short for a set of new rules as long and complicated as these new water quality regulations. The Vermont Town Meeting Tradition requires that all citizens have a full opportunity to address the issues at length. Three 2 hour public promulgation meetings do not fulfill Vermont's time honored convention, even though they may meet the requirements of the Administrative Procedures Act.

The public comment period must be extended to at least six months. The public needs enough time to read, digest and respond to the complex and linguistically confusing ukase [sic]. It is not unreasonable to add an additional six months for responses considering that the State has paid many full-time employees for several years to compose these regulations and considering that the persons affected earn their own livings by working full time.

Holding additional public hearings for the airing of concerns is not too much to ask. The purpose of public expression of concerns is that it provides an opportunity for individuals not only to address the officials but also to convince their peers of the correctness of their expressed views. The news media will report on these meetings. Others may then intervene in favor or opposition of these views. The public debate will either spur needed change or elicit public support for the proposal. In the end, the public will be educated in a manner that just issuing the new regulations cannot accomplish.

Written comments do not provide these benefits. They are easily ignored. Similarly short, time-limited objections at the promulgation meetings will be dismissed as being "unsupported."

Comment 9-4: [Boivin 2]
Thank you for extending the comment period another 30 days to October 15, 2015. Also record my objection to the accelerated comment period. The State and the EPA has taken over two years to develop these regulations. Three 2 hour meetings to present these complex and long regulations is insufficient public notice. Granting the public only 4 minutes for comments to each person is not adequate. Meetings should be held with every affected sector of the state to collect their inputs on the proposed final regulations. The comment period should be extended to at least six months.

While we recognize the political desire to have these "ready for the Vermont Legislature to take up the issue at the beginning of the 2016 session this is no excuse to short circuit the public that will be affected and ram these regulations through. If having this issue before the legislature is of such importance then the development of these regulations should have been accelerated and released in sufficient time for adequate public comment.

These regulations have been under development for over two years with a full time staff and paid consultants. The fact that the public is being cut out of the process now that they are being finalized shows that these regulations are being driven by political exigencies and not by science. Additional proof of the political motivations rather than cleaning up the lake is the fact that the radio announced on the morning of October 12, 2015 the approval of these regulations. This is three days prior to the close of the comment period. These policies are doomed to fail because they are not based on science but on political pressure, hearsay and uninformed impressions.

Consolidated Response: In response to the requests, EPA extended the original comment period by an additional 30 days for a total of 60 days. The original 30-day comment period is consistent with Vermont DEC's practice when it is proposing a TMDL. With the 30-day extension, EPA believes the public comment was sufficiently long to allow for detailed comments by interested parties. The suggestion that the TMDLs (which are not regulations) were approved prior to the close of the comment period is incorrect. Other than agreeing to extend the comment period to 60 days, EPA did not take any final action before the end of the comment period. EPA disagrees with the suggestion that written comments are easily ignored. As evidenced by this Response to Comments document, each written comment received has been directly responded to by EPA.

In addition to the ultimately 60 day public comment period, EPA conducted three public outreach sessions to provide the interested public with an opportunity to see a presentation on the TMDL allocations and ask questions. As discussed in Chapter 9 of the proposed TMDLs, EPA and the Vermont agencies began conducting outreach on the TMDLs in 2011. Stakeholder meetings with affected sectors (e.g., agriculture, municipalities) began in 2013 and continued through 2014. In December 2014, EPA, the DEC and the Agency of Agriculture hosted public outreach sessions in Rutland, Middlebury, Burlington and St. Albans. EPA presented proposed wasteload and load allocations for each lake segment and the Vermont agencies reviewed the control strategies that would be used to achieve the stormwater portion of the wasteload allocations and the load allocations.

Finally, it's unclear whether the concerns about regulations raised in the third and fourth comment are referring to the TMDLs or to regulatory actions that will be taken by Vermont in implementing the TMDLs. If the commenter was referring to the TMDLs, please note that TMDLs are not regulations, but EPA nonetheless provided many opportunities for public input, as summarized above. If the commenter was referring to State regulatory actions to implement the TMDLs and/or Act 64, the State will provide (or has already provided in some cases) opportunities for public input consistent with Vermont's requirements for public notice.

Comment 9-5: [Two Rivers-Ottauquechee Regional Commission]
Will the listening sessions on the TMDL could result in changes or if the Plan is essentially final and that suggestions are welcomed but not able to change the document?

Response: The meetings were outreach and listening oriented. The commenter was informed to make any comments for the record in writing.

Comment 9-6: [Friends of Northern Lake Champlain]
The Friends of Northern Lake Champlain supports the EPA TMDL Phase I draft and are extremely disappointed to learn that the hearing time period has been extended another month.

For several years, FNLC has sat in on countless water shed meetings, testified before various legislative committees, held numerous citizen and legislative education and outreach events, and heard the impassioned cry of the same citizens that you heard in St. Albans on Wednesday August 26. During this same time period, FNLC has dealt with diminishing financial resources and grown frustrated with the diminishing number of on-the-ground P loss reduction projects that we can provide. We are hopeful that the passage of Act 64 and adoption of EPA's TMDL plan will signal the turnaround point and end the degradation of Lake Champlain.

Due to Vermont's unique topography and land uses, the TMDL plan to emphasize reduction from NON-POINT P run off sources in critical source areas is bound to have the best overall results. Cover crops, corn/hay extended crop rotations, grassed waterways, stream and ditch buffers, no-till corn and soy bean planting, and contour plowing can be employed on thousands of acres of crop ground and prevent hundreds of tons of P laden sediment from reaching our water ways. These practices have extensive research to back them up and can be employed profitably on VT farms.

The Missisquoi Basin has been singled out for the most aggressive P loss reduction in all land use categories. FNLC recognizes that the most cost efficient and effective P loss reduction cures can happen on these critical area non-point sources. Since this aggressive reduction is required in low population townships with low incomes and few taxable businesses, town budgets will not be able to support this work. And dairy farms dealing with low milk prices and fighting for survival have no extra funds for improvements. To assist this area in accomplishing the most aggressive reduction, the political and citizens' will in outside areas must be successfully recruited. This is the role of the watershed groups and government and FNLC plans to work to help the state develop a change in culture that places a higher value in preserving our environment

Please do not allow any further delay in the adoption of the TMDL plan. We have to accelerate our work immediately or we risk losing public support.

Response: EPA appreciates that time is of the essence and extended the original comment period by an additional 30 days.

10. Other

Agriculture

Comment 10-1: [LCI *et al*., 5]
Fifth, given the Agricultural sector market forces at work currently, the goals of water quality and industrial agriculture production are innately at odds. The manifestation of such is clearly seen in the murky rivers and cyanobacteria laden waters of South Lake, St. Albans Bay, and Missisquoi Bay. A market that rewards volume at the lowest possible price will continue to externalize its costs across the landscape, exploiting both our waters and those downstream. Should EPA's commitment to environmental justice be taken seriously, it is our opinion that it is incumbent that EPA addresses it peers at the USDA to formulate a Farm Bill that ensures the agriculture community be adequately compensated for its fair treatment of both our environment and our farm laborers. The current system is abusive, profiting only those truly "upstream." We urge to encourage the White House to take a position that supports a food system that is rewarded for its environmental stewardship rather than for its exploitation of our natural world and those who depend on it. Those who profit must share in the responsibility of shepherding the resources from which they prosper. Until such time, we regret that we do not believe we will see much progress in the watersheds most impaired due to agricultural activity.

> **Response:**
> EPA acknowledges the views of the commenter. EPA has developed the TMDLs to address the laws, regulations and policies currently in place and is optimistic that real progress can and will be made in the coming decade.

Comment 10-2: [Sparacino]
To those farmers who follow best management processes by keeping a buffer, planting cover crops, not allowing livestock to enter our waterways, who inject liquefied manure vs. spreading it, and use other techniques to keep nutrients on farms, not in the lake, we applaud you and thank you!

To the farmers we have personally witnessed spreading liquified manure on every piece of open land located in our watershed, we implore you to stop and reconsider the detrimental effects you are contributing to our watershed and its inhabitants.

> **Response:**
> EPA acknowledges the commenter's encouragements.

Wind projects

EPA received 90+ comments related to the potential development of the Swanton Wind project. EPA's consolidated response follows Comment 10-12.

Comment 10-3: [Lang *et al*.]
It is good news that the EPA will invest time, money and expertise to help clean up Lake Champlain. I especially appreciate the suggestions on how we can help. Maintain vegetation buffers, maintain forests and trees and get "pervious".

As you are diligently working to clean up the lake, there is a potential **industrial wind turbine project** called Swanton Wind which is being proposed in the headwaters of Missisquoi Bay. Instead of maintaining vegetation buffers around these wetlands, this project proposes to **blast 7 turbine pads creating 11,600 (12) yard dump truck loads of shot rock** and according to the published plan **will be placed in wetland buffers.** Instead of maintaining forests and trees, the Swanton Industrial wind project proposes to **clear cut 45 acres of forest land on top of a ridge and wetland plateau at the headwaters of Missisquoi Bay.** Instead of "getting pervious", the **Swanton Industrial wind project proposes to create 27 acres of impervious surfaces** (this includes 7-50ft x 50ft turbine pads and interstate highway sized roads) in this wetland at the headwaters of Missisquoi Bay.

The State of Vermont must not fast track these industrial wind projects that put our Lake at even greater risk. The EPA's recent report set out Total Maximum Daily Loads (TMDLs). The Missisquoi Bay area would need to cut phosphorus by as much as 64.3 percent to meet the TMDL for that region. And, according to the EPA report, developed land and stream erosion are the biggest contributors of phosphorus in a central segment of the lake. The State of Vermont and the EPA **must not turn a blind eye to practices that will increase stormwater runoff into our lake.**

Please speak to our Secretary of ANR and let her know that we all need to work together to clean up the lake. We must not clear cut 45 acres of forest around headwaters to our lake. We must not put shot rock in buffers, we must not create 22 acres of impervious surfaces in the headwaters of our lake.

Please tell Sec Markowitz to stop the proposed Swanton Industrial Wind project. Renewable energy projects are important, but not in places that further threaten the health of our lake. Please see attached Fact sheet on this project.

FACT SHEET: Proposed Swanton Industrial Wind Project According to the EPA and Vermont Agency of Natural Resources, Saving Lake Champlain requires us as citizens to do three things.

Maintain Vegetation Buffers: ANR and EPA says a buffer slows water flow, absorbs moisture, cleans water, ANR describes a buffer to be a minimum of 50 feet. The Swanton Wind project will create approx 16,300 (12) yard dump truck loads of blast rock. Some of which according to the proposed Swanton Industrial Wind project will be placed in wetland buffers. See Swanton Wind LLC Map. * turbines require 50ft x 50ft x 40ft deep concrete pad (7pads)(3rock expansion from blast)/ conversion cubic ft to cubic yard /12 yard dump truck = 19,444 truckloads of blast rock.

Maintain Forests and Trees: ANR and EPA says a forest will slow water flow, clean water and help prevent erosion. **A single tree will absorb 100 gals of water per day, an acre of trees will absorb 410,060 pounds of CO2.**

The Swanton Industrial Wind Project proposes to clear cut 45 acres of Forest. *****10,235ft x 100ft for road + 300ft x 300ft (7) turbine pads + 200ft x 200ft 10 Storm water basins = 70 acres of clear cut required per Swanton Wind project map. **For comparison the Wal-Mart parking lot in St Albans is 7 acres, Swanton Wind is proposing to clear cut 10 Wal-Mart parking lots** in the headwaters of St Albans Bay and Missisquoi Bay.

Get pervious: ANR and EPA say the creation of impervious surfaces will speed water flow which cause erosion with causes pollution in the Lake. The Swanton wind project proposes to create 22 acres of impervious surfaces in the headwaters of St Albans Bay and Missisquoi Bay, for comparison that's about 3 Wal-Mart Parking lots on a ridgeline in the headwaters of St Albans Bay and Missisquoi Bay. *10,235ft x 35ft road + 300ft x 300ft (7) turbine pads = 22 acres of impervious surface created in the headwaters of St Albans Bay and Missisquoi. (rev b)

Comment 10-4: [Messier, P]
We are diligently working to clean our Lake (Champlain) and the EPA is investing huge amounts of money, I'm told, with many in the area volunteering their time as well. As you may know, our Lake is very ill and will take years and much effort before it can be taken off life support.

Many property values have been downgraded because of the smell, toxicity in water, and the list goes on. A very sad situation.

The EPA and the State of Vt must not turn a blind eye to the practices which will increase pollutants into our local treasure. As you know, this industrial turbine project will add massive amounts of run-off pollutants directly into Fairfield Pond (camping area) and then into Lake Champlain. You no doubt agree this cannot be allowed to happen.

We need your help to protect our Green Mountain scenic treasures, our Lake Champlain and Fairfield Pond, our wetlands, and natural habitats. Please do the right thing.

Comment 10-5: [Seymour *et al*. (multiple letters and one "petition"]
It has come to my attention that you are accepting public comment re: the cleaning up of our waterways and the phosphorous problem. As you are turning your attention to working on cleaning up the lake, there is a potential **industrial wind turbine project** called Swanton Wind which is being proposed in the headwaters of Missisquoi Bay.

Instead of maintaining vegetation buffers around these wetlands, this project proposes to **blast 7 turbine pads creating 11,600 (12) yard dump truck loads of shot rock** and according to the published plan **will be placed in wetland buffers.** Instead of maintaining forests and trees, the Swanton Industrial wind project proposes to **clear cut 45 acres of forest land on top of a ridge and wetland plateau at the headwaters of Missisquoi Bay.** Instead of "getting pervious", the **Swanton Industrial wind project proposes to create 27 acres of impervious surfaces** (this includes 7 -50ft x 50ft turbine pads and interstate highway sized roads) in this wetland at the headwaters of Missisquoi Bay.

The State of Vermont must not fast track these industrial wind projects that put our Lake at even greater risk. The State of Vermont and the EPS **must not turn a blind eye to practices that will increase stormwater runoff into our lake**.

Please speak and let our Secretary of ANR know that we all need to work together to clean up the lake. We must not clear cut 45 acres of forest around headwaters to our lake. We must not put shot rock in buffers, we must not create 22 acres of impervious surfaces in the headwaters of our lake.

Please tell Secretary Markowitz to stop the proposed Swanton Industrial Wind project. Renewable energy projects are important, but not in places that further threaten the health of our lake.

Comment 10-6: [Goodrich, Pierce]
It has come to our attention that you are accepting public comment regarding the cleaning up of our waterways and the phosphorous problem. As you are turning your attention to working on cleaning up LAKE CHAMPLAIN, there is a potential industrial wind turbine project called SWANTON WIND which is being proposed in the HEADWATERS of LAKE CHAMPLAIN'S Mississquoi Bay.

This project proposes to blast 7 turbine pads creating 11,600 (12) yard DUMP TRUCK LOADS of shot rock and according to the published plan will be placed in wetland buffers. Instead of maintaining forests and trees. The Swanton Industrial wind project proposes to CLEAR CUT 45 ACRES OF FOREST land on top of a ridge and WETLAND plateau at the HEADWATERS of MISSISSQUOI BAY. In addition the Swanton Industrial wind project proposes to create 27 ACRES of IMPERVIOUS SURFACES (this includes 7 -50ft x 50ft turbine pads and INTERSTATE SIZED roads) in this WETLAND at the headwaters of Missisquoi Bay.

The State of Vermont must NOT fast track industrial wind projects that put VERMONT LAKES at greater risk. The State of Vermont and the EPS must not turn a blind eye to practices that will increase stormwater runoff into the lake and further DETRIORATE the water quality of Mississquoi Bay.

We all need to work together to clean up the lake. We must not clear cut 45 acres of forest, we must not put shot rock in buffers, and we must not create 22 acres of impervious surfaces in the headwaters.

I implore you to advise Secretary Markowitz to STOP THE PROPOSED SWANTON INDUSTRIAL WIND PROJECT. Renewable energy projects are important, but not in locations which further threaten the water quality of Vermont lakes.

Comment 10-7: [Bushey]
We need your help! The Swanton Wind Project plans to install seven (7) huge wind turbines on a hillside overlooking Fairfield Pond in Franklin County, Vermont. We own a cottage on the eastern shore of this small body of water. We fear the Wind Project will destroy sections of the hillside with resulting runoff emptying into Fairfield Pond via surrounding areas which will degrade water quality in the Pond. The pond's outlet empties into a creek which flows into the Missisquoi River, which empties into Lake Champlain.

It seems incongruous to initiate all the concerted efforts now in place to clean up Lake Champlain and its tributaries only to have more sediment, and who knows what else, flow downhill into the streams causing more water quality damage. (The phosphorus levels in the pond have just recently dramatically increased due to selfish people clearing shore areas to get ahead of the July 1st implementation of the Shoreline Protection Act!)

The seven planned turbines according to reports will be 499 feet tall, the tallest in Vermont, with a cement base of 50x50 feet wide and 40 feet deep. It is reported the blast rock from these seven sites will be dropped into current wetlands and a beaver pond near the top of the hillside. We've been told it is actually a plateau up there on the site.

Please investigate this proposed project on Rocky Ridge, just off Route 105 north of St.Albans, Vt. It is actually in the Town of Swanton.

We are so fearful this project will seriously damage our environment. We had hoped to enjoy our senior years in peace.

Comment 10-8: [Dubie, Collopy]
Thank you for accepting public comment. It's wonderful that the EPA is investing time, money and expertise to help clean up Lake Champlain, and that you're welcoming input on how to do that. My husband Bruce and I have lived on Fairfield Pond for 16 years. We've run the Fairfield Pond Recreation Association for 14 years. We've spent almost 200 to 300 hours annually trying to improve water quality. My previous career at Vermont Local Roads was a Federal/State program providing training and technical assistance to Vermont municipalities and VTrans including best management practices and smart growth as outlined by the EPA, DEC, ANR, and the RPCs. We're happy that the Shoreland Protection Act (SPA) passed. Due to a lot of hard work and education, phosphorus levels on Fairfield Pond had been stable at around 14-15 for several years. Prior to the SPA there was serious development and clear cutting on Fairfield Pond, which resulted in a spike in phosphorus to 20-21 for the past two years. It will take years to recover from that and we still have to do everything in our power to prevent further water quality impairment.

You stated at the August 26th meeting in St. Albans, VT that the Missisquoi Bay area would need to cut phosphorus by as much as 64.3% to meet the TMDL for that region. According to the EPA report, developed land and stream erosion are the biggest contributors of phosphorus in the central segment of the lake. You also stated that impervious surface carry pollutants and nutrients into rivers, streams, lakes and ponds. According to the State, they account for 14% of the lakes phosphorus loads and are linked to toxic algae blooms and aquatic habitat degradation. We have experienced this on Fairfield Pond in the past few years.

So, that brings me to the seven - 500 foot tall wind turbines proposed for Rocky Ridge in Swanton, but you might as well say they're on Fairfield Pond and Fairfield Swamp. This area is documented with beaver ponds, wetlands, vernal pools and recognized as one of the highest habitat blocks in the region. These wetlands and streams drain into the already impaired Black Creek and it's watershed is one of the largest tributaries to the Missisquoi River and ultimately Lake Champlain. Many of these facts were pointed out at your August 26th presentation. The DEC outlines this type of development as "stressors" under the Surface Water Management Strategies. One "stressor" is "Encroachment", which states: "Encroachment increases impervious cover adjacent to lakes, river and wetlands, thereby increasing the rate and volume of runoff, loading of sediment and other pollutants, and temperature of the receiving water. The cumulative loss of wetlands that provide water quality protection to adjacent surface waters can result in ongoing reduction in water quality. The extent of encroachment, the cumulative effects of impervious cover, and the degree to which natural infiltration has been compromised can also contribute to the instability of the stream channel." Under "stressor - Channel Erosion" it states: "The effects of channel erosion are pervasive and consequential throughout the state. Where it occurs, unmitigated channel erosion causes long-term (>25 year recovery time) impacts that are very costly to repair."

It is imperative that we put a moratorium on industrial wind projects in the State of Vermont. We cannot compromise Lake Champlain's long fought effort that we're spending millions of dollars on to clean-up. We have to realize that mountain top removal is not the answer to our serious environmental water quality problems. Please tell Secretary Markowitz that the Swanton Wind Industrial Turbine project on Rocky Ridge and Fairfield Pond is not an appropriately sited location and will further deteriorate the Missisquoi Bay area, a priority for clean-up under the 2015 State of the Lake.

Scott Homstead of the engineering firm Krebs and Lansing (the firm designing stormwater for Swanton Wind and the same firm that designed Lowell Mountain- which had a stormwater violation in 2013 and paid a fine of $58,000) said he'd heard a lot about water quality. Homstead said, "the amount of impervious surface will actually be 9 acres, and the runoff from the project will eventually head toward Route 105, and the **Mississquoi River and Lake Champlain,"**. His statement confirms that stormwater runoff will move toward an already impaired part of Lake Champlain.

Comment 10-9: [Kane & Pierce]
As you know, phosphorus has been building up in our soils for generations. It is soluble in water and is then carried by the groundwater and surface water into our streams, lakes, and eventually Lake Champlain. While it is good to stop, as much as possible, more phosphates from being added with improved agricultural and household practices that target and reduce the amount of phosphates entering the lake, we also have to prevent the phosphates that are present from running into the lakes with such things as buffer zones of plants that will take up the phosphorus and by not reducing the plant coverage that is there with more pavement and roofs.

We are camp owners on Fairfield Pond and we are greatly concerned about the proposed Swanton Wind industrial wind turbine project that we understand will cut over 40 acres of forest and will create over 25 acres of impervious surface. It will destroy the small ponds and vegetation which right now provide important water control and wildlife habitat and instead turn it into roads and concrete platforms with runoff into Fairfield Pond, which ultimately drains into Missisquoi Bay. One year ago, the State of Vermont enacted a shoreland protection bill that forbade landowners such as ourselves from adding to the impervious surface on our property and severely limited the amount of foliage and trees that could be removed. This was all to prevent runoff into the pond. The proposed Swanton Wind project will undo the intent of that legislation and will further impair a small, but important yet threatened water body. Camp owners have been vigilant in monitoring the water quality of Fairfield Pond. Volunteers test the waters for clarity and send samples for lab testing. They educate themselves and battle milfoil and other invasive species. They are the EPA's best allies in fighting to maintain water quality and to protect the wildlife of this gem of a small lake. The proposed industrial wind towers may render all that work for naught. We expect they are an ecological nightmare waiting to happen. We urge you to consider the degradation a project such as the installation of industrial wind turbines will have. Please review the proposed regulations and make sure that you add language to your plan so that projects such as these come under your jurisdiction and are scrutinized for any potential impairment of the Missisquoi or St. Albans Bay watersheds.

Comment 10-10: [Boudreau]
I have grave concerns regarding the placement of wind turbines at the Rocky Ridge site in Swanton, Vermont. There are many variables to be concerned about. Most importantly, there are numerous homes VERY close to this site, there are wetlands, and I also have concerns with the water runoff since it will gravely

impact Fairfield Pond and Lake Champlain. There are so many issues documented about health near a turbine that I believe it is our duty and right as Vermonters to protect our citizens. Who would rightfully make a decision such as this when there are so many negative issues that will arise from such a decision? There should be no collateral damage when a choice can be made to protect our citizens, land, water, and beauty that we have strived to maintain.

I believe in renewable energy but we need to carefully think this out and be responsible in how we administer this program. There are other answers to renewable energy that do not have the impact and unreliability that wind turbines have, such as turbines in water lines. I question why we would want to scar the beautiful landscape of Vermont.

I also have grave concerns that the people's wishes are not being listened to and heard. Where is democracy in Vermont when the local government (cities and towns) have no say in the process? I'm very sad that we are in the state that we are in.

Comment 10-11: [Bell]
I am a resident of Fairfield, living on Fairfield Pond and am writing to express my concern over the impending Swanton Hill Wind Farm project and its effect on the Fairfield community.

Fairfield pond is a beautiful recreational body of water for many residents in our and adjoining communities. The installation of seven industrial wind turbines along Rocky Ridge which overlooks the pond will greatly impact the natural habitat of many migratory birds, bats, and other animals. They will be affected by the forest fragmentation that will be necessary for the installation of the infrastructure needed to install these turbines.

There will be fewer animals, birds and bats as their habitat will be severely disrupted. The migration of many birds travel directly over this ridge. We have an eagle on the pond, as well as 3 loons this year. The area supports deer, bear and a bobcat has been seen by several different residents in that area. The future effects of the loss of these animals has unseen consequences for our future environment.

The acres of tree clearing and impermeable surfaces that will be created (large roads built to get the turbines and equipment to the site, and large concrete pads created after blasting rock to set them on) will negatively impact the surrounding water quality-as this area is part of the headwaters that drain into Black Creek, Fairfield pond, Missisquoi Bay and ultimately Lake Champlain.

This will have a negative economic impact in our area, affecting property values and tax base. The area will be less attractive to visitors if we have water that we cannot use for recreation and a landscape that has enormous noisy turbines, instead of the forested green mountains and the peaceful nature we have to offer which many people travel to experience.

This project is in complete opposition to the agency of natural resources own mission to protect natural habitat and preserve wetlands, improve water quality, (in addition to working with the directive from the EPA to improve water quality in Lake Champlain). Phosphorous levels affecting Saint Albans and Missisquoi Bay are already serious and have led to dangerous algae bloom. The progress that has been made by passing the Shoreline Protection Act will be obliterated by a project of this size in a valuable wetland and watershed.

Comment 10-12: [Vermonters for a Clean Environment]
We further express our genuine dismay at the failures of the state of Vermont and EPA Region One to protect our highest quality water on ridgelines. We have watched EPA and Vermont's ANR permit the filling of hundreds of feet of Class A1 waters for wind energy development. During and after construction we are politely told everything is just wonderful at the sites, yet the evidence shows otherwise. https://vimeo.com/75033169.

We have asked for the opportunity to have independent experts evaluate the stormwater systems on the wind mountains in Vermont, and are assured not to worry, that ANR is taking care of it all and everything is working fine.

VCE's members have lost trust in our state and federal agencies where protection of water quality is concerned. Political agendas are turning our environmental protection agencies into schizophrenic enablers, where on the one hand the public is advised they must do their part to address water quality problems, and on the other hand industrial developers are given free reign, without any independent monitoring and only captured governmental agency oversight, to degrade and even destroy some of the purest water on earth.

As we watch yet more high elevation watersheds threatened by more wind projects in Readsboro, Searsburg, Swanton, Grafton and Windham, we wonder when facts will overcome political agendas. Until independent water consultants are allowed access to the wind sites in Vermont to ground truth the claims that are being made that there are no impacts to water quality from high elevation ridgeline developments, there really is no reason to trust or believe that those stormwater systems are working or to have any faith in government permits.

High elevation ridgeline water quality impacts are but one example of the failures we have seen from EPA and Vermont's ANR regarding the efforts to clean up Lake Champlain and the state's water quality overall. In every case we work on, we see one part of government assuring us that water quality is being protected through its permits, and yet when we get out in the field and see what is actually happening, water quality is being degraded.

We have concluded that the environment would be better protected if EPA and ANR did not exist. Because then there would be no agencies to permit pollution. If our government agencies are going to continue to issue permits that degrade water quality rather than protecting and maintaining it, we cannot expect the public to support efforts such as the second TMDL.

Consolidated Response:
EPA appreciates the commenters' support for the measures that will be implemented to reduce phosphorus discharges into Fairfield Pond and the Missisquoi Bay and St. Albans Bay watersheds.

With regard to the proposed wind project, unless a project is subject to review under the National Environmental Policy Act (NEPA) or section 404 of the Clean Water Act, EPA is typically not directly involved in the review of such projects unless specifically asked for assistance by Vermont. EPA has shared all the comments received on this subject with the Agency of Natural Resources and expects that

the commenters will have ample opportunity to provide further comment during the public process included in the review of these projects in Vermont.

The TMDLs set allocations for current and future developed land. In reviewing any new project proposal, Vermont will need to ensure that future development in the Missisquoi Bay, St. Albans Bay, or any other watersheds will be consistent with those allocations and accounted for in the tracking system that will monitor implementation of the TMDLs.

Combination Pond

EPA received three comments related to Combination Pond. A consolidated response follows the third comment.

Comment 10-13: [Messier, M]

The following was a commentary prepared by many Combination Pond / Charter Hill Neighborhood Members / Deeded Property Owners. In addition to our (deeded) riparian rights, we have rights to due process. We have not been represented by the City of Rutland or State of Vermont in these matters. Indeed there has been taxation with adverse representation in these matters to date, by the City of Rutland and the State of Vermont. There is currently a stay in the Federal Case City of Rutland v. EPA. A corner stone of the City of Rutland (and State of Vermont) filing was an agreement regarding Combination Pond. One of the problems is the agreement was subject to Federal / State of common law due process, but due process has yet to be fully provided. At the EPA Meeting Noticed in Rutland, VT the City and State Representative would not discuss the issues as "litigation" was pending.

Further the City of Rutland has no evidence of "brook trout" deaths or autopsies caused by temperature or anything else in and around Combination Pond, other than birds, wildlife and fishermen (women), at a fishing derby the City of Rutland Recreation Department in part sponsors. The Pond temperatures are similar to and lower than those at the King Street Ferry Dock and Colchester Reef. of Lake Champlain.
EPA tables and calculation appear to attribute 0, 0 % by water and wetlands to TMDL impairment. If fact EPA information appears to extoll the benefits of wetlands to filtering water, and storm-water runoff.

I am a direct descendant of the Champlain Family, Francois Michel Messier-Amiot-Barbancon-Seigneur de Champlain Family. We the Champlain Family are disappointed by the Charter Hill Developers - City of Rutland - State of Vermont's apparent bait and switch in its agreement to attract development in c. 1974 baiting property owners by promotion, advertising then deeding (recording) rights to use and enjoy the pond (water), only later to (switch policy) remove Combination Pond. It is also of interest that the State of Vermont in its last session has approved the expenditure of approximately $495,000 to restore Sweat Pond, in Guilford, VT. As you are aware the State of Vermont also passed legislation and taxation in the name of Lake Champlain, named for and by Our Champlain Family in c. 1609.

Thank you for your time and consideration Michel Joseph Messier - seigneur de Champlain...,
mmmxii@gmail.com, Seigneur de Champlain on Facebook

P.S. I have also filed a request (demand) for a jurisdictional review by the EPA of the Combination Pond wetlands, copy provided via amicus brief in the case City of Rutland v. EPA case 2:15 cv 35 VT Federal.

Article published Dec 11, 2013
Pond not causing damage

The following commentary was written by Michael J. Messier with and on behalf of the Save Combination Pond Group.

Combination Pond is part of the stormwater runoff sediment solution, not the problem. It will cost nothing to leave the pond as it is. We respectfully request the City of Rutland and State of Vermont rescind the agreement to remove Combination Pond. The city and state did not include and provide notice to all "interested persons," due process (in open meetings, not executive sessions). They did not mitigate damages to property owners (there are six lower cost alternatives not to remove the pond), and will have taken property without due process (under eminent domain).

The costs to taxpayers is zero to leave Combination Pond as it is, per city and state consultants who were paid for by taxpayers.

What's next? Drain Piedmont Pond, Lakes Bomoseen, Dunmore or Champlain? These bodies of water are part of the Champlain watershed, too. The city stated that the water in Combination Pond is too warm, which they believe is the cause of the pollution in the Moon Brook watershed. However, Lake Champlain has the same temperature profiles as Combination Pond.

The city states that warm water from Combination Pond is causing brook trout deaths in Moon Brook. There is no evidence of trout deaths or autopsies of dead brook trout in or around Combination Pond. (City of Rutland meeting minutes, dated Jan. 7, 2013; Rutland Herald, Article published Jan. 14, 2013, City Hall Reporter's Notebook.)

The city also states that the bug population, specifically stoneflies, is being reduced by warm water. These bugs were studied just a few times during their two least active months, September and October. The state sprayed to minimize the mosquito population, which may have reduced the bug population as well.

State of Vermont statute states that there shall be "no change from the reference condition that would prevent the full support of aquatic biota, wildlife, or aquatic habitat uses. Biological integrity is maintained, and all expected functional groups are present in a high-quality habitat. All life cycle functions, including overwintering and reproductive requirements, are maintained and produced."

Combination Pond is an evidenced home to aquatic biota, wildlife, aquatic habitat, including, but not limited to, trout, herons, ducks, beaver, otter, geese, deer, fox, turtles, stoneflies, and many more endangered species, including, but not limited to, taxpayers (voters). Removing Combination Pond would prevent the full support of aquatic biota, wildlife or aquatic habitat uses. It would violate the statute and break the law.

The pond's benefits, deeded property rights, include but are not limited to the following: fishing, boating, swimming, birdwatching, wildlife watching, skating, education, recreation, meditation, vegetation, hockey, yearbook photos, photography, art, tourism, flood control, sediment retention, ice storage, firefighter training and testing, backup emergency water supply for firefighting and more. Millions have been and are projected to be spent on recreational facilities in the city of Rutland. These ponds are recreational facilities that already exist at no costs.

We the Committee to Save Combination Pond do not want an increase in property taxes. We want to find ways to make government more efficient and pay lower taxes. This would include the city paying less for consulting and legal fees. The city should engage volunteers to plant shrubs and trees, and other plants called for to preserve the wetlands, and watersheds, mitigating the ramification of stormwater runoff.

"Romeo (Rutland's city attorney) said he had seen deeds giving property owners rights to enjoy the pond" (Rutland Herald, "Neighbors plan to fight for city pond," by Brent Curtis). Members of the community also have a legal right to use and enjoy Combination Pond. That right should not be destroyed by city government.

There are many ponds and dams upstream and downstream of this pond that have not been studied. There are temperature data questions. The temperatures were not recorded by an independent entity.

Temperature-montitoring boxes were found on the bank of Combination Pond, not even in the water, by a neighbor and her grandson. The temperature study in total is suspect.

Let us all consider that our property rights shouldn't be used as a political football. The mayor's red herring (trout) has been used to divert attention from the real issue: stormwater runoff into the Moon Brook watershed. Ninety-nine percent of the Moon Brook watershed is not Combination Pond. The pond is two acres of the watershed or 1 percent.

Combination Pond has been here as long as anyone can remember. It is a heart-shaped pond, in the heart of a neighborhood, in the heart of Vermont. Our mission is to save the pond for the community.

Comment 10-14: [Vero]
We are property owners around combination pond in Rutland. The pond for too many reasons to go into and which has not already been explained by mr. Messier, should not be drained.

Comment 10-15: [McCue]
Subject: Proposed removal of Combination Pond to achieve lower phosphorous levels in lake champlain

I have been a resident of the Charter Hills area of Rutland Vermont since 1980 and familiar with the Combination Pond since my childhood when I spent much time exploring and fishing in this area. The city of Rutland governance has currently spent much time and money studying alternatives to improve the quality of water in Moon Brook, a tributary to Otter Creek in Rutland. It is my educated opinion that the best alternative is to leave the pond alone and conduct some minor cost improvements such as enhancing the riparian zone and conducting minor improvements to the dam and berm which impounds the 2 acre pond.

According to our mayor, Chris Louras and our public works commissioner Jeff Wenberg, it is necessary to remove the pond in order to establish a population of Brook Trout in the waters below the pond. This would result in lower temperatures to improve the habitat of the stream. In reality the state requires a lower phosphorous load in order to improve the quality of both Otter Creek and Lake Champlain. During a recent late summer period, we experienced little rain for a number of days. At this time, I inspected the brook both above and below the pond and found the flow had diminished almost to the level of an intermittent stream. This low level of the stream causes me to doubt whether or not it would support brook trout for any extended period of time.

The stream has its source in the East Mountain region and immediately encounters residential development in the Gleason road area. It continues to flow through a former landfill area and then forms a very nice wetland area just north of the combination pond. After leaving the pond in the Charter Hills residential area, it continues to flow through more residential areas (Moonbrook Drive, Catherine Drive and Georgetti Blvd). After this it flows under Stratton Road, a major thoroughfare in Rutland and proceeds to another impoundment, the Piedmont Pond. Surrounding Piedmont Pond is more extensive residential development and it continues through more residential areas including Ronaldo Court, Perry Lane, Killington Avenue, Jackson Ave and then across Route 7 to the South western developed areas of Granger Street and Forest Street before entering Otter Creek. I am sure that you are familiar with all of this. The point is that the main reason why Phosphorous contamination occurs is because hundreds of acres of residential development and paved parking lots as well as residential runoff. The removal of the Combination Pond will not improve the phosphorous quality one iota and is a waste of Rutland taxpayer money.

I am a retired Biology teacher and when I was working, I took some of my Biology and Environmental Science classes on field trips to the Combination Pond. During these trips, we would sample various levels of biota and found it to be a productive ecosystem with a typical small pond profile much like other natural ponds that I had studied in the Hubbarton Lake Hortonia area. There was a diverse population of macro-invertebrate, microscopic, submergent and emergent vegetation as well as invertebrate and vertebrate species. During the past years, I have recorded several species of turtle, including snapping turtles. This makes me wonder if there could also be some species of rare or endangered species which may have never been discovered here. In recent years including this past spring and summer, geese have settled there during the summer months to raise their young. It also serves for a stopover for geese migrating in the fall and summer. Other species that I have observed include osprey, deer, a possible eagle, beavers, otters, fisher cats, foxes, bobcats, and more too numerous to mention. Of course there is also significant diversity of fish to include sunfish, bass, perch and trout. Residents fish this pond from as early as April until October. During the winter months local youths use the pond for hockey and skating. In May, a fishing derby for children occurs. The pond is a treasure and is used by other local teachers as a nearby laboratory for field trips. If this was a natural pond like those located in Hubbarton, the state of Vermont would be very distraught with any removal proposals.

In a recent confrontation with Public Works Commissioner Wennberg, I was informed that removal of the pond would allow us to save millions of dollars on a stormwater mitigation system. I informed him that it was time for the city to recognize that the real reason was to delay, delay, delay, as lowering the temperature will not improve all the stormwater runoff which continues due to the residential runoff, use of Lawn Master fertilizer services and parking lot/ road way runoff. I recently checked out the water flow and found nothing but a green water pool near the intersection of moon brook and South Main Street (route 7) in Rutland City. Rutland city needs to be seeking grants and working with the state of Vermont to improve the phosphorous and other

nutrient runoff that continues to plague the Lake Champlain basin and not engaged in false solutions like removing ponds. [emphasis in original] This also seems to be related to some political purpose as the removal of the pond would allow for more area to develop and further exacerbate the problem of runoff. It would be a shame to remove this treasure as the pond and wetland above it are of much value to the community.

I urge you to rule in favor of the Combination Pond and the residents of the City of Rutland and not for the uneducated political viewpoints of the Rutland City politicians. Thank you.

Consolidated Response:
The issues related to Combination Pond described by the commenters arise from a TMDL for Moon Brook and litigation related to that TMDL. EPA is a party to that litigation and cannot discuss those matters in this response to comments on the Lake Champlain TMDLs. The Lake Champlain TMDLs do not have a direct bearing on Combination Pond or Moon Brook.

Other

Comment 10-16: [Anonymous 2]
Since EPA disapproved the 2002 Lake Champlain Phosphorus TMDL on January 24, 2011, the provisions of 40 CFR Part 130.7.d.2 have been significantly violated. EPA must provide a detailed explanation to the citizens of the Vermont detailing why these legal requirements were violated.

Response: EPA assumes the commenter is referring to the requirement at 40 CFR 130.7(d)(2) that EPA shall establish loads within 30 days of disapproval of a TMDL. EPA acknowledges that it has taken far more than 30 days establish the revised phosphorus TMDLs for the Vermont segments of Lake Champlain. However, EPA and Vermont have made best efforts to establish the TMDLs and implementation plans expeditiously, especially when one considers the complexity of the endeavor and the resource constraints of EPA and state partners. With the passage of nearly a decade since the original TMDLs were developed, the underlying scientific modeling approach needed to be revisited and upgraded in significant ways. A new decade-worth of data then needed to be processed to establish a baseline. In an effort to save time, EPA and the state began development of policy options in parallel with the modeling work. Given that the Lake Champlain basin comprises 48% of Vermont's land mass and is home to about 65% of its population, the gathering of stakeholder input, development of policy options, and the building of the necessary program, stakeholder and political support was a time-intensive process. EPA and the State of Vermont believe that the time taken to build well-supported allocations and accompanying implementation programs were critical to the long-term success of this effort.

Comment 10-17: [Boivin 1]
The Data and Calculations must be provided.

The State must provide the public easy and clear access to all the data and calculations used to support the new water quality regulations as part of the promulgation process. For each watershed the database should include de minimus:

1. The list and locations of all measuring points.
2. The amount of water flowing past the measuring point.
3. The amount of phosphorus in pounds or tons and concentrations flowing past the measuring point.
4. The volume of the river or stream between the measuring points.
5. The list of all approved point sources, permitted discharges, and actual discharge history.
6. The land uses in the watershed in both actual area and percentages.
7. All data and calculations that assign the load to any particular source.
8. The amount of phosphorus reduction expected for each practice or rule implemented.
9. The calculation of these expected reductions.
10. All studies or data that justify the expected reductions for each practice.
11. All other data and calculations that were used in creating or justifying the new water quality regulations.

Provision of the data should be easy because the State should already have it. Without the above all regulations would not be supported by the means and methods of science but on hearsay or speculation and therefore would be arbitrary and capricious. The public has the right to review not only the regulations but also the data and calculations that engendered them.

> **Response:** EPA provided links to all the technical documents supporting the development of the TMDLs on the EPA web page devoted specifically to the Lake Champlain TMDLs. As noted elsewhere, EPA is not promulgating any regulations. EPA is issuing twelve TMDLs that contain phosphorus allocations that, collectively, will lead to reductions in phosphorus so that water quality standards in Lake Champlain will be achieved. Vermont will be promulgating regulations as part of the implementation of the TMDL allocations. The commenter may wish to address the request for data related to new regulations to DEC.

Comment 10-18: [Burak, Anderson & Meloni]
The TMDL should estimate the cost of implementation.

> **Response:** There is no requirement that TMDLs include an estimate of the cost of implementation and EPA has not made an estimate for the Lake Champlain TMDLs.

Comment 10-19: [Terry]
I own a camp in North Hero. When a family member from Maine went with me to Alburg Dunes State Park, he commented that he had never seen a stretch of sand that large without clams. I don't know what species, but he said clams would filter out the algae and grass seeds that turn the water into soup. Can you investigate this?

> **Response:** Fourteen native freshwater mussel species inhabit the Lake Champlain basin, along with the invasive zebra mussel. Mussels do filter out and consume algae from the water and have a limited role

in maintaining water clarity. The lack of mussels at the Dunes may be due to the presence of zebra mussels, which are known to attach to native mussels and impair their growth.

Comment 10-20: [Ericson]
HOW TO REDUCE PHOSPHOROUS IN LAKE CHAMPLAIN:

(1) REASONS TO STOP DUMPING TREATED SEWAGE INTO LAKE CHAMPLAIN and re-route it to industrial uses and south to the Atlantic Ocean because one-third of Vermonters draw their drinking water from Lake Champlain.

Dumping treated sewage into Lake Champlain, from which one-third of Vermonters draw their drinking water, raises the phosphorous level as well as the "disgust" level of the common people having to drink Lake Champlain water mixed with treated waste which is then treated again with chloromines and monochloromines, depending on which town you live in along the shores of Lake Champlain, and also raises the incident risks of cancer, a life threatening disease, because chloramines and monochloramines mixed with organic lake water create trihalomethane chemicals that are carcinogenic.

We all know that rich people drink bottled spring water, but this increases the level of disparity in the health between rich people drinking bottled spring water and regular Vermonters drinking Lake Champlain water which contains treated sewage, and 5 which raises the phosphorous level in Lake Champlain.

RESOURCE 1, to support the fact that we must stop dumping treated sewage into Lake Champlain to reduce phosphorous. http://water.usgs.gov/edu/phosphorus.html In metropolitan Atlanta, Georgia, phosphorus coming into streams from point sources, primarily wastewater-treatment facilities, have caused West Point Lake to become highly eutrophic ("enriched"). A sign of this is excess algae in the lake. U.S. Department of the Interior | U.S. Geological Survey URL: http://water.usgs.gov/edu/phosphorus.html Contact Information: Howard Perlman Monday, 27-Jul-2015 14:42:31 EDT

RESOURCE 2, to support the fact that we must stop dumping treated sewage into Lake Champlain to reduce phosphorous. http://www.lakeeriewaterkeeper.org/detroit-wastewater-plant/ The Detroit Wastewater Treatment Plant was the single largest contributor of phosphorus to Lake Erie. It may well still be the largest single contributor of phosphorous to Lake Erie. The Detroit wastewater plant canceled a contract to reduce overflows due to the lack of funding. Also, there are many articles in Michigan papers about corruption in operations of the Detroit wastewater plant. There are reports of failed equipment and understaffing which results in treatment failures. There are ongoing legal proceedings on this matter. There appears to be no independent analysis of the phosphorous loads from DTWWP to Lake Erie and whether or not DTWWP is meeting the targeted .5 mg/l load.

RESOURCE 3, to support the fact that we must stop dumping treated sewage into Lake Champlain to reduce phosphorous. http://www.epa.gov/lakeerie/primer.html Most of the excess phosphorus entering Lake Erie comes from two sources: the effluent from sewage treatment plants (STPs) and tributaries that receive agricultural runoff from farmland.

RESOURCE 4, to support the fact that we must stop dumping treated sewage into Lake Champlain to reduce phosphorous.

PLEASE NOTE THAT CRIS ERICSON DOES NOT AGREE WITH THE ALUMINUM SALTS DUMPED INTO KEZAR LAKE TO REDUCE PHOSPHOROUS BECAUSE ALUMINUM CAUSES DIMENTIA AND DEPRESSION IN HUMAN BEINGS, AND ONE-THIRD OF VERMONTERS DRAW THEIR DRINKING WATER FROM LAKE CHAMPLAIN, so Lake Champlain should not have aluminum salts dumped into it.

http://water.epa.gov/type/lakes/kezar.cfm

Lake sediments, contaminated by years of effluent discharge from a nearby wastewater treatment facility, were the source of internal phosphorous loading. The Clean Lakes Program, section 314 of the Clean Water Act, provides assistance to states for identifying and restoring lakes that are water-quality-impaired. The effectiveness of aluminum salts application rests on the ability of aluminum to form complexes, chelates, and insoluble precipitates with phosphorus, thereby removing it from the water column and depositing it in the sediment in forms unusable by phytoplankton. Depending on pH, phosphorus concentration, aluminum concentration, and the rate at which additional phosphorus is supplied, aluminum salts can provide long-term inactivation of sediment phosphorus. Furthermore, aluminum has been shown to have no toxicity to aquatic life at the pH and dose necessary for lake restoration. Although not all forms of phosphorus (e.g., dissolved organic phosphates) are removed by aluminum salts application, this methodology has proven to be an effective strategy for phosphorus inactivation in many water-quality-impaired lakes.

RESOURCE 5, to support the fact that we must stop dumping treated sewage into Lake Champlain to reduce phosphorous.
http://www.ecy.wa.gov/programs/wq/plants/algae/lakes/LakeRestoration.html
Reducing phosphorus inputs to lakes can affect the amount of algae in the lake by removing a key nutrient. In some lakes, like Lake Washington in Seattle, nutrient diversion meant diverting sewage from this lake. Depending on the project, major engineering may be required at great expense and other receiving waters may be affected by the nutrient-rich water.

CRIS ERICSON argues that the EPA and Stephen Perkins should ask President Obama for a major funding administration policy to re-route treated sewage from Vermont, New York and Canada, south to industrial uses and to the Atlantic Ocean, and protect Lake Champlain for drinking water because only 3 percent of the world's water is fresh water, and our populations are growing, so we need to protect Lake Champlain for drinking water.

(2) REASONS TO STOP THE construction of any NATURAL GAS PIPELINE within 150 miles of Lake Champlain from which one-third of Vermonters draw their drinking water because building it in Vermont, New York or Canada within any storm drainage run-off or natural gas pipeline explosion area of Lake Champlain would increase phosphorous to the lake. Fracking can cause Property Damage to plumbing and pipes. Natural gas explosions from pipes and tubing bursts result in further property damage, and distribution systems become bacteriological incubators during warm weather months because the "fracking" causes the sludge and debris to flush into Creeks, Streams, Rivers, and other habitat areas, forcing more phosphorous into the storm drainage system, and from there into Lake Champlain.

PLEASE NOTE: "Natural Gas" is NOT natural, it is fracked, a process whereby chemicals are forced into the ground to expose the gas, and the groundwater is then polluted, destroying residential neighborhoods nearby, and contaminating local lakes and ponds.

https://checksandbalancesproject.files.wordpress.com/2011/05/fracking29noshadows-013.png

Diagram: HOW NATURAL GAS IS EXTRACTED. NATURAL GAS DRILLING CONTAMINATES DRINKING WATER SOURCES.

A mixture of millions of gallons of water, chemically treated sand and toxic chemicals is injected under high pressure into drilling well. Toxic fracking fluid spills from pipes, open valves and transporting vehicles and contaminates local waterways.

Fracking fluid leaks through fissures and contaminates aquifer.

Fracking fluid is pumped 7000 feet or more down and a similar distance horizontally to release NATURAL GAS.

Inside the NATURAL GAS producing rock formation, propellants like chemically treated sand and ceramic keep fractures open. Fracking fluid injected at high pressure creates fractures and releases NATURAL GAS.

The majority of fracking fluid remains in the ground and is NOT biodegradable. High pressure creates more fractures, releases methane gas and forces toxic fracking fluid upwards. Toxic fracking fluids, benzene, methane, and other CARCINOGENS pierce and POLLUTE LOCAL AQUIFERS.

Residential wells pump water, which is unsafe for use, from contaminated aquifers into homes. Concentrated methane gas creates flammable water and poisonous fumes. Toxic fracking fluid waste is dumped in poorly constructed, and sometimes unlined pits, and seeps into local waterway and aquifers.

(3) REASON TO STOP DUMPING CHEMICALS TO "TREAT" INVASIVE SPECIES in Lake Champlain from which one-third of Vermonters draw their drinking water: because the invasive species acquire immunity to the chemicals and then increase the amount of phosphorous in the lake. Also, the invasive species that have not yet acquired immunity to glyphosate and other Monsanto chemicals, die, and become nutrition for more phosphorous growth. Also, by buying Monsanto chemicals, the State of Vermont is supporting an industry they simultaneously have legal court actions against to force GMO genetically modified food labelling on products, so the State of Vermont is paying for Monsanto's legal fees by buying their chemicals!

(4) REASON TO OUTLAW MOTORBOATS in Lake Champlain from which one-third of Vermonters draw their drinking water: because they are never 100% purely cleaned when they arrive from out-of-state and they bring with them eggs, seeds, spores, tiny root fibers and cleaning chemicals not completely rinsed off, and these increase the amount of phosphorous in the lake, as well as pollute the peoples' drinking water with unconscionable amounts of leaked gas and oil.

Response:
EPA appreciates the commenter's suggestions for protecting drinking water drawn from Lake Champlain. Under the framework of the Clean Water Act, water quality standards for Lake Champlain were established by the State of Vermont with a goal of maintaining its use as a source highly suited for public water supply, with disinfection, and filtration when necessary. The phosphorus TMDLs will support these uses by reducing nutrient loadings into the water body. EPA agrees that reduction of nutrients will help reduce the potential for enrichment and algae growth. Stopping fracking and gas pipelines, banning chemical treatment of invasive species, and outlawing motorboats are outside the objectives of the TMDL effort.

EPA received a wide-ranging commentary from one individual. The comments are presented here in full, and subdivided for the purpose of responding. In some instances, the comments have been included and responded to in earlier sections of the document. In those instances, EPA has provided the cross reference to the earlier Comment and Response and the response is not repeated here. EPA has made efforts to repair formatting and typographical errors to best convey the intended meaning. However, this was not possible in all cases and some errors remain. The commenter also did not provide the references that are footnoted throughout the commentary. In Comment 10-21 these notations sometimes appear as numerals and other times as words in parentheses. A request for the citations was not responded to.

Comment 10-21: [Houriet, 1]
This is the second draft of a "citizen comment" on Vermont's proposed implementation of EPA's recently announced phosphorous load projections for Lake Champlain.

An earlier draft was predicated on EPA protocol ensuring public participation in the decision making process vouchsafed as keystone in the founding charter of the Clean Water Act. (1)

Thus the EPA was required to allow for a public comment period following the state's submission of a plan to implement standards and regulation of agricultural-sourced pollution. Ideally, the agency's would consider the public comments in making a final determination, a thumb's up, thumb's down, on whether Vermont's plan provided "reasonable assurance" that the state could achieve the reductions it declared it could.
The first draft was aimed at a September 15th deadline (extended a month). It evaluated three aspects of the Vermont program applying the EPA's four prong test for evaluating the effectiveness of state programs (two). That they must
(1) be *specific* to the pollutant and the waterbody for which the TMDL is being established;
(2) implemented as expeditiously as practicable;
(3)) accomplished through reliable delivery mechanisms;
(4) supported by adequate funding. . .

Applying EPA's own criteria, to Vermont's plan, three contested areas were evaluated
1) The degree of assured statutory authority to enforce numeric phosphate emissions; an unambiguous authoritative designation of a "methodology" (four) to identify measure and regulate farm specific sources expeditiously, equitably and legally.

2) Act 64's omission of mandatory BMP's incorporated into the operating permits of Medium and Large Farm Operations (MLO's and FLO's
3) Calculation of the Margin of Safety (MOS) in setting g necessary load reductions; taking into account (or not) an escalating rate of internal release of dissolved phosphate from sedimented lake bottom.

This reviewer followed the EPA-prescribed process; amassed some 6,000 words of text backed up by a hundred footnotes citing the best authorities in the field of Phosphate chemistry, and environmental law focused on the EPA's program of TMDL's (5). The more critical question concerning TMDL's was to what degree states had implemented them i.e. given adequate statutory authority for state agencies to effectively implement them.

In our view: Vermont flunked – hands down – on three out of four of EPA's criteria.

By section of the CWA, protocol, EPA was required to make and publically announce either approval or disapproval within sixty days of that determination (six). The public comment period proceeding that determination is nominally purposed to instill and enhance public participation in the bureaucratic decision-making process. The aim creates a presumption the EPA will *really* consider public opinion, their judgement and interest as "stakeholders."; that these comments all told will make a *difference;* inform and change EPA's decision differently from what the Agency without the benefit of public input, would have made regardlessly.

This is not to say, that there weren't grounds to be skeptical of EPA – not to speak of Vermont – of gaming the rules of due process. Nevertheless, pragmatically – faithfully applying rules on this case - would prove something regardless if EPA's approval was a foregone conclusion.

Giving the benefit a doubt to both parties, the reviewer persisted to slog thru an exhaustive evaluation.

Summary
Three elements were chosen for focus and evaluation – using the definition and four point test of state actions:
(1) Must be specific to the pollutant and the waterbody for which the TMDL: is being established
(2) implemented as expeditiously as practicable
(3) accomplished through reliable delivery mechanisms, and
(4) supported by adequate funding. . .

The three areas in contention and chosen for evaluation are the same issues that had been of greatest concern to the Conservation Law Foundation since 2002. (5)) . ,
...–Act 64's omission of mandatory BMP's incorporated into the operating permits of Medium and Large Farm Operations (MLO's and LFO's)
– The total lack of statutory authority to enforce numeric phosphate emissions and to employ the use of a Phosphate Index (6) to identify measure and regulate farm specific sources expeditiously, equitably and legally.
–Failure to increase the Margin of Safety (MOS) in calculating necessary load reductions; in disregard to potentially grave feedback, , an escalating rate of internal release of dissolved phosphate from sedimented lake bottom .

Findings
– Omission of mandatory BMP's flunks two out four of the tests. This deleted provision – demanded of Vermont by both the EPA – and the CLF -is a management tool crucial to addressing critical source areas

(CSA's) in Missisquoi. Without this proven and reliable "delivery mechanism" implementation will be delayed rather than expedited.
– .Absence of numeric standards and P-index as expressly authorized and to be implemented – indisputably fail on four counts. Specificity, expeditiousness, the exact delivery mechanism, affordability, TMDL's are at the core of the EPA's program, and had been at the top of its list of what states were expected to do -- a pre-condition for taking over an EPA-delegated program, (6). The scientific and regulatory core of TMDL approach, augmented by a P-index are barely referred to by Vermont. A word count selecting *phosphate* for the some 90,000 words that comprise Act 64 and Implementation Plan, returns a surprisingly small hit. *Water quality* ten times more. Vermont has adopted a water quality rather than a numeric, phosphorous specific system, incompatible with TMDL's, and combined with a program of voluntary compliance entirely – subject to vagueness rather than specificity, ambiguity, delay, and legal challenge; This has been clearly and numerously validated by the prime authority on the subject. (7).
– Vermont's Margin of Safety is more than a mere miscalculation, one that could be written off as a technical foul in predictive modeling. Rather However it implies a grave minimalism a potentially catastrophic factor serving to divert public attention from the hard facts of a TP concentration compelling an extreme (84 per cent) of the farm-sourced load of P. The rate of P concentration and algal flowering may be approaching levels that could be irreversible (8), and compel measures more urgent and imperative than the Shumlin Administration thus far has not so much as hinted as necessary.

The above criticism (and evidence) – that Vermont officials are not being "straight" with the public - raises questions of why and for what rationale would they choose to downplay the urgency of the situation – in direct violation of the Clean Water Act's insistence that every program should strive to achieve public participation (if not awareness) of the facts that go into decision-making? (9)

> **Response:** EPA takes the three bulleted items under the heading "Findings" immediately above to represent the commenter's main concerns and will address them in turn.
>
> As to the need for "mandatory BMPs," EPA did not take the position that mandatory BMPs had to be incorporated in all LFO and MFO permits. EPA's main interest was in raising the base expectation for all farms, and Act 64 addressed this concern by mandating Required Agricultural Practices (RAPs). There is no question that Best Management Practices – beyond the RAPs – would be needed on some farms, particularly in the Missisquoi Bay watershed. With the passage of Act 64, the Secretary of Agriculture has fewer constraints on requiring BMPs where they were deemed necessary and the settlement of the CLF petition (see response to Comment 7-1) has made BMPs mandatory in the Missisquoi Bay watershed.
>
> The commenter's concerns about narrative standards and the P-index are discussed in detail in Comment 10-23 and EPA's response. Similarly, the commenter's concern about the Margin of Safety is discussed in detail in Comment 6-88 and EPA's response.

Comment 10-22: [Houriet, 2]
At outset of doing this evaluation, commentary, this reporter was guided by opportunities that CWA's provisions for citizen's rights of review and petition enshrined. Hope that citizen suits would break the dysfunction of a crippled EPA and the states adamant and reluctant in large part to impose anything smacking

of mandatory controls on the agricultural industry. It was a central tenet of "Cooperative Federalism" advanced by Oliver A. Houck of Tulane Law School.(10). It called for grass roots groups organized around the lakes, ponds and water basins - where people live and experience the problem first hand and are best qualified to take direct action to break through what appears to be a stalemate between the states and the EPA.(11)

The initial approach of this review was to produce a lawyerly case, linking each point of evidence with 33 U.S.C. or Administrative Procedures Act (APA). At least, such a comprehensive statement might furnish the foundation for a citizen's suit. (12)

But before the conclusion of evaluation, evidence and events pointed away from a citizen's suit directed through the federal courts to order the EPA to lean on the states and make them do what's right. Rather it suggested that the only available resort may be for Vermonters to organize around fundamental legislative changes to Act 64. (13)

Interestingly, it may be more feasible to change the institutional inertia in Vermont than make the EPA do a job it's unwilling or unable to perform. That point for later, to emerge from the evaluation that follows.

THE MAKING (AND UNMAKING) OF ACT 64

If not for CFC's [*sic*, assumed to be CLF] oversight, this reporter would have remained for some time clueless - as to how was significantly left out of Act 64. . . The public efforts of CFC to spur on Vermont and the EPA have been well respected. While not entirely successful, these efforts have been most helpful in narrowing the elements that CFC would most vociferously propose and defend vis a vis those that the Shumlin administration and the USDA would stonewall in the lowest profile possible. .

Flashback to early June of this year. The precursor of Act 64, popularly named Vermont's Clean Water Act, although formally a Water Quality Act, was House Bill 35. And nearing the end of the legislative session it had sailed through six committees, and had been returned home to the Fish and Game and Water committee, where it had been introduced under the chairmanship of Rep David Deen (D-Putney).

At no point in its the legislative ambit, did the bill receive testimony of soil scientists. A remarkable omission given that the crux of implementation depends on translating emergent research of phosphorous transport into law. (14)

Some of committee members discerned that H-35 was being strictly marshaled and laid out to them as a *fait accompli*, and much too generally to lead to real discussion, and meaningful changes. As the representative from my district on the committee observed. "It became clear that Mears and Ross were there to tell us not what the legislation meant, but it was going to be, period. It was a done deal." (15)

Those who did question (*what the hell IS a TMDL anyways?)* were told – no cause for worry. Details of the bill didn't matter since the statute's only purpose was "to get EPA off our backs."

It turned out to be a red herring that fooled normally astute observers. (16)

At any rate. CFC's senior attorney had been keeping close tabs on last minute amendments to H-35, and became assured that key provision he had fought long and hard for, had survived the legislative equivalent of sausage making pretty much intact. Chris Kilian thought and believed the bill had been voted and signed out of committee – with an understanding that it would not be tinkered with on its the way to the House floor. Yet – according to Killian the bill was intercepted at the "last minute"; taken to Chuck Ross' office where a key provision was "gutted." I spoke to Killian soon after. Understandably incensed, the tone of his remarks may have been unguarded. He considered the act underhanded, and a betrayal. He planned retaliation in the form of an ace in the hole, a legal option he'd been holding in reserve, suit pending in Vermont Environmental Court. (17)

But weeks later no hard feelings were publicly evident. At the June 16 signing of Act 64 on the Burlington waterfront, a beaming Kilian stood front and center and held his tongue as Governor Shumlin boasted that Vermont had taken the lead of the states in "bold" legislation to clean up Lake Champlain. "Enough is Enough" he chanted, referring to a fifteen year delay in getting the program underway – implying it was EPA's fault. .. He cited Ohio's record – the notorious burning of the Cuyahoga River – somehow a mile marker to show how far more progressive Vermont was. (18)

Gov. Shumlin went out of his way to credit Killian (deservedly).

"We wouldn't be here today if not for him," Shumlin acknowledged CLF's role in goading both the state and the EPA from into action. Kilian's response was in kind collegial but scrupulously conditional: the Act was only a" first step" in a long process. He assured CLF's continued vigilance. . . Implied was his ace in the hole – the option to reactivate the pending suit if Ross didn't make good on a new promise evidently made since he last spoke to me.

None of the above became public during the sixty-day interim between signing of Act 64 and the EPA's release of updated TMDL's. During this time, Kilian and Ross were engaged in "closed door "negotiation. (19)

However on August 16, and again on the waterfront, EPA and state officials went on camera to make joint release of EPA's final TMDL's for Lake Champlain, and Vermont proposed Implementation. A careful side by side reading of the documents suggested Kilian had not gained one iota from the closed door negotiations. Rather than restoring what had been left out, the proposed Implementation Plan looked weaker than what had been proposed back in 2007.

A week later I called Kilian. ., "After two decades on the ramparts I'm at a loss –:" The regret in his s voice wasn't just for his own professional loss, but for the people who had camps and homes on Missisquoi Bay; for the loss of the Bay for recreation, the depreciation of property values. Aside from a strategic mistake of entering into closed door, sworn to secrecy bargaining "I couldn't get them to come clean." "I didn't need to ask who it was who hadn't" come clean."

* * *

We focus on three areas of contention. Incredibly, they are much the same issues first raised by CFL years ago in a challenge by petition of EPA's approval of Vermont's *first* implementation plan. Six years of foot-dragging ensued. In October 2008 CLF sought - and got – federal court ruling on that EPA had abused its discretion in

approving Vermont's implementation plan. The Vermont Agency of agriculture filed a lengthy and telling answer to CFC"S suit (20) and joined with EPA to appeal. The 2nd district court upheld CLF, and remanded the case it back to both Vermomt and the EPA. Five more years went by without result. The EPA made a succession of postponements, pushing back release of final TMDL's while nudging Vermont to revise its own water quality standards without benefit of EPA's finalized guidelines. It was a Catch-22 kind of reciprocal absurdity. It permitted both parties to blame the other for kicking the can down the streambed. Analogous to an architect directing a mason to build the base of a chimney while withholding its specifications.. In lieu of "final TMDL's, the EPA provided "guidance" – hinting to state agencies – chiefly Natural Resources and Environmental Conservation – what the new load reductions might or might not entail in terms of new regulation. . It devolved into a bureaucratic blame game. . A paper war of memorandum. The EPA was gingerly nudging Vermont to do what the Agency EPA no longer had the political capital to take on – regulations controlling the pollutants in agricultural run-off.

For some time EPA had been on a collision course with the USDA with a budget and corporate constituency second only to the Pentagon. It was more evident why EPA was balking than Vermont whose dairy industry was very important to the state, but a drop in the milk bucket nationally in terms of interest sector clout. Whatever the real reason for Vermont excuses, the EPA was blamed for threatening to take back the authority it had delegated to regulate all non- point pollution and impose Draconian measures that would break the state's budget: a classic red herring that masked the protectionist nature of the state rights agenda. (20).

Given all that, it's not surprising that three areas of contention – issues that the Court remanded for EPA to clarify and for Vermont to strengthen – have survived unamended to carryover in this latest round of reiterative Agency review – pretty much in the same state they were when challenged by CFC nearly thirteen years ago. *Deja vu all over again.*

THE 'BIG ENCHILADA'

The 'big enchilada' was the one provision Killian would fight hardest to preserve in legislation. And the one that Ross would take the greatest risk to keep out – the risk being his fingerprints would be left on the cleaver. It was to be a major provision in § 4851 under PERMIT REQUIREMENTS FOR LARGE FARM OPERATIONS - a BMP or Best Management Plan incorporated in the operating permits of MFO's and LFO. These general permits cover Vermont's large concentrated feeding operations, or CAFCO's as they are called when permitted federally under the EPA's NPDES program.

(The uninitiated in EPA acronyms should consult (20)) to learn the difference between a BMP and Accepted Agricultural Practices (AAP) – due to be upgraded and renamed a Required Agricultural Practices (RAP) even though little is strictly required except attendance at six to eight classes in conservation soil practices.)
CLF and the EPA were both behind the push to install BMP's into the operating permits of farms in critical areas of the Missisquoi. There the rising rates of TP concentration militated against any sort or degree of delay. These BMP's would be farm and watershed specific, earmarked for the Missisquoi watershed. Not as yet they were seen as necessary in other lake segments where, it was felt, there was more time for voluntary RAP to take effect.

BMP's are more strictly numeric than AAP's in that they can set quantitative markers to measure progress, or the lack of – grounds for revocation of a permit. Nutrient Management Plans are typically enfolded within a

BMP, both reviewable by the public under NPDES regulations, as they should be made in Vermont.(21) . Under the present scheme, revocation of a permit happens rarely happens.

The argument for BMP-conditioned permits is that they further "expeditious" compliance with practices designed to reduce phosphate in sub-surface run-off; and assure expeditious enforcement on the small per cent of farmers who push the envelope, and take a free ride in a voluntary system.

And conveniently for the test comparison offered here, the EPA standard for reasonable puts a premium on the expeditious.

> **Response:** EPA thanks the commenter for sharing his perspective on how Act 64 came into being. The final product is what is of importance to successful implementation of the proposed TMDLs. EPA's evaluation of the important role Act 64 plays in buttressing the Phase I Implementation Plan is discussed in the response to Comment 7-2.
>
> EPA declines to respond to the commenter's characterization of the views of CLF. EPA has directly addressed comments provided by CLF elsewhere in this document. [See responses to comments 1-5, 4-1, 6-1, 6-2, 6-11, 6-49, 6-50, 6-84, 6-86, 7-1, 7-7, 8-1]
>
> The commenter's description of CLF's challenge of the 2002 TMDL is incorrect. The federal court did not rule in CLF's favor. Rather, EPA and CLF reached a settlement that provided that EPA would seek a voluntary remand from the court to allow the Region to reconsider its 2002 TMDL approval decision. The court approved this settlement. A concise description of the legal history was provided in Section 1.2 of the proposed TMDLs and is included in the final version.

Comment 10-23: [Houriet, 4]
VERMONT'S ACT 64: a conspicuous avoidance of Phosphate.

1. In the Act's preamble, framing over-arching powers to support the discretion of rule-making, there was no mention of Phosphorous, the prime culprit of water degradation. Moreover, the legislature failed to explicitly identify this scientifically-established causal link between Dissolved Reactive Phosphorous and runaway growth of cyanobacteria. Act 64's silence on this point is "red meat" for Farm Bureau litigators eager and ready to attack the first state with the temerity to do so; i.e. establish a "significant nexus" as outlined by the Supreme Court in *Rapanos* (25) – without which implementation of numeric limits on phosphorous emissions would be found "impermissibly arbitrary and capricious." (26)

2. Phosphorous is not mentioned in the Definition of Pollutants as solely "animal wastes." Suggested amendment: include "excess nutrients from fertilizers" as regulated pollutants.

3. Not only Act 64, but the body of Vermont's laws, rules and regulations, exclude phosphorous as a "discharge. The prevailing definition is a "direct and surface "discharge" that can be visibly verified such as from manure. However phosphorous is discharged from inches to a foot below the soil surface, and is as invisible as sugar dissolved in water. (27) The main reason why enforcement based on a neighbor's complaint

of a discharge based on the present definition and the elusive nature of phosphorous would have no legs in court.

4. Perhaps the most compelling argument for Vermont's exclusion of phosphorous can be found in its proposed Implementation plan, a reference to the general permit issued in June 2013 for concentrated animal feeding operations.

The Vermont statewide concentrated animal feeding operation (CAFO) general permit was issued in June 2013. **While the permit is not phosphorus-specific,** any farm that discharges pollutants to a surface water body **can** be required to obtain a permit. (27)

5. Since 2003 the UVM extension and U.S. Natural Resource Conservation Service have employed a Phosphorous Index, developed expressly to evaluate certain soil types such as those clay soils in the Missisquoi watershed. It was developed by Fred Magdoff and William Jukela. A Phosphorous Index is more comprehensive and complicated than its modest title suggests. However, without it – for reasons that go beyond the scope of this comment to propound – it is impossible to identify, evaluate, monitor and equitably enforce reductions in farm-sourced phosphorous emissions. (28). The authority cited and consulted for permission to cite him in this context is Andrew Sharpley internationally recognized as the author of P-index. (29) Without employing a P-index, no Best Management Plan or Nutrient Management Plan can withstand court challenge.

And yet, throughout Act 64 and the Implementation Plan, the sole reference to a P-index appears on page 80 of the Implementation Plan. It falls under the heading "Additional research to continue improvements in nutrient management and increase adaptive management." It follows an entry for "On-farm digesters that increase the use of manure as bedding." The listing significantly proposes to evaluate the *concept* of a P-index as a means of "achieving standardization between states." Presumably this evaluation would entail a grant to reinvent the "wheel" that Magidoff and Jukela developed on their own, costing taxpayers nothing. (Jukela went on to Wisconsin to develop a P-Index there. Magidoff, now retired in Fletcher Vt., has s never once been consulted by legislators or agency officials in the drawing up of Act 64 or implementation of TMDL's.

One of the best in the U.S, developed by Fred Magidoff and William Jukela while both were at UVM Ag School, plant and soil science. It was adapted for Vermont soils, in particular the type of clay soils in the Missisquoi Valley that have high percentages of aluminum and ferrous hydroxides that have to be factored to obtain test results for soluble and plant available phosphate and that larger fraction that becomes almost immediately fixated. A very long footnote, more appropriate to a soil science journal, is required here for those who need a science-based justification for the P-Index use.(FN). Suffice to say, that TMDL's cannot be implement or integrated proportionately into soil management plans, either into site-specific BMP's and NMP's.

While it sounds modest, P-index actually is a methodology incorporating the cutting edge of phosphate transport. It is indispensable at every step of a program to control phosphate run-off: Without it there is no tool that can first identify, monitor and enforce effluent limits fairly – that is, fractionate the phosphate into forms relative to the variables of every soil type.

The adaptive functionality and usefulness of the P-Index makes it a high-charged item. (FN)

Except for Maryland, the state with water quality, narrative and voluntary programs, shun adaption of a P-index because it's an efficient, reliable, equitable and enforceable. It will stand the toughest court challenge the US Farm Bureau can muster – provided its use is mandated by statute and not just in the in the rulemaking. not fully and legislatively authorized. That is what Maryland has done.

I was struck by the lack of reference to the P-Index, given its value. And also for the fact that throughout the entire process of formulating its Implementation plan Magidoff, retired since 2,007 consulted, given his reputation and background of published research in the field. But that dismissal did not surprise Magidoff. (FN)

At the signing of Act 64, I approached David Mears. He'd said he'd never heard of a Phosphate Index. "I'm a lawyer, not a scientist."

But the trouble with that Andrew Sharpley remarked, "If you don't get the science right, you won't the law right. And if you can't explain the science to the public, you won't have enough support to get it right."

> **Response:** As to items 1 through 4 above, EPA notes that although phosphorus levels in Lake Champlain may have been an important driver in the development of Act 64, the Act is oriented to addressing the quality of waters throughout the state, regardless of the pollutant(s) responsible for the impairment. There is little doubt that phosphorus is among the pollutants of interest, but other pollutants such as nitrogen, sediment and bacteria, are among the threats to waters throughout the state. Act 64 makes regular use of the term "nutrients" which is commonly understood to include phosphorus, nitrogen and potassium. Among the Act's purposes is to "authorize and prioritize protective measures designed to implement and meet the impending total maximum daily load (TMDL) plan for Lake Champlain, meet impending TMDL plans for other state waters, and improve water quality across the state.
>
> With regard to item 5, while the Phosphorus Index is not directly discussed in the TMDLs, it is very much a part of the Phase 1 Implementation Plan and Act 64. Act 64 requires that: revisions to the Required Agricultural Practices include nutrient management planning; Large and Medium farms have nutrient management plans; and the Agency of Agriculture provide training in nutrient management planning. The Agency of Agriculture requires that nutrient management plans exceed the Vermont USDA NRCS Nutrient Management Plan 590 Standard. The Vermont Phosphorus Index is included among the criteria in the Nutrient Management Plan 590 Standard.

Comment 10-24: [Houriet, 6]
INCOMPLETE ADDENDUM
Uncovered thus far in this comment was the stipulated agreement between CLF and the AAFM. Because it was not announced until two weeks before the October 15 EPA's deadline, we have not been able to give it sufficient informed analysis. Neither has that agreement been given a public hearing. In addition there is legal uncertainty whether that agreement is subject to EPA process and applicable sections of the CWA: whether the order and consent decree of the Vermont Environmental Court (to which the agreement was remanded) will have "the force of law." (31).

With this comment, we are petitioning the EPA to allow amendment to this statement that would cover this agreement, its hearing set for November, and any court decision.

For now, inconclusive and somewhat discontinuous, we submit the following.

Days before the deadline for posting citizen comments, while fact checking the draft against the EPA text, a curious unexplained reference popped up. It was buried near the end, inelegantly tacked on in apparent haste.

It was a repeated, strangely unidentified reference – to a "*revised*" Phase One Implementation Plan. The most amplified of the references was this

> In light of the many challenges in the basin, Vermont has included a specific Missisquoi Bay section in the *revised* Phase1 Implementation Plan intended to accelerate the reduction of phosphorus inputs from the tributaries to the bay. As detailed in the Reasonable Assurance discussion for Missisquoi Bay (Section 7.2.1), the State *will* make enhanced phosphorus reduction efforts to address agricultural, forestry, and unstable stream corridor sources.

The passage aroused doubts. Could it be this comprehensive study, so diligent and earnest, might turn out to be; in terms of effecting institutional change, an exercise in futility? . . Not to be found – on any official web site, either that of the EPA's or the two Vermont agencies – - were any references to the aforesaid "revised *Pha*se 1 Implementation plan." The unowned reference was evidence that some covert side-agreement had been made, in effect – conditional approval that gave Vermont a free pass, bypassing public notice. Nevertheless the sneaky insertion did reveal something – more to the credit of the EPA than the Ag agency. Note in the above captioned text, the syntax "the State *will* make enhanced phosphorus reduction." Hitherto, the Agency had avoided leaning on the state, making direct, explicit commands. Like a permissive parent reluctant to order his charge "you *will* do your homework." Until now the EPA's has couched its guidance statements in open ended and/or options that connoted permissiveness, intimating that Vermont could voluntarily go their own way, free to ignore the Agency's timid suggestions. (32).

Still you had to credit EPA for these last minute show of firmness. Although these imperatives were belated, the Agency had for once told AAFM bluntly to get its act together. The EPA was urgent in tone, authoritative in command. It called upon Vermont to concentrate manpower and assets on Mississquoi; not just to obtain legal consistency with the prioritizing of critical areas embedded in the section 303 of Basin Management approach – but in response, we surmise, to the real emergency actualized by the summer of 2,015. (33).

Not only the EPA but extreme circumstances had arose that had given Vermont no option *but* to respond to the urgent injunction somehow contained in the "revised *Pha*se 1 Implementation plan."

Vermonters, outside Franklin County, were clueless to the imminent threat of runaway water degradation. For one, algal growth had now spread as far down the east shoreline as Georgia and had driven down assessed and market value of shoreline camps, cottages and homes. (34).

> **Response:** The stipulated agreement between CLF and AAFM (the Agency of Agriculture, Food & Markets) is akin to the Phase I Implementation Plan in that it addresses implementation and not the allocations that are the core of the TMDLs. As with the Phase 1 Implementation Plan, interested parties

in Vermont have and will have opportunities to comment on these documents before they are finalized by the state agencies. The Agency of Agriculture provided opportunity for public comment on the proposed settlement of the CLF petition during November 2015 as part of the process of finalizing that agreement. EPA is satisfied that the public has had the opportunity to comment on the settlement and will not reopen the opportunity to comment on the TMDLs.

Contrary to the commenter's assertion, the revised Phase I Implementation Plan (as of August, 2015) was available on EPA's website, along with the TMDLs and other supporting documents, throughout the public comment period.

Comment 10-25: [Houriet, 7]
HEARING IN ST. ALBANS

By August the reserve of patience and trust in "Mont-pell-yah" was running on empty. When Ross and other officials arrived in St. Albans this August to gauge public reaction to the newly released allocations for reducing "phosphate loading" they were greeted by pickets and signs denouncing bureaucratic delay. (35) It was standing room for three hundred some who jammed the hall of the Historical Society. For the greater part the reaction was muted skepticism as official from several agencies reiterated the standard talking points that had been uniformly repeated since the occasion Governor Shumlin's signing of Act 64 – "collaborative partnerships of stake-holders" " stewardship", "adaptive management", and above all, "patience." The high point emotionally came from an impatient resident of Missisquoi whose rage was tripped by Secretary Ross. He had just restated an oft-repeated theme of the state's program "we're all in this together ... we're all responsible for getting there. "

"How can *we* be responsible?" she retorted in fury. "Don't tell us we're the ones to blame; for corn on corn on corn? Don't tell us we're the ones .accountable. *We* know who's really accountable."

The Ag secretary reply was a dispassionate plea. "It's a huge cultural problem. We got to trust and have faith in each other..." But his answer was taken - by those in the audience and some in the administration – as obtuse, badly missing the mark. He'd skirted the ethical point of the lady's justified rant; fogged the difference in accountability between what society in general must bear, and the individual's moral and legal accountability. True, we're all responsible as members of a society who drive cars and trucks, equally to subject to the rules of the road. Then again a small percentage of incorrigible offenders exist who chronically drive drunk over the limit. They bear greater accountability in being most responsible for the state posting limits on car speed and effluent emissions in the first place.

The irate lady from Missisquoi had raised a question that struck at the problematic crux of implementing Act 64.

A NEW URGENCY

Rather than Secretary Ross, the EPA proved to be the party more responsive to mounting impatience and criticism. That is if you can decode between the lines of the EPA's statement – imperative sentences that conveyed a new sense of urgency as to how Vermont *must* implement the final TMDL's. Few general readers would have caught this. It took this reviewer three times thru with an investigative fine comb, to grasp the key

clue. It was a recurrent but untraceable reference to a *Revised Phase One Implementation Plan.* For instance: the most amplified of these ordered "the State *will* make enhanced phosphorus reduction efforts."
...
The italicized *will* underscored a shift from optional to mandatory compliance by Vermont. Along with a warning of unspecified "consequences." if the state failed to comply: "Vermont, in partnership with federal and local governments, *will* achieve and maintain the reductions necessary to meet the TMDLs' phosphorus allocations."

--. "The State will invest extra resources/effort into identification of opportunities where active intervention in bank erosion processes could be most effective, and then implement practices as further described in *Chapter 5, Section J of the revised Phase 1 Implementation Plan."*
–"For agriculture, Vermont *will* visit all known livestock operations in Franklin County and assess them for water quality violations and concerns."
– "The widespread application of measures assumed in EPA's modeling analyses **wil**l be carried out on the ground."
- "The farm specific analyses *will* be prioritized based on prior identification of farms likely to present the greatest threat to water quality, often referred to as "critical source areas."
-Finally, the "big enchilada," the deal-breaker long dormant between Ag secretary Chuck Ross and Chris Kilian of Conservation Law Foundations (CLF)
--"Farms *will* be required to address any violations of the "Required Agricultural Practices" *as well as install site specific BMPs where necessary* to comply with water quality standards. Specific details can be found in the Missisquoi Bay – Enhanced Implementation section of the *revised* Phase 1 Implementation Plan.(Chapter 5, Section J, Vermont, 2015.**"**

UNCONFIRMED DEDUCTIONS CONFIRMED

As far as being publicly available, no such revised plan was discoverable by September 28. Our hunch was that they were a last minute demand that the EPA had appended on deadline at the tail end of its TMDL announcement. But not in time for Vermont to formulate a complete answer. The total of these inserted references to a missing revised plan summed up to even greater inference.

That the *EPA had already given Vermont de facto approval conditional on the state's required implementation of certain measures. But remained uncertain was whether Vermont had agreed to comply, either on off the public record.* At any rate highly inferential speculation except for one point. That for once, the EPA and the CLF were on the same page in backing generalized BMP's as mandatory in critical source areas of Missisquoi. It suggested a significant change the balance of power among the three principals driving from what had been since 2002 a top-down process in conceptualizing and enacting Act 64. Up until now EPA had stayed neutral as Secretary Ross uncompromisingly rejected the CFL's main demand. Now this new set of mandatory requirements suddenly imposed on the State indicated that the last moment EPA had endorsed not only Chris Kilian's most cherished demand, but several provisions aligned to the installation of BMP's in Missisquoi.

There was only one source could verify this – Vermont's "contact administrator" at EPA's Title One office in Boston, Steve Perkins.

"You got it right - "he confirmed after several minutes of presenting the above scenario. I wasn't making it up out of thin air, he assured, and the *revised* plan wasn't a phantom. . These were new EPA requirements hurriedly imposed to meet a statutory deadline. That said, questions immediately unfolded. As a side-deal it was still only half of a quid pro quo agreement. While the EPA's "quid" was definitely out on the table, Vermont's reciprocative "pro" was held back, partial and incomplete. In terms of a three-way transaction with EPA and CLF in alliance, the 'ball' was over in the court of Chuck Ross.

"What's going to happen?" we asked.

"Stay tuned," Perkins rejoined, hinting that it was quite imminent.

* * *

SIDE-DEAL ROLLED INTO SIDE-AGREEMENT

A day or two afterwards, a side-agreement was announced. It took the form of a joint stipulation on and motion between CLF and AAFM, for Vermont Environmental Court to issue an order approving the agreement, and consent decree for carrying it out. . Under the Court's grant of equitable powers, the order and decree would become law: unreviewable by the public.

The joint agreement and the agreed upon use of the Environment Court suddenly made Vermont's proposed Implementation look like a 'done deal." In spite of the EPA's last minute requirement for immediate and general installation of BMP's in Missisquoi, the CLF's Chris Kilian had agreed to drop a pending suit inclusive of this demand; in return Chuck Ross, secretary of AAFM substituted a three to ten year process of farm "assessment" to determine individually if BMP's were "necessary..."

One of the many issues to be explored in a separate comment is whether the urgency of the situation makes further assessment of farms in a critical source area resemble the classic re-arranging of the deck chairs on the Titanic. Furthermore, Ross' lep chosal [*sic*] would single out farmers for violating emission standards for which the present Act 64 offers no umbrella of legal authority.

In brief, Act 64 should be amended to designate critical sub-basins in which *all* farmers would be assigned BMP's and work together to bring down their basin's contribution of phosphorous pollutants. This plan would work – both legally and pragmatically.

Response: EPA acknowledges the commenter's narrative view of events of August and September, 2016. EPA does not share the same "behind the scenes" view of the narrative. As noted above, Vermont's revised Phase I Implementation Plan (August 2015) was available on EPA's web page along with the TMDLs throughout the public comment period. EPA was certainly aware of what CLF was demanding in its settlement discussions with the Agency of Agriculture as its petition and the record of the Secretary's first decision were in public view. EPA had also stated at public meetings in December 2014 on the developing TMDL framework, that meeting water quality standards in Missisquoi Bay would require just about every measure available. There is no question that EPA welcomed the prospect of an agreement between CLF and the Agency of Agriculture. References to a "side deal" and "side

agreement" improperly suggest that the matter between CLF and the Agency of Agriculture were somehow part of the TMDLs. While EPA certainly had great interest in the outcome of the petition, it was a separate matter that EPA was not a party to at any time.

Comment 10-26, [CLF]
On May 9, 2016, EPA received a letter reiterating concerns with the proposed TMDLs. Although well beyond the close of the comment period, EPA has included the comments here. EPA's response follows each of the numbered sections of the letter.

Conservation Law Foundation (CLF) understands that the Environmental Protection Agency (EPA) Plans to issue the Lake Champlain Phosphorus Total Maximum Daily Load (TMDL) within the next few weeks. While we recognize the importance of getting a TMDL in place as soon as possible, the TMDL as currently envisioned is deeply flawed. CLF has submitted several comment letters over the last six months raising our concerns about the draft TMDL. Despite multiple discussions with EPA and the State of Vermont, CLF's core concern remains unaddressed. As such, we are taking this opportunity to reiterate those concerns, and set forth why it would be unlawful and unreasonable for EPA to issue the TMDL as currently drafted.

CLF is a member-supported, not-profit organization that uses legal, scientific, and policy tools to protect and enhance water resources throughout New England. CLF has played a key role advocating for strict controls of phosphorus discharges into Lake Champlain. However, despite decades of cleanup efforts, many segments of the lake continue to decline. The revised TMDL is therefore critically important to addressing phosphorus pollution and complying with federal mandates under the Clean Water Act (CWA).

The Lake Champlain TMDL that EPA is poised to issue fails to satisfy the requirements of the CWA and its implementing regulations. While we continue to hold all of the concerns raised in our prior comment letters from October 2015 and February 2016, we want to specifically highlight three particularly concerning points where the proposed TMDL significantly deviates from the provisions of the CWA. First, the TMDL sets wasteload allocations for wastewater treatment facilities that unlawfully permit a substantial increase in actual and facility design-capacity phosphorus loading to the impaired waters of Lake Champlain. Second, EPA lacks specific assurances that the nonpoint source reductions relied upon will actually occur. Third, the TMDL Accountability Framework does not contain necessary, mandatory triggers for revision to ensure compliance with water quality standards.

(1) The wasteload allocations for wastewater treatment facilities unlawfully allow a substantial increase in phosphorus loading into impaired waters.

The CWA was enacted more than 40 years ago to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."[1] In fact, Congress envisioned elimination of the use of the nation's waters for waste disposal by 1985 and that fishable and swimmable waters be achieved by 1983.[2] The TMDL process is critical to achieving the CWA's purpose by requiring states to develop pollution budgets for impaired bodies of water.

Since the annual phosphorus concentrations in Lake Champlain already exceed water quality standards and impact designated uses,[3] these pollution budgets must be guided by the requirement to meet water quality standards.[4] For wastewater treatment facilities (WWTFs) in impaired lake segments, an allocation set above the actual phosphorus load of that facility is inconsistent with the CWA. As discussed below, the way in which the draft TMDL sets wasteload allocations (WLAs) for WWTFs violates this core requirement in the CWA for a number of reasons.

First, very few WWTFs in the watershed will see actual decreases in phosphorus loading as a result of the WLA. Although the draft TMDL developed new and reduced allocations on paper for 26 of the 59 WWTFs in the watershed, only nine of these facilities will see **actual** decreases in phosphorus loading as a result of the proposed WLA. Meanwhile, 50 out of 59 facilities will be allowed to maintain or significantly expand current actual loads – adding ever more dissolved phosphorus into the watershed (up to 37,000 pounds per year at maximum WLAs) and contributing more phosphorus to present water quality standard violations. In other words, the draft TMDL relies on paper reductions in phosphorus loads by comparing current and future **permitted** loads of phosphorus at design capacity, rather than current **actual** loads against allowable future loads.

Second, the TMDL only requires 13 of the 59 WWTFs to implement upgrades immediately. In an effort to provide the State with flexibility, EPA acknowledges that "[c]onstruction of upgraded phosphorus treatment facilities will not be required until actual phosphorus loads approach 80% of facilities' WLAs."[5] While 13 facilities' loads have already exceeded 80 percent of the new allocation, the remaining 46 facilities are proposed to be allowed to increase their discharge of phosphorus pollution until the 80 percent threshold is met. If one only looks at the Main Lake segment, where phosphorus originating from WWTFs comprises nearly 50 percent of the base load,[6] WWTFs could increase their phosphorus discharges by over 4,000 pounds before any upgrades are required. Even after retrofits, unless and until the actual WLA is exceeded, the draft TMDL could be interpreted to allow these dischargers to continue to discharge indefinitely, despite the fact that it is readily acknowledged that hoped-for nonpoint source reductions and attainment of water quality standards are not expected to occur for decades.

Third, 18 facilities have not received new allocations in the draft 2015 TMDL nor the 2002 TMDL. The phosphorus concentration limit for several of these facilities is 5.0 mg/l at design flow. In contrast, the draft 2015 TMDL bases its new allocations on phosphorus limits of 0.2 mg/l at design flow for large facilities and 0.8 mg/l at design flow for mid-sized facilities. Further, EPA has noted that the 2002 TMDL wasteload allocations based on effluent concentrations of 0.6 mg/l are "well above what was technologically feasible at the time."[7] This difference in concentration limits between newly regulated facilities and ones that have been ignored is astronomical. The phosphorus limits for wastewater treatment facilities should be in greater alignment with and reflective of the best available control technology.

Lastly, the approach in the WLA facially violates 33 U.S.C. § 1311(b)(1)(C). Under the proposed WLA, actual dissolved phosphorus discharges from wastewater treatment facilities will in-fact contribute to violations of water quality standards and will in-fact increase their level of contribution for decades to come. There is no statutory provision that even arguably allows that sort of expansion of actual current pollution loads from these permitted facilities, let alone purporting to authorize such an expansion for decades to come.

While section 1311(b)(1)(C) did provide significant flexibility in meeting water quality standards over time, the grace-period provided by the statute expired in 1977. As a result, any permits issued for these facilities must contain limitations necessary to meet state water quality standards immediately upon issuance.[8] The point source/nonpoint source "trade-off" scenario described in 40 C.F.R. § 130.2(i)—wherein less stringent WLA-derived water quality based effluent limitations are permissible in WWTF permits if nonpoint source pollution controls make more stringent load allocations (LAs) practicable---can only occur if load reductions from the LA component are sufficient enough to bring Lake Champlain into compliance with water quality standards within the life of the relevant permit.[9] Surely EPA cannot expect the voluntary, unfunded nonpoint source control measures set forth in Vermont's Implementation Plan to achieve enough load reductions over the course of the next five years to bring Lake Champlain into compliance with water quality standards. For this reason, EPA cannot set WLAs for WWTFs that contribute to violations of the state water quality standards.

The draft 2015 TMDL's neglect to regulate facilities with appropriately stringent phosphorus concentration limits, as well as its delay of upgrade requirements that allows increased phosphorus discharges are contrary to plain requirements of the Clean Water Act and addressing the causes of Lake Champlain impairment.

Footnotes in Comment

1 33 U.S.C. § 1251(a).
2 33 U.S.C. § 1251(a)(1) "[I]t is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985"; Id. at 1251(a)(2) "It is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, an wildlife and provides for recreation in and on the water be achieved by July 1, 1983."
3 Vermont Dep't of Environmental Conservation, *State of Vermont 2014 303(d) List of Impaired Waters* (Sept. 2014); U.S. Environmental Protection Agency, *Phosphorus TMDLs for Vermont Segments of Lake Champlain*, pg. 15 (Aug. 2015).
4 33 U.S.C. §§ 1313(d)(1)(C), 1311(b)(1)(C).
5 *Id*. at pg. 30.
6 *Id.* at pg. 18, Tbl 3.
7 U.S. EPA, *Reconsideration of EPA's Approval of Vermont's 2002 Lake Champlain Phosphorus Total Maximum Daily Load ("TMDL") and Determination to Disapprove the TMDL*, pg. 8 (Jan. 2011).
8 *See In re J & L Specialty Prods. Corp*., 5 E.A.D. 333, 334 (EAB 1994) ("NPDES permits issued after July 1, 1977 must require compliance with water quality-based effluent limitations immediately upon the effective date of the permit.").
9 *See* In Re City of Moscow, Idaho, 10 E.A.D. 135, 142 (E.P.A. July 27, 2001) ("[C]ompliance schedules for NPDES permits are limited to five years or the life of the permit.").

Response:

EPA disagrees with the commenter's assertion that an allocation for a wastewater facility above the actual (current) phosphorus load of that facility is inconsistent with the CWA. Neither the Clean Water Act nor EPA's TMDL regulations and guidance categorically preclude allocations to a WWTF above the actual phosphorus load of the facility, as long as the sum of the WLAs and the reasonably assured LAs, along with the margin of safety, do not exceed the total loading capacity.

As described in the opening paragraph of Section 7.1 of the TMDLs, section 303(d) of the CWA requires that a TMDL be "established at a level necessary to implement the applicable water quality standard." EPA regulations define a TMDL as the sum of WLAs and LAs and a margin of safety, and provide that "[i]f best management practices or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent." 40 C.F.R. §130.2(i). EPA's TMDL guidance further explains that when a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load

reductions will occur, the TMDL must provide "reasonable assurances" that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable (USEPA, 1991; see also Perciasepe, 1997). This is what EPA has done in these TMDLs.

There is no statutory or regulatory requirement that prohibits EPA from establishing a TMDL in which some WWTFs receive WLAs that effectively allow an increased load through growth, others receive WLAs that maintain current loads, and still others receive WLAs that require reduced loads, as long as the WLAs, in combination with the reasonably assured LAs and margin of safety, are set at levels that collectively will ensure that WQS will be met. Indeed, 40 C.F.R. § 130.2(h) specifically includes future sources of pollutants in the definition of "wasteload allocation." Clearly this would apply to the situation where a WWTF increases its load up to design capacity, as well as to entirely new sources. The CWA and EPA regulations also do not require WLAs to be limited to current or reduced loads until nonpoint source reductions are achieved, and the commenter does not cite a specific provision to the contrary.

The WLAs for the WWTFs in the TMDLs (see Table 9) present an "apples-to-apples" comparison of how much phosphorus WWTFs are currently allowed to discharge and how much they will be allowed to discharge under the new TMDLs. In addition, EPA reviewed cumulative data for the facilities, and actual WWTF phosphorus loads from all of the 59 facilities over the last 10 years have declined from 24.67 mt/yr in 2006 to 13.62 mt/yr in 2015. The three- and five-year running averages over this ten year period show a steady decline in the load over the period. The fact that many WWTFs discharge well below their permitted limit is commendable and has been beneficial to Lake Champlain. EPA and VT have good reason to expect that this will continue.

Of the 59 wastewater treatment facilities that discharge into Lake Champlain, 26 have received new reduced allocations. Of the 26, 13 facilities will need to initiate upgrades to achieve the reduced loads.[3] The other 13 facilities that have received new loads (Barre City, Enosburg Falls, Global Foundries, Northfield, Richmond, RockTenn, Essex Junction, Shelburne 1 and 2, South Burlington Airport Parkway, South Burlington Bartletts Bay, Stowe and Waterbury) are currently operating well below their new loads. EPA has analyzed the cumulative data for these 13 facilities from 2006 to 2015 to determine trends and thus the likelihood that there would be an increase in the phosphorus load. The total actual load from the 13 facilities has ranged from a high of 7.932 mt/yr in 2006 to a low of 3.075 in 2015. EPA calculated 3- and 5-year running averages of the total load from these facilities, starting with 2006. Both the 3- and 5-year running average total loads decrease steadily over time. The cumulative average load for the last five years of record (2011-2015) is 26% lower than the five prior years.

EPA is not aware of any evidence that supports CLF's claim that all of the WWTFs "will in-fact increase their level of contribution for decades to come." Instead, the near term upgrades at 13 of the facilities referenced by CLF will further the decline in WWTF loads, and those reductions will occur in the lake segments where the decreases will be most beneficial. And as mentioned in the preceding paragraph, there are 13 other facilities that have already been decreasing over time and there is no reason to assume that they will increase their loads.

[3] Hence, we do not understand the commenter's assertion that only 9 facilities will need to reduce their loads.

The discussion about the Main Lake segment contains a significant inaccuracy. The phosphorus load from VT WWTFs in the Main Lake segment comprise 7.2% of the total VT load, and 5.2% of the total (VT + NY) load, far less than the "nearly 50%" claimed by CLF. The potential increase of 4000 pounds if all WWTF increased their loads to their permitted limit is less than 2% of the total loading capacity of the Main Lake segment.

As to the 18 facilities that did not receive reduced allocations in either the 2016 or the 2002 TMDLs, they were not ignored by EPA. EPA's process and rationale for setting the WLAs for the WWTFs was clearly described in Sections 6.1.1 and 6.1.1.1 of the proposed TMDLs. EPA made decisions about each of the 18 facilities based on the relative contribution of WWTFs in each segment, the size of the facilities and the extent to which other point and nonpoint source measures would be sufficient to meet the total allocation for the relevant TMDL segment. For example, while the concentration of phosphorus in the discharges from some of the very small WWTFs is high, the combined total load from the eight facilities with phosphorus concentrations greater than 3 mg/l is only 1 mt/yr. This is less than one sixth of one percent of the total phosphorus load from VT sources (631 mt/yr). So even though the phosphorus concentrations are high, the amount of phosphorus discharged from these facilities is extremely small. In addition, as noted in the proposed TMDLs, the 2002 allocations for two of the 18 sources (Burlington Electric and Weed Fish Culture Station) were already lower than a limit equivalent to 0.2 mg/l at design flow.

EPA notes that of the remaining 15 facilities (not directly addressed by CLF) which all received the same allocations as in the 2002 TMDLs, 11 (Brandon, Middlebury, Proctor, Rutland City, Vergennes, Hardwick, Johnson, Milton, Morrisville, Perrigo Nutritionals and Alburgh) are in lake segments that were consciously not targeted by EPA for WWTF reductions because the combined WWTF permitted discharges are less than 10% of the phosphorus base load, and the developed land and nonpoint reductions needed were 30% or less. One of the facilities (Troy/Jay) has already been upgraded and the allocation is already in the current permit. Another facility, Cabot, is small in size and consistent with EPA's WWTF allocation approach, small facilities were kept at their current allocation. Two of the facilities, Fair Haven and Poultney in South Lake B, were given the same allocation as in 2002 after EPA determined that there was adequate reasonable assurance that the nonpoint reductions would be sufficient to meet the overall loading capacity.

Neither EAB decision cited by the commenter supports the position that a TMDL cannot include a WLA that is greater than a WWTF's current load. Rather, these decisions address the question of whether, and to what extent, a compliance schedule may be provided to a discharger to meet water quality based effluent limits.

In *In re J & L Specialty Prods. Corp*., 5 E.A.D. 333 (EAB 1994), the EAB explained the general rule that, pursuant to CWA § 301(b)(1)(C), permits must contain permit limits necessary to meet water quality standards immediately upon permit issuance, but also noted that there are two exceptions to that rule, one of which is where the state's WQS or implementing regulations authorize a compliance schedule. *Id.* at 343-344. The EAB then went on to consider the permittee's various challenges to compliance dates in the permit. The permit limits at issue were not based on WLAs, and the decision does not address whether WLAs may be set above current loads when there is reasonable assurance that sufficient load reductions will occur to ensure that WQS will be met.

The commenter relies on the EAB's decision in *In Re City of Moscow, Idaho,* 10 E.A.D. 135, (EAB 2001) to support its position that less stringent WQBELs based on WLAs are permissible in WWTF permits *only* if load reductions from the LA component are sufficient to bring Lake Champlain into compliance with water quality standards within the life of the relevant permit. The commenter's reliance on *Moscow* for this premise is misplaced. First, the WLAs on which the City of Moscow's permit limits were based were not dependent on non-point source load reductions.[4] Second, *Moscow* addresses the length of schedule that may be included in a permit to allow time for the permittee to achieve compliance with new WQBELs in its permit. Nowhere does *Moscow* address the length of time that may be necessary to attain instream water quality standards, let alone hold that a TMDL must ensure that such standards will be met in five years. Finally, the EAB did not hold that compliance with permit limits must be achieved within the life of the permit, but rather that EPA's authority to provide a compliance schedule in the permit was circumscribed by state law. In light of Idaho's regulations, which provide that schedules to meet a new WQBEL in a permit are limited to five years or the life of the permit, the EAB held that EPA did not err in imposing a compliance schedule that was consistent with state law rather than including a less stringent schedule proposed by the state's § 401 certification. *See Id.* at 153-154.

In addition, EPA disagrees with the commenter's assertion that the nonpoint source reduction measures in the Phase 1 Implementation Plan are voluntary and unfunded. Many of the measures addressing non-WWTF sources are required by Act 64 or existing or new regulations. Act 64 specifically stipulates that many specific agricultural measures be implemented through rule-making, including requirements pertaining to vegetated riparian buffers and ditch buffers, soil erosion, nutrient management, barnyard management, and livestock exclusion. Additionally, the Secretary of Agriculture's revised decision includes a host of additional firm BMP requirements for the Missisquoi Bay watershed, which is the watershed with the most challenging NPS reduction needs (VAAFM, 2016). Act 64 also establishes strong provisions for phosphorus reductions from stormwater sources, through creation of three new stormwater permitting programs that will require retrofits to existing developed land. So the measures addressing agricultural and developed land sources are certainly not voluntary. And regarding streambank/stream corridor sources, as described in the response to comment 6-87, there are new regulatory measures in Act 64 and the Phase 1 Implementation Plan that will speed up the transition of stream reaches to a more stable condition. One example is the riparian buffer and livestock exclusion requirements to be included in the new RAPs. Both the 25 foot buffer requirement for agricultural lands and the livestock exclusion requirement will lead to more stable (well vegetated) streambanks and eliminate erosion caused by livestock trampling. In addition, the State's recently revised stream alteration regulations require that failed culverts be replaced typically with larger structures, meeting design requirements and performance standards that will minimize channel erosion – this is another requirement that will speed the transition to more stable channel conditions. Lastly, as discussed in the response to comment 6-84, the forestry BMPs (called AMPs) are required for more than 60% of forest land and that percentage is growing every year due to steadily increasing enrollment in the current use program. Because these measures (across all four sectors) are required, they are not dependent on funding. EPA has demonstrated with the Scenario Tool that these required measures (along with others)

[4] Paradise Creek TMDL, Idaho Department of Environmental Quality, December 24, 1997 ("Waste load allocations are not dependent on nonpoint source reductions to meet instream water quality standards because water quality standards will be met for the discharge prior to mixing with Paradise Creek. Because this TMDL does not have waste load allocations that are dependent on nonpoint source controls, reasonable assurance is not applicable.") TMDL at p. 28.

will be sufficient to achieve needed reductions. And it's clear from the Phase 1 Implementation Plan that many of these measures will be substantially implemented in the near-term, especially the agricultural measures.

(2) EPA lacks specific assurances that nonpoint source control measures will occur because final implementation measures are not in existence at the state level, and EPA has no clear understanding of how those control measures will be funded.

EPA regulations define a TMDL to include WLAs and LAs, and provide that "[i]f best management practices or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent."[10] EPA's non-binding TMDL guidance further states that when a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, "there must be specific assurances that the nonpoint source reductions will in fact occur" for the TMDL to be approvable.[11] Nonpoint source programs identified in the LA must be in existence and robustly funded at the time of TMDL approval in order to serve as a specific assurance. In fact, in disapproving the 2002 Lake Champlain TMDL, EPA previously stated that it was "[u]nable to identify any programs or activities **in existence at the time of the TMDL submittal** that provide assurance that nonpoint source reductions would occur, and that anticipated reductions would be sufficient to meet the TMDL load allocations."[12]

Where a TMDL is developed for waters impaired by both point and nonpoint sources, EPA's determination of specific assurance that the TMDL's LAs will be achieved considers whether practices capable of achieving the specified pollutant load: (1) are technically feasible at a level required to meet allocations; and (2) have a high likelihood of implementation. While the specific nonpoint source control measures set forth in Vermont's Implementation Plan may be technically feasible, EPA cannot reasonably determine that there is a high likelihood of implementation where final implementation measures are not in existence at the state level, the state will not even be providing EPA with a final implementation strategy until months after TMDL approval, and where necessary funding for implementation does not exist.

Successful implementation of any new control measure requires adequate financial resources. Nonpoint source pollution control measures are no exception, especially ones that place the financial burden on individuals or municipalities. Here, EPA lacks both a clear understanding of the costs associated with implementation of the TMDL's nonpoint source pollution reduction programs, as well as how the state will generate revenue to fund them. For example, the control measures included in the Vermont Implementation Plan to reduce streambank erosion, such as removal of river corridor and floodplain encroachments, will only be accomplished if landowners and municipalities have sufficient financial resources or are required to complete implementation actions through enforceable requirements. Similarly, the best management practices relied upon in the TMDL to reduce phosphorus load from forests are also dependent on the willingness of landowners, and constrained by financial considerations.

The 2015 TMDL briefly mentions several funding sources for implementation, but they are small amounts of money and temporary in nature. Further, the initial revenue generating mechanism put in place by Act 64 is underperforming (the three-year-long property transfer tax surcharge was supposed to contribute $5.3 million annually, but only approximately $2 million has been committed for 2016). The TMDL also alludes to new

federal funding available to improve water quality in the Lake Champlain Basin. But without a clear picture of how much money each of the key measures will cost to implement,[13] or an exact plan for long-term financing,[14] EPA cannot reasonably assume that adequate funding exists for those key nonpoint source pollution control measures to occur.

Footnotes in Comment

10 40 C.F.R. § 130.2(i).

11 40 C.F.R. § 130.2(i); U.S. EPA, *Guidance for Water Quality-Based Decisions: The TMDL Process*, ch. 1 at 3, ch. 2 at 9, ch. 3 at 5-6 (Apr. 1991).

12 U.S. EPA, *Reconsideration of EPA's Approval of Vermont's 2002 Lake Champlain Phosphorus Total Maximum Daily Load ("TMDL") and Determination to Disapprove the TMDL*, pg. 11-12 (Jan. 2011) (emphasis added).

13 CLF asked the State in mid-April 2016 for an estimate of what it would cost to implement the TMDL. The State responded that it was still working on compiling the numbers.

14 The Vermont Office of the State Treasurer is working with the Vermont Department of Environmental Conservation to draft a report on long-term financing of state-wide water quality improvement, but the stakeholder process is still ongoing, and the final report to the Legislature is not due until January 2017.

Response:

Unlike the 2002 TMDL, Vermont has developed a robust Implementation Plan that has milestones and specific requirements, and is supported by Act 64. Thus, in contrast to EPA's findings on reconsideration of the 2002 TMDL, EPA has a firm basis for determining that the load allocations will be reasonably assured.

EPA agrees that the specific nonpoint source control measures set forth in Vermont's Implementation Plan are technically feasible. EPA disagrees that it cannot reasonably determine that there is a high likelihood of implementation. As described in Section 7.2 in the TMDLs, many of the most important milestones in the state's Implementation Plan are included in Act 64, significantly bolstering the likelihood of implementation. Act 64 requires that the Implementation Plan be subject to public comment and finalized *after* the issuance of the final TMDL, which will ensure that the final plan is aligned with the final TMDLs.

Finally, it is inaccurate to say that necessary funding for implementation does not exist. In fact, Act 64 provided funding for eight additional staff for the Agency of Agriculture, Food and Markets and 13 additional staff for the Department of Environmental Conservation; established a Clean Water Fund to support future work; and requires a recommendation to the General Assembly on a longer-term financing mechanism. Many of the additional staff have already been hired by the Vermont agencies. These are permanent positions and the new personnel have already begun to implement key parts of the Phase 1 Implementation Plan. CLF's expectation of an "exact plan for long-term financing" is an unrealistic one as the appropriation of funds in Vermont by the General Assembly is an annual exercise. Furthermore, many of the implementation actions are not dependent on such financing: many measures are required, and there are no longer exemptions for these requirements in the absence of government funding (e.g., agricultural BMPs in the Missisquoi Bay watershed, WWTP upgrades, etc.). Likewise, Act 64 provides for the establishment of permit programs for stormwater sources that will require reductions from developed land regardless of funding availability. Moreover, the Accountability

Framework included in the TMDLs (Section 7) is structured, in part, to increase the likelihood of continuous State funding.

(3) The Accountability Framework for the draft 2015 TMDL does not allow for, let alone require, clear triggers for revision, and is inadequate to ensure that implementation failures are rectified in a timely fashion.

According to EPA guidance documents, TMDLs must include monitoring plans in order to track effectiveness of implementation and clearly trigger revisions where necessary, particularly when a TMDL involves both point and nonpoint sources.[15] The monitoring plan should describe data to be collected to determine if load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.[16]

The Accountability Framework for the draft 2015 TMDL does not contain these necessary elements for modification. Instead, the TMDL Accountability Framework is based on Vermont's Phase I Implementation Plan, the Tactical Basin Plans (also referred to as the Phase II Implementation Plan), and EPA's recitation of discretionary authorities to track and assess Vermont's progress and to take discretionary federal action if the State fails to meet milestones. While these statements are helpful in outlining specific implementation actions, they do not include phosphorus monitoring or assessments of whether water quality standards are being met. The Accountability Framework lacks any guaranteed triggers for reconsideration even if alluded-to implementation actions never occur at all or if funding completely fails to materialize.

Since EPA's assessment of "satisfactory progress" according to the Framework is based on whether implementation of specific control measures has occurred, EPA will consider the TMDL "successful" so long as the actions outlined by the State are put into practice—regardless of their efficacy at reducing phosphorus loads. Without comprehensive monitoring, the actual impact of the TMDL on water quality will be unknown, and ineffective implementation practices will continue.

For example, according to the current draft Accountability Framework, so long as the Agency of Agriculture adopts revised Required Agricultural Practices (RAPs) by a certain date (which, by the way, the Agency is set to miss the July 1, 2016 deadline), then EPA will determine in its final report card that Vermont has made "satisfactory progress." Upon closer inspection of the substance of the RAPs, however, it becomes clear that the rules are not as stringent as was contemplated by either Act 64 or EPA's scenario tool. In fact, certain agricultural best management practices (BMPs) that are applied within EPA's scenario tool, such as converting cropland to hay, are not even contemplated in the proposed RAPs. Other practices, including crop rotation, manure injection, and conservation tillage are applied heavily within the scenario tool, but are only indirectly captured within the RAPs through potential inclusion in possible Nutrient Management Plans. The way the Framework is currently drafted, EPA would not pick up on these shortfalls through monitoring, and would not be prompted to make revisions to the TMDL to remedy actual pollution to the Lake. Rather, the report card process would merely be an assessment of paper compliance with program development.[17]

Further, successful monitoring goes beyond the target pollutant. In a 2013 Government Accountability Office (GAO) report, the GAO found a water temperature TMDL in Oregon to be insufficient because it tracked water temperature, but failed to monitor biological indications. The GAO found that "without tracking biological

conditions affected by temperature, it would be impossible to assess whether progress was being made toward the water body's designated use."[18]

Lastly, the milestones included in the plan are insufficient and are only backstopped by potential discretionary action in any case. Given the spotty track record of implementation to-date, the Accountability Framework must include much more specific annual milestones and oversight for at least the first 10 years of implementation. From years 10 to 16, the Framework should include accountability documentation every two years. If all goes according to plan, timeframes for accountability determinations could be extended after year 16. Given the vagaries of funding, program development, and the tactical basin planning process along with the severity of the water pollution problem in the lake, the current Accountability Framework unlawfully withholds required regulatory actions and includes unreasonable timeframes and insufficient monitoring.

Footnotes in Comment

15 U.S. EPA, *Guidance for Water Quality-Based Decisions: The TMDL Process*, at 17 (Apr. 1991).

16 *Id*.

17 This same analysis could be applied to several other pollution control programs being rolled out by the State to implement the TMDL. For example, the Municipal General Roads Permit: while EPA may find that "satisfactory progress" is made if the final General Permit is issued by December 30, 2017, a closer inspection of the regulatory program being developed indicates that the average Vermont town will only need to retrofit 20 percent of unpaved roads, or 0.5 miles of road per year over the course of 20 years to comply with the permit. This runs contrary to the TMDL assumption that the WLA for developed land in every lake segment could be achieved with "stormwater retrofits equivalent to the combination of 100 percent hydrologically connected unpaved road segments." TMDL, at page 36.

18 U.S. Government Accountability Office, *Clean Water Act Changes Needed If Key EPA Program is to Help Fulfill the Nation's Water Quality Goals*, pg. 43-44 (Dec. 2013).

Response:

While a monitoring plan is not a required element of a TMDL, EPA guidance recommends including a monitoring plan to track the effectiveness of a TMDL.[5] A new section on monitoring, reflecting the existing long-term monitoring program and some new elements (including the kinds of elements recommended by the commenter) has been added to Chapter 8 in the final TMDL document. This section includes information on monitoring during implementation, both tracking and accounting for measures taken and associated phosphorus reductions and the continuation of the decades-long monitoring of instream and in-lake phosphorus levels. These monitoring and tracking efforts together constitute a comprehensive monitoring plan well suited for evaluating TMDL implementation progress, assessing attainment of water quality standards, and supporting future TMDL revisions.

Regarding monitoring of the TMDLs' effect on water quality, the Lake Champlain Long-Term Water Quality and Biological Monitoring Program, operated by the Vermont DEC and New York State DEC and coordinated through the Lake Champlain Basin, has operated since 1992. This constitutes a robust water quality monitoring program throughout the basin – the lake and tributaries. This network, which covers more indicators than just phosphorus, will continue to provide regulators and all interested stakeholders with a clear indication of the trends in water quality in the various segments as the TMDLs are implemented. Vermont's Phase 1 Implementation Plan also has numerous references to monitoring,

[5] See "Guidance for Water Quality Based Decisions: The TMDL Process" (US EPA, 1991), as clarified by "Clarification Regarding Phased Total Maximum Daily Loads" (US EPA 2006).

particularly in describing the important role of VT DEC's Monitoring, Assessment and Planning Program (MAPP). The water resource planning process is closely linked to and dependent upon monitoring and assessment activities.

The Accountability Framework is intended to provide a clear yardstick against which Vermont's implementation efforts will be measured and a mechanism for transparent public reporting of this evaluation. It also is intended as a form of backstop in the event Vermont's progress doesn't measure up. The framework provides for interim reports on EPA's evaluation of progress compared to specific basin-wide milestones in 2017 and each year for one or more sub-basin compared to specific implementation plans starting in 2019. It provides for final report cards on basin-wide milestones in 2018, and annually starting in 2021 on one or more specific sub-basins. Each of these final report cards represent check points where EPA will evaluate whether satisfactory progress in implementation of measures to reduce P loadings has been made and take action if there has not been satisfactory progress.

It is incorrect that "EPA will consider the TMDL "successful" so long as the actions outlined by the State are put into practice—regardless of their efficacy at reducing phosphorus loads." The identified actions/measures to reduce P loadings were specifically selected and evaluated using a scenario tool to arrive at a suite of measures that are expected to sufficiently decrease loadings to meet WQS. EPA will evaluate both the form and substance of the required milestones in determining whether "satisfactory progress" has been made. EPA has explicitly stated this intent in the final TMDL Accountability Framework.

CLF's assertion that the proposed Required Agricultural Practices (RAPs) are not consistent with what was evaluated in EPA's scenario tool is incorrect. EPA has and will continue to evaluate the RAPs to ensure that they include all the measures EPA simulated in determining that measures would be sufficient to meet water quality standards. The commenter implies that practices EPA used in the Scenario Tool, such as conservation tillage, manure injection, and crop rotation, will not necessarily be employed because they are not specifically included in the RAPs. EPA simulated the effects of those practices based on the premise that nutrient management plans will be requiring these practices where applicable. EPA continues to consider this a reasonable premise, because, with the combination of Agency of Agriculture large and medium farm operation permits, Act 64, and the proposed RAPs, detailed nutrient management plans will be required for all but the very smallest dairy operations. The identified practices are examples of practices that are typically specified for applicable areas in nutrient management plans. Nutrient management (including compliance with soil loss stipulations) is already required under the existing Accepted Agricultural Practices, and these provisions have been strengthened in the proposed RAPs. The VT Agency of Agriculture's inspectors spot check three fields on each farm visited to determine whether nutrient management plans are being complied with, and issue enforcement orders as needed. Applicant certification of compliance with nutrient management plans is also needed in order to obtain cost-share funds from the USDA Natural Resources Conservation Service (NRCS), and NRCS takes this requirement very seriously. Given that nutrient management plans are required, that adherence to nutrient management plans is mandatory, and that the types of BMPs cited by the commenter are commonly prescribed in nutrient management plans, EPA has a strong basis for expecting the level of application simulated in the scenario tool. In addition, the VT Agriculture Secretary's revised decision (VAAFM, 2016) requires that these types of practices be employed in the Missisquoi Bay watershed. Lastly, the conversion of cropland to hay is less commonly

prescribed in nutrient management plans, but is applicable particularly for cropland on steeper slopes and more erodible soils as a means to meet the soil loss stipulations (1T) included in Act 64. The level of application simulated in the scenario tool (20% of clayey soils on steeper slopes, and only in the South Lake B watershed) is consistent with this application level.

11. List of Commenters

Commenter	**Comment #**
Adamson, Duncan	8-11
Ahladas, Yiota	1-1, 6-7, 7-10
Alexander, Jennifer	6-80
Anonymous 1	5-2
Anonymous 2	6-40, 6-41, 6-64, 10-16
Bacon, Herb	4-2
Bell, Diane	10-11
Bloom, Darryl	1-1, 6-7, 7-10
Boivin, Mark	6-42, 6-81, 6-82, 9-3, 9-4, 10-17
Bolio, Elaine	10-5
Boomhower, George	6-79
Boudreau, Jennie	10-10
Burak, Anderson & Melloni	6-58, 10-18
Burlington, City of	6-9 , 6-12, 6-14, 6-27, 6-31, 6-36, 6-45, 6-46, 6-47, 6-61, 7-15, 9-1
Burrell, Sally	1-1, 6-7, 7-10
Bushey, Mary & Richard	10-7
Butterfield, David	10-3
Cadreact, Kate	5-3, 7-2, 8-12, 8-13, 10-1
Casey, Laurel	1-4
Central VT Reg Planning Commission	8-4
Collins, Michael	5-3, 7-2, 8-12, 8-13, 10-1
Collopy, Sally & Bruce	10-8
Conservation Law Foundation (CLF) and VNRC	1-5, 4-1, 6-1, 6-2, 6-11, 6-49, 6-50, 6-50a, 6-84, 6-86, 7-1, 7-1a, 7-7, 8-1, 10-26
Davis, Betsy	1-1, 6-7, 7-10
Dehner, Ann	7-18
Dennett, Charlotte	6-10, 6-66
Deslandes, Luc & Michelle	10-3
Dratgass, Genevieve & Richard	1-1, 6-7, 7-10
Dubie, Penny	10-3, 10-8
Dunkling, Brian	5-3, 7-2, 8-12, 8-13, 10-1
Dunkling, Paul	5-3, 7-2, 8-12, 8-13, 10-1
Dunnington, Bill	1-3
Dwight, Annie	1-1, 6-7, 7-10

Eckles, Alice	1-1, 6-7, 7-10
Eisenhardt, John	5-3, 7-2, 8-12, 8-13, 10-1
Ericson, Cris	10-20
Ernst and Supeno, Barbara	1-1, 6-7, 7-10
Essex Junction, Village of	2-1, 6-5,-15,-18,-19,-30,-34,-54,-55
Ford, Russ	6-73
Forlie, Kai Mikkel	5-3, 7-2, 8-12, 8-13, 10-1
Friends of Northern Lake Champlain	9-6
Gallagher, Kati	1-1, 6-7, 7-10
Garrant, Danielle	10-3
Garrant, Ian	10-3
Gay, Barbara	1-1, 6-7, 7-10
Goodrich, Keith & Sara	10-6
Gould, Schyler	1-1, 6-7, 7-10
Green Mtn Water Env Assn	6-16, 6-18, 6-22, 6-24, 6-26, 6-32, 6-37, 6-44, 7-12 , 8-5, 8-7
Harvey, George	1-1, 6-7, 7-10
Hausman, Emmy	1-1, 6-7, 7-10
Houriet, Robert	2-3, 6-88, 10-21 thru 10-25
Jackson, Hannah	1-1, 6-7, 7-10
Joy, Richard	5-3, 7-2, 8-12, 8-13, 10-1
Kane, Paula & Greg Pierce	10-9
Klohck, George	1-1, 6-7, 7-10
Knight, Sylvia	6-72
Koenig, Walt	1-1, 6-7, 7-10
Krupp, Ronald	1-1, 6-7, 7-10
Lake Carmi Campers Assoc	6-70, 6-71
Lake Champlain Committee	2-2, 6-3, 6-63, 6-65, 6-85, 6-87
Lake Champlain International	5-3, 7-2, 8-12, 8-13, 10-1
Lang, Dustin	10-3
Lawn & Horticultural Products Work Group	6-59
Lemieux, Gregory	1-1, 6-7, 7-10
Luneau, Judith	10-5
Magnus, William	6-74
Marks, Elise	1-1, 6-7, 7-10
Maroney, James	6-67, 6-68
Martin, Mary	1-1, 6-7, 7-10
Matthews, Ed	1-1, 6-7, 7-10
McCue, Tim	10-15
McNamara, Mariah	1-1, 6-7, 7-10
Meacham, Brent	5-3, 7-2, 8-12, 8-13, 10-1

Messier, Mark	10-13
Messier, Pat	10-4
Mulac, Douglas & Julie	5-3, 7-2, 8-12, 8-13, 10-1
New York Dept of Environmental Conservation	6-4, 9-2
Norris, Jeanne	6-77
Paluga, Christine	5-3, 7-2, 8-12, 8-13, 10-1
Parizeau, John	6-75
Patel, Kosha	6-39
Paye, P A	1-1, 6-7, 7-10
Pearsall, Paula	10-5
Peters, Susan	1-1, 6-7, 7-10
Phipps, Claude	1-1, 6-7, 7-10
Pierce, Greg	10-6
Plainfield, Town of	6-53
Polya, Lance	1-1, 6-7, 7-10
Qua, Bob	5-3, 7-2, 8-12, 8-13, 10-1
Robbins, Michele	1-1, 6-7, 7-10
Rose, Bernadette	6-76
Roskam, Wm Craig	5-3, 7-2, 8-12, 8-13, 10-1
Royer, James	10-3
Royer, Jeanne	10-3
Samuelson, Bill	5-3, 7-2, 8-12, 8-13, 10-1
Schrauf, Jeremy	1-1, 6-7, 7-10
Seymour, Suzanne et al	10-5
Seymour, Suzan et al (see below for 69 signers)	10-5
Slabaugh, Ron	1-1, 6-7, 7-10
Smith, Janet	6-69
South Burlington, City of, Stormwater Services	7-14, 7-16, 8-6, 8-8
South Burlington, City of, Water Quality Dept	6-8,
Sowles, Marilyn	5-3, 7-2, 8-12, 8-13, 10-1
Sparacino, Gerard and Rita	7-6, 8-10
Spencer Smith, Susan	1-1, 6-7, 7-10
Spengler, Kristy	1-1, 6-7, 7-10
Stanko, Carmyn	1-1, 6-7, 7-10
Stoleroff, Debra	1-1, 6-7, 7-10
Strobridge, Daniel	6-62
Summers, Brad	5-3, 7-2, 8-12, 8-13, 10-1

Supeno, Barb	1-1, 6-7, 7-10
Swayze, Henry	6-78
Terry, Christine	10-19
Thompson, Beth	1-1, 6-7, 7-10
Thorne, Robert	5-3, 7-2, 8-12, 8-13, 10-1
Tremblay, Gil	10-3
Tremblay, Marie	10-3
Two Rivers-Ottauquechee Regional Commission	9-5
Vermont ANR, Forest Parks & Recreation	7-4
Vermont DEC	6-13, 6-43, 6-60, 7-3, 7-19
Vermont EPSCoR Research Team	5-4, 7-5
Vermont League of Cities & Towns	5-1, 6-23, 6-51, 7-8, 7-9, 8-2
Vermont Rural Water Assn	3-1, 6-6, 6-28, 6-35, 6-38, 7-11, 8-9
Vermont Youth for EcoAction	6-48
Vermonters for a Clean Environment	10-12
Vero, Jacquelyn	10-14
Wellman, William	5-3, 7-2, 8-12, 8-13, 10-1
Werner, Kitty	1-1, 6-7, 7-10
Willey, Sarah Jo	1-2
Williams, Eesha	1-1, 6-7, 7-10
Williston, Town of	6-25, 6-52, 6-56, 6-57
Wood, Jonathan	6-83
Wynroth, Barbara	1-1, 6-7, 7-10
Yahn, Elinor	1-1, 6-7, 7-10
Seymour et al. includes	10-5
Assaf, Patricia Giroux	10-5
Barton-Caplin, Tin	10-5
Bates, Ray	10-5
Bell, Diane	10-5
Boudreau, Ron	10-5
Boudreau, Tyrell	10-5
Boyajian, David	10-5
Burke, Bruce	10-5
Butterfield, David	10-5
Cairns, Ellen	10-5
Coppenrath, George	10-5
Deslandes, Michelle Bushey	10-5

Dickerson, Anne	10-5
Dubie, Brian	10-5
Dubie, Penny	10-5
Engler, Mark J	10-5
Fiske, Jon	10-5
Fiske, Tricia	10-5
Fyfe, Mary Jo	10-5
Godin-Parent, Katlyn Robyn	10-5
Goodenow, Wendy	10-5
Gouveia, Dane	10-5
Grant, Nat	10-5
Harvey, Cecelia	10-5
Hodgson, Jeffrey	10-5
Ingham, Randy	10-5
Kasupski, Karin	10-5
Kenny, Sarah	10-5
Knight, Bethany	10-5
Koch, Jean	10-5
Lang, Christine	10-5
Lapine, Nancy M	10-5
Lasnier, Jason	10-5
Lasnier, Kimberly	10-5
Li, Christian	10-5
Lovelette, Brandon	10-5
Lovelette, John	10-5
Macleod, Janet	10-5
Mandell, Elisabeth	10-5
Mcfadden, Judi	10-5
Mcmahon, Dennis	10-5
Merrigan, Meg	10-5
Morse, Patricia	10-5
Neale, Maggie	10-5
Ober, Robert S	10-5
Oberg, Eric	10-5
Orvieto, Dar	10-5
Paquette, Jane	10-5
Parks, Fred	10-5
Parks, Kathy	10-5
Parks, Mike	10-5
Pearsall, Paula	10-5

Perkins, Bob	10-5
Pierce, Greg	10-5
Ristow, Cheri Smith	10-5
Rondeau, Emily	10-5
Safford, Cheri	10-5
Seymour, Suzan	10-5
Shaw, Melinda	10-5
Sikorski, Rohana	10-5
Singleton, Dorothy	10-5
Smith, Evy	10-5
Smith, Nancy	10-5
Staples, Kari	10-5
Suchomel, Frank A	10-5
Tougas, Francine	10-5
Tremblay, Marie	10-5
Walrafen, Janice	10-5
Ward, Kimberly	10-5

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