

SWMI FRAMEWORK
CONSOLIDATED PUBLIC COMMENTS and RESPONSES
November 28, 2012

I. SAFE YIELD

1. Many comments were received that Safe Yield recommendations are too high and need to be reduced. These letters indicated that the Safe Yield methodology favors water suppliers and does not protect rivers. Several commenters expressed concern that withdrawals at proposed Safe Yield rates would cause streams to be pumped dry during drought periods and suggested a summer-flow based Safe Yield (as opposed to an annual Safe Yield.) Several of these commenters felt there should be more of a connection between the fish and habitat science and Safe Yield. There were suggestions to contract with USGS or another outside party to determine Safe Yield.

Response: Safe Yield represents a permitting limit on total major basin allocations within the context of the Water Management Act (M.G.L. c. 21G). The Safe Yield methodology specified in the SWMI Framework is based on an annual time step and is applied at a major basin scale that was established by the MA Water Resources Commission (with a few exceptions). This scale and time-step is consistent with the registration process established by the Water Management Act for historic withdrawals. To vary from this approach would be inconsistent with how approximately 85% of the regulated water withdrawals in MA were authorized through the registration process. As such we would not have the data necessary to assign how water was withdrawn seasonally or subbasin specific during the registration period for many registrants. Identifying whether a specific subbasin's allocations exceeded safe yield would be impossible without having the data to know exactly how the registered volumes were withdrawn in the first place. SWMI cannot change the registration process and the data provided in that process for historic withdrawals established by the Water Management Act.

SWMI is a balance between a recognition of existing demands, efforts to minimize their impacts, and the need to mitigate future demand impacts. While recognizing the historic volumes authorized through registration statements, SWMI goes beyond Safe Yield and prevents additional impacts to streams by applying streamflow criteria at a seasonal time step and subbasin scale. In addition, existing withdrawals in our most flow-depleted areas (Groundwater Withdrawal Levels 4 and 5, formerly known as Flow Levels) will be required to minimize the impacts of those withdrawals to the extent feasible through demand management and implementation of mitigation measures that will be identified through consultation during the permitting process. We believe that between the use of safe yield and streamflow criteria, appropriate protection will be afforded at a small scale while still maintaining public water supplies.

2. There were comments about the spatial scale of the Safe Yield methodology. Some commenters were concerned about the possibility that the entire Safe Yield for large watersheds could be withdrawn in locations devastating headwater streams.

Response: In terms of spatial scale, data that would be needed to determine compliance with Safe Yield at a smaller scale is not available. This is because, when the Water Management Act was first implanted in 1988, use of individual sources was not independently reported as part of the Registration process; only total system water use was reported. Thus, records are not available for discerning compliance with a smaller-scale Safe Yield; i.e., the Water Management Act registration applied to the entire water supply system, not partitioned among its various sources. The registration process potentially allowed such large withdrawal scenarios to exist. Application of Streamflow Criteria is intended to protect rivers from excessive withdrawals. Existing water suppliers must minimize the environmental impacts of their existing withdrawals to the extent feasible. Existing water supplies are critical for public health and safety, and these sources usually cannot be readily replaced. Future water supply sources or increases in permitted withdrawal rates will be governed by Streamflow Criteria to prevent impacts to aquatic resources through mitigation requirements.

3. Some commenters supported the Safe Yield methodology and determinations put forth by MassDEP in October of 2009. If the proposed methodology is to be used, they thought would be more appropriate to use the actual drought of record applied to each basin. They also felt environmental protections belong in permitting, not the Safe Yield methodology. They opined that there is no legal basis for considering environmental protection within the statutory definition of Safe Yield.

Response: Agencies did consider using the actual drought year of record for the Safe Yield methodology. However, different basins were affected by past droughts differently. In order to have a consistent approach to safe yield calculations, the Annual Q_{90} statistic was chosen. The Annual Q_{90} is close to actual drought year flows, and while a conservative value it was chosen so that communities would have enough water for public health and safety during severe droughts, while also recognizing that environmental factors need to be considered as well.

MassDEP is responsible for interpreting and applying the Water Management Act, including the definition of Safe Yield. MassDEP believes that the inclusion of the word "dependable" ("maximum dependable withdrawals") in the definition of Safe Yield requires the agency to determine Safe Yield in a manner that will sustain the ecological health of the water source over the long term, in order to ensure the availability of future withdrawals. Environmental protection measures focused on preserving healthy streams and fish populations are included in permitting, not in Safe Yield.

4. Reservoir storage credit should be adjusted to provide for downstream releases for fish during dry weather. Also, the Safe Yield methodology might rely too heavily on reservoir storage credit.

Response: Safe yield, as defined in the Water Management Act includes a consideration of surface water and of storage. In keeping with this definition, the proposed SWMI Framework applies reservoir storage volumes conservatively, only to reservoirs that could store more than a year of recharge. Only 9 reservoir systems state-wide qualify under those requirements. During a drought, it is very likely that releases from the reservoirs would be highly curtailed in favor of water supply for public health and

safety. While we agree that releases from reservoirs would likely result in benefits for downstream aquatic habitat, this provision was not appropriate to include in Safe Yield. Reservoir releases are included elsewhere in the proposed SWMI Framework, including the Tiers Table (minimization measures) and the Offset/Mitigation Table. The Offset/Mitigation Table also recognizes (credits) the potential environmental benefits that could be gained by releases from non-public water supply impoundments.

Finally, through recently published USGS Firm Yield studies for Massachusetts, we have learned that there may be very limited opportunities for releases from public water supply reservoirs without sacrificing water that would likely be needed to meet existing demands, especially during the extreme drought calculations represented in the Safe Yield methodology.

II. BIOLOGICAL CATEGORIZATION OF STREAMS

1. Some commenters felt the fish and habitat model was not calibrated against actual data and overestimates the impact of withdrawals on fish decline. There were suggestions that the science should be peer reviewed. Public water suppliers felt that they should not bear the burden of performing site-specific studies in order to rebut presumptions created by what they perceived as flawed science.

Response: Data included in the model consisted of measured field data (e.g., fish community sampling), GIS derived calculations (e.g., impervious cover at the 1 meter scale derived from ortho photos), and modeled variables (e.g., percent alteration of the August median flow). The methodology used to model the variables has been published according to the peer review process described below and we feel is appropriate for illustrating the relationship between fish community variables and flow alteration on a statewide scale. The Fish and Habitat Model was incorporated into a multi-year public involvement and stakeholder process to meet SWMI goals for improving the way water is allocated on a statewide basis.

USGS Peer Review Process

USGS pursues vigorous and open peer review of its science and information products. Due to the scientific nature of the information, it passes through many quality assurance reviews, including rigorous peer review, prior to approval and release to ensure the reliability, objectivity, and integrity of the information. These review and approval standards and requirements are available at <http://www.usgs.gov/usgs-manual/500/502-3.html> and <http://www.usgs.gov/usgs-manual/500/502-4.html>.

Peer review is required for virtually all science information products, regardless of media, whether published and disseminated by the USGS or by an outside entity if the author has full time, part time, or volunteer (including emeritus) USGS affiliation or shared affiliation (for example, between the USGS and a university). In keeping with practices in the broader scientific community, directives from government authorities, and USGS Fundamental Science Practices (FSP), the following also applies for USGS information products.

USGS defines peer review (also referred to as technical peer review, refereeing, or scientific peer review) as scrutiny of work or ideas by colleagues (peers) who are well qualified and who are of equal standing with one another. In the scientific field the implication is that education and/or

experience qualify one to comment on the work of others in a particular field of expertise. Qualified peer reviewers of USGS information products must have no stake in the outcome of the review or publication of the work, are not associated with the work being performed, and are without conflict of interest.

A minimum of two peer reviews by qualified reviewers is mandatory for all USGS science information products that require peer review. All peer reviews, including any additional peer reviews required by the USGS and outside publications, must be included with the product package (the revised manuscript with reviewers' comments addressed, the peer review reconciliation, and all original peer reviewer comments) that is submitted for USGS approval.

Peer reviews typically evaluate or critique the clarity of hypotheses, the validity of the research design, the quality of data collection procedures, the robustness of the methods employed, the appropriateness of the methods for the hypotheses being tested, the extent to which the conclusions follow from the analysis, and the strengths and limitations of the overall product.

The final peer-reviewed and USGS approved report represents the agency's best scientific interpretation and factual data on the subject at that time. Peer review of draft manuscripts is intended to assure the accuracy of data, the scientific validity of interpretations, and the consideration of alternative interpretations. The rigorous quality-assurance process (including peer review) embodied in the USGS FSP is deliberative because of the iterative exchange of ideas and opinions among the involved parties. Peer reviews are considered predecisional because they represent the collective thoughts that are being analyzed in order to arrive at that final product. The disclosure of an unapproved manuscript and associated peer reviews could allow incorrect or incomplete information to be ascribed to the USGS. The public could be greatly harmed if incorrect or out-of-context information was used for public policymaking or resource management. Therefore, whether requested, for example, under the Freedom of Information Act, the Information Quality Act, or other means of public inquiry, peer review comments are predecisional, deliberative unpublished USGS information that should not be disclosed because release could cause foreseeable and serious harm to the USGS, the DOI, and the public.

Peer Review of the USGS Fish and Habitat Reports

Peer Review of USGS Scientific Investigations Report 2011-5193, "Factors influencing riverine fish assemblages in Massachusetts," by D.S. Armstrong, T.A. Richards, and S.B. Levin, was conducted in accordance with the USGS peer review process described above. The two mandatory peer reviewers were Larry R. Brown and Christopher P. Konrad. Both reviewers are well-qualified, PhD researchers with strong backgrounds related to the subject matter of the report.

In addition to the above protocol, MassDEP sought two independent experts in aquatic biology to review the USGS Fish and Habitat Study, as well as some of the responses critical to the use of this science in SWMI policy development. Results of the reviews supported the science and its proposed application to state water policy.

As with the application of any model, more detailed site-specific information about a basin and a town will provide permit reviewers with greater information and will always be considered. If a community feels that the model does not accurately reflect on-the-ground conditions, they will have the opportunity to present additional information.

2. Some commenters commended the EEA agencies and USGS for the quality and innovation of the scientific research that underpins the SWMI framework.

Response: The work done by USGS in collaboration with the Department of Fish and Game (DFG) is a nation-leading, first of its kind look at the relationship between fluvial fish, water withdrawals, and impervious cover. The State is indeed fortunate to have had this work, a culmination of over 10 years of state-funded data collection and modeling, applied to water management decision making.

3. A major problem with the Groundwater Withdrawal Levels (formerly known as Flow Levels) is that they don't incorporate the influence of two very significant factors: surface water withdrawals and sewer system infiltration and inflow (I/I).

Response: We recognize that the proposed SWMI Framework focuses on groundwater withdrawals and provides less statistical significance for annual surface water withdrawals. There were several challenges to including the influence of surface water withdrawals. First, information was available for surface water supplies on an annual basis, whereas groundwater withdrawals could be expressed fairly reliably as monthly statistics. Second, lengthy consideration was given to applying assumptions regarding impacts of public water supply impoundments on downstream flows. Agency staff made streamflow measurements downstream of numerous reservoirs during the summer of 2011 in an attempt to generalize streamflow amounts, but found that the conditions varied too greatly for generalization. Until outflows from surface water reservoirs can be more accurately quantified, the Surface Water Transition Rule has been proposed in the SWMI Framework.

Regarding sewer system inflow and infiltration, we acknowledge that I/I can cause groundwater loss in sewered areas, particularly during spring months. A previous USGS study (Massachusetts Water Indicators) attempted to incorporate the effects of I/I into its assessment of streamflow impacts, but determined that I/I data were not readily available in a usable format for modeling, and volumes were too unpredictable to estimate confidently. However, SWMI Groundwater Withdrawal Levels based on alteration of August streamflow are relative to each other, and I/I is not generally a significant problem during the summer months when the water table is at its seasonal low. Improvement to I/I will be considered as a mitigation option for additional withdrawals.

4. Some commenters expressed concern about the lack of a specific proposal for identifying Groundwater Withdrawal Levels, Biological Categories, and Streamflow Criteria for certain coastal watersheds, and urged the agencies to address this problem immediately, even if it means further delays in overdue permit renewals.

Response: We acknowledge that some areas remain unassessed and there is a need to continue work on providing an equivalent regulatory framework for these areas. The SWMI Framework document addresses the technical issues associated with the southeast coastal watersheds that are dominated by thick glacial aquifers. The agencies are currently considering evaluating these areas using recently developed regional groundwater models to assess surface water impacts from groundwater withdrawals. Impacts to kettle-hole pond levels and aquatic habitat may be a more appropriate consideration in these areas.

5. Stream depletion analysis that leaves out the return flows is incomplete and artificially accentuates the impact of wells.

Response: In the final analysis, the term “Flow Level” really means the proportion of groundwater withdrawals relative to the unimpacted August median streamflow (thus the change in terms to Groundwater Withdrawal Levels or GWL). Also, the SWMI Framework does consider wastewater return flows. Considerable stakeholder input was received and agency staff time was applied to the issue of how to handle wastewater return flows in the SWMI process. Wastewater return flows were not included in the GWL and Biological Categories because in the Fish and Habitat Model they did not have the statistical power of other variables. Part of the statistical weakness of the return flow variable was that the volumes tended to be extremely small or extremely large, which did not make them amenable to analysis. While the agencies recognize that wastewater returns can represent a significant portion of streamflow, and make valuable contributions to groundwater (base flow), they also raise concerns for nutrient loading impacts on surface water quality and aquatic habitat. SWMI implementation will “credit” wastewater returns, where appropriate, prior to determining the amount of mitigation needed for Water Management Act permit renewals. Provisions to develop appropriate methodologies for crediting wastewater return flows within the SWMI process have been included in the Pilot Study commissioned by the state to test the implementation of the SWMI Framework.

III. STREAMFLOW CRITERIA

1. Instead of Streamflow Criteria, SWMI should have streamflow standards, and “hands off” flows should be established. There should be mandatory flow thresholds below which withdrawals cannot be authorized and where permitted and registered withdrawals must have mandatory and significant mitigation requirements.

Response: The agencies envision that for new or increased withdrawals, Streamflow Criteria will be used as permitting limits in all cases except where the need is critical and alternatives are not available. The intent of SWMI Streamflow Criteria was to establish a framework for the application of permit limits and mitigation. Within the SWMI Framework, increasing levels of permitting thresholds (tiers) and mitigation are linked to Streamflow Criteria via Groundwater Withdrawal Levels. Mitigation will be required for increases and new withdrawals in specific GWLs and where quality natural resources exist.

2. Stream flow goals should echo those of the federal Clean Water Act – designating GWL 3 as a minimum standard for all streams.

Response: The agencies considered and evaluated this possibility during the SWMI process, and discussed its limitations during meetings with stakeholder committees. Existing development and water needs within Massachusetts make this goal infeasible in many locations.

IV. WATER MANAGEMENT ACT PERMITTING

1. Some commenters felt that allowing a percentage of water use above previous use (5% and/or 8% increase) would allow for “backsliding” to lower Groundwater Withdrawal Level /Biological Category.

Response: In response to comments received, the new Framework has dropped the potential increase of withdrawal by up to 8% and left the increase to 5% in the calculation of baseline. Staff have analyzed water use data from the years 2003-2005 (the baseline years) and compared it to the 2000-2004 period used in the USGS Study and feel confident that on average water withdrawal volumes during these two periods are comparable. While a 5% increase over the previous baseline potentially could result in backsliding, the state believes the likelihood is small. The allowance of a 5% increase over previous use in baseline was provided to reduce the regulatory burden on public water suppliers who were requesting a relatively small additional amount of water. This allowance will also reduce the burden on Water Management Act staff and others participating in SWMI implementation, allowing them to focus on the more significant permit increases.

2. There was concern that using the proposed baseline would in effect penalize good water conservation and reward poor water conservation efforts that had been made during the baseline period of 2003 to 2005.

Response: DEP will make allowances for systems that can specifically show that they implemented more stringent restrictions prior to the 2003-2005 period, by increasing the baseline for those systems. In addition, the 5% increase provides some buffer for those that may have previously implemented good water conservation practices. For systems that may have been inefficient from 2003-2005, the resulting baseline might be considered inflated, but the possibility exists that the Department of Conservation and Recreation (DCR) Water Needs Forecasts which are based on meeting the 65 RGPCD and 10% UAW Performance Standards may become the baseline limit instead, and if that isn't the case then those requirements when combined with the need to implement water use restrictions will likely drive down demand and eventually allocation volumes as well.

V. PERMITTING TIERS TABLE

1. A scope for site specific studies needs to be developed.

Response: Agency staff is currently developing methodologies for site-specific studies using information developed as part of the SWMI Pilot Study.

2. The SWMI framework focuses solely on further regulation of water supply through the Water Management Act permitting process while the focus for aquatic habitat should be on water quality/impervious cover.

Response: The USGS study pointed to both groundwater withdrawals as well as impervious cover as being highly correlated to a decrease in fluvial fish relative abundance. Through the currently proposed SWMI process the State intends to strengthen the existing regulatory structure under the Water Management Act to address the effects of water withdrawals on aquatic habitat. The impact of impervious cover and stormwater (runoff from impervious cover) is recognized in the SWMI Framework and addressed as mitigation options to facilitate putting more water in the ground, by minimizing runoff

and water quality degradation. Also, these issues are regulated under different state and federal programs, and significant regulatory steps are being taken to reduce impacts of impervious cover under these programs.

3. “Mitigation commensurate with impact” as proposed fails to achieve the goal of stream improvement where impacts already exist.

Response: The SWMI Framework clearly distinguishes between existing withdrawals and impacts versus new withdrawals and impacts. This was built in to recognize existing development, the needs of the existing population, and to continue to maintain public health and safety. Existing water supplies are critical and these sources usually cannot be readily replaced. At the same time, the State has made a strong commitment to environmental protection and improvement where feasible. In the most significantly flow-impacted locations (GWLs 4 and 5) minimization of existing environmental impacts to the greatest extent feasible is required within the SWMI Framework. While minimization may provide opportunities for improvements, significant stream improvement may not be feasible in all locations. The proposed Framework will require mitigation for increased or new withdrawals, with the intent of avoiding and compensating for additional impacts.

4. DEP should withhold permission for additional water use until after the mitigation is in place.

Response: The Department believes that mitigation should occur where possible in advance of the increased withdrawal volumes. This may not be practical in all circumstances where the additional water need is immediate, so flexibility needs to be incorporated. The SWMI Framework is structured such that a PWS/community will know when in the next 20-year period it will likely need more water, based on its water needs forecast. That should give the PWS time to plan for and implement mitigation prior to withdrawing the additional water.

5. There should be a clear path for MassDEP to deny withdrawal requests.

Response: The proposed SWMI Framework does allow MassDEP to deny withdrawal requests, particularly with the “no feasible alternative” language within the permitting tiers table.

6. On the issue of wastewater returns, credit should be on a gallon-for-gallon basis, with minor adjustments to compensate for the distance from the discharge to the withdrawal point.

Response: The SWMI Pilot Studies include development of methodologies for crediting wastewater return flows within the SWMI process. Stakeholders are participating on the SWMI Pilot Steering Committee and agencies will consider their input on this matter.

7. The permitting tiers table should not allow backsliding and should require minimizing impacts for all permitted withdrawals. Eliminating baseline from Tier 4 would ensure that any FL or BC slippage would require Tier 4 review.

Response: While avoiding backsliding was a general principal adopted by the SWMI Framework, the State also recognizes that there may be certain circumstances where a PWS may not have any other alternative to meet necessary water demands, and a Groundwater Withdrawal Level or Biological

Category may be crossed. As a result, accommodations for backsliding had to be incorporated into the SWMI Framework. Minimizing impacts for all water users is achieved to some extent through standard permit conditions that target conservation and unaccounted-for water (Standard Conditions 1-8). Additional minimization requirements are reserved for water supplies within the most significantly flow-altered areas. Note that to date only approximately half the public water supply permits include Standard Conditions 1-8. The Standard Conditions often result in the most significant water conservation and flow improvements. Limiting the additional minimization requirements to GWL 4 and 5 areas will allow agencies to focus efforts on the areas needing the most urgent attention. Note that the new Framework now only has 3 Tiers. The new Tier 3 review is very similar to Tier 4 in the draft Framework.

VI. TRANSITION RULE FOR SURFACE WATERS

1. One group of commenters want surface water withdrawals addressed and recommends eco-flow releases.

Response: The proposed SWMI Surface Water Transition Rule addresses surface water sources and applies many of the same requirements expected of groundwater suppliers. Water Management Act permits for surface water supplies will include Standard Conditions 1-8 and the requirement to mitigate the impacts commensurate with the withdrawal increase requested. In addition, surface water suppliers looking to increase withdrawals or to implement restrictions based on reservoir specific conditions and not those included in Standard Conditions 1-8 will be required to develop a drought and demand management plan that ties management actions to reservoir levels, and evaluate the feasibility of implementing releases. As detailed in Response #4 of Item1-Safe Yield, impacts of surface water reservoirs on streamflow cannot be consistently characterized throughout the state at this time.

2. Some commenters felt it is premature to add a Surface Water Transition Rule to surface water suppliers until the science is more developed. If it is not possible to articulate the impacts of surface water withdrawals, then there is no objective method for assessing mitigation, or establishing the streamflow criteria that are necessary to develop drought and demand management plans.

Response: While the impact of surface water withdrawals on precise monthly flow alterations is not quantified by SWMI, there exists plenty of data on the detrimental impacts of reservoirs and dams on downstream fish populations. The most obvious method for mitigating such impacts is to release water downstream where physically possible, and without impacting a supplier's ability to meet demand. The Transition Rule for Surface Water requires suppliers looking to deviate from the water use restrictions required in Standard Conditions 1-8, and/or those suppliers looking to increase withdrawal volumes above baseline, to evaluate the feasibility of implementing releases. For those surface water suppliers looking for volumes above their baseline, they will also be required to mitigate commensurate with the impact from the additional withdrawal request. Two of the suppliers in the SWMI Pilots have surface water sources which may inform a method for assessing mitigation. Mitigation associated with withdrawal increase requests can at a minimum be assessed with respect to the additional volume requested.

VII. OFFSETS/MITIGATION

1. It is critical to establish clear goals and measurable benchmarks toward restoration of the 301 subbasins in Groundwater withdrawal levels (formerly referred to as Flow Levels) 4 and 5. The restoration goal/target for these categories should be explicit with required measures or improvement to category 3 at a minimum over 20 years.

2. MassDEP is not being realistic about its capacity with limited staff to develop a regulatory program that will rehabilitate the subbasins that are in the lowest tiers in any meaningful timeframe.

Response to questions 1 and 2: The SWMI Framework does not envision restoration of Groundwater Withdrawal Level/Biological Categories 4 and 5. The SWMI goal for these basins is improvement of conditions through the minimization of existing impacts, and mitigation of any additional impacts. As a result of the degree of development and population in Massachusetts, restoration to GWL or Biological Category 3 in most cases is probably not a feasible expectation.

3. Mitigation should, over time, identify, prioritize and implement all technically feasible measures to address degradation.

Response: The SWMI Framework reflects a balance between existing demands, efforts to minimize the impact of those demands, and measures to mitigate increasing demand impacts to the maximum extent feasible. While feasibility certainly includes the technical ability to implement such measures, feasibility also includes considerations of costs, level of improvement, authority to implement such measures, and adaptive management. The Pilot Studies will inform this discussion.

4. Mitigation may not be achievable; we need a better understanding of actual, tangible ecological benefits balanced against the costs of the mitigation actions. The SWMI Framework lacks quantitative analysis demonstrating that severe water restrictions will be effective with respect to improving or even maintaining stream flows and aquatic ecosystems. MassDEP should conduct ongoing and periodic review to see if the permitting program is achieving the desired results.

Response: We hope to gain a better understanding of mitigation costs and expected benefits from the ongoing SWMI Pilot Studies. Some mitigation measures may be difficult to quantify, however, both quantitative and qualitative approaches to measuring results will be evaluated in the Pilots Studies and may be developed with agency staff through consultation sessions in the permitting process.

5. Factors that determine feasibility are highly interpretable. MassDEP should develop explicit terms under which it will determine there is no feasible alternative available and a flow category could be dropped.

Response: We agree that feasibility is subjective. While we are hopeful that the SWMI Pilot Studies will shed light on determining feasibility, we also recognize that site-specific information will result in vastly different outcomes and expect over time that criteria can be developed to address this subjectivity.

6. Quantification with an accurate accounting method of offset measures is needed to ensure conditions do not get worse and to avoid disputes over whether mitigation is in fact commensurate. An 80-20 split of hard (measurable) credits and softer credits is appropriate.

Response: State staff, as well as the SWMI Pilot Study, are attempting to identify methodologies for determining mitigation commensurate with impact. It is uncertain whether all communities will be able to reach a mitigation level of 80% "hard" or quantifiable measures. We hope to evaluate this with the pilot water suppliers.

7. Regulations should affirmatively state that the goal of commensurate mitigation is to offset fully the impacts from increased withdrawals. Where mitigation is required it should be measured and enforced on a quantitative gallon for gallon basis.

Response: The term "commensurate with impact" in the permitting tiers table was intended to imply a one-to-one mitigation level. The regulations will reflect this. Quantification of mitigation is being explored through the SWMI Pilot project, however we recognize that not all mitigation is quantifiable and there may be significant environmental benefit to mitigation such as aquatic habitat improvements.

8. Some commenters opposed retroactive offset credits for otherwise required mitigation such as federal MS4 permits.

Response: Communities have numerous regulatory requirements and financial limitations. The agencies felt it would be fair to "credit" mitigation activities that have taken place since the period associated with the SWMI Groundwater Withdrawal Level assessment and are still in effect. It is also expected that varying mitigation credit may be given by considering existing requirements under other regulatory programs.

9. Some commenters supported aquatic habitat restoration funded by water rates and recommended water banking at a 2:1 ratio.

Response: Both of these options are included in the proposed SWMI Offset/Mitigation table. Water banks can be credited to various degrees depending on their ratio and expected water savings.

10. Minimization plans should include public opportunity for input.

Response: Stakeholder input in mitigation is being included in the SWMI Pilot Studies. A public comment period is currently included for new WMA permit applications and as part of the 20-year renewal process. We expect that the revised regulations being developed to incorporate the SWMI Framework will continue that practice and in fact formalize the inclusion of a comment period on draft permits and the mitigation plans.

VIII. APPLICATION OF LOW-FLOW STATISTIC for NON-ESSENTIAL OUTDOOR WATER USE RESTRICTIONS

1. The proposed low-flow trigger is an improvement over drought advisory, but the proposed trigger is too low. Triggers should be based on unimpacted flows.
2. One commenter likes the Annual 7-day low flow and August median Aquatic Base Flow (ABF) as stream triggers.

Response to questions 1 and 2: Agency staff reviewed various low-flow triggers and recommended the Annual 7-day low flow trigger using existing gage data. This trigger was found to be responsive much sooner than the state drought declaration both for imposing restrictions and for lifting restrictions. Unimpacted flows could not be used for the low-flow trigger, because this approach would not be responsive for rivers that have significant wastewater surcharges (the trigger may never trip with the artificially higher flows). The ABF flows triggering the initial water use restriction are based on simulated unimpacted flows. While the potential still exists that these unimpacted flow triggers may not hit in surcharged basins, the ABF flows being used as triggers are significantly higher than those applied for the 7-day low flow trigger, and as such the wastewater surcharging is less likely to significantly alter overall flows.

3. WMA permits should trigger total bans on non-essential water use. One commenter suggests monthly Q_{50} (median) flow as the trigger, on both public and private water sources. Total bans on non-essential outdoor water use should be imposed on all communities in subbasins with Groundwater Withdrawal Levels (GWL) 4 or 5.

*Response: In general, a phased approach is currently being used to trigger outdoor watering restrictions and is proposed to be strengthened with the new SWMI Framework requirement that would replace the Drought Task Force Declaration Trigger with the 7-day low flow value. MassDEP currently uses the simulated natural Q_{50} flows calculated for June and August as their water use restriction triggers. The June Q_{50} value is the trigger for May and June, and the August Q_{50} streamflow is the July – September trigger. Once the flow in the stream goes below the identified Q_{50} flows, the first set of restrictions (2 days of watering per week outside 9 am – 5pm for those above 65RGPCD) is triggered. Under the proposed SWMI Framework, when the flow in the stream decreases to the 7-day low-flow value, then further restrictions (1 day per week outside 9 am -5 pm for those above **and below** 65 RGPCD) are triggered. While not requiring a total ban, the Department’s condition requires that suppliers not meeting the 65 RGPCD performance standard implement restrictions that limit nonessential water use to only 1 (streamflow option) day or 2 (calendar option) days per week outside the hours of 9 am to 5 pm. Those meeting the performance standard must restrict nonessential water use between 9 am – 5 pm seven days per week. Similar controls on non-essential water use are expected for all WMA permit holders. We believe this phased approach is sufficiently protective and a significant improvement over the old approach which relied upon the slower responding Drought Task Force Declaration for more stringent restrictions and did not require those below 65 RGPCD to make similar reductions.*

IX. REDUNDANT WELLS

1. One commenter wants the proposed redundant well policy to apply to previously permitted sources with no volumes.
2. One commenter doesn't agree with "transferring" registrations of old wells to new ones as it would perpetuate unregulated withdrawals that disregard environmental conditions. MassDEP should avoid extending the reach of registrations.
3. One commenter was concerned that the redundant well provision will allow the development of new water supplies that are not subject to the full requirements of the WMA. Such wells should only be allowed to help address existing environmental or public health problems and should not increase the authorized amount.

Response to questions 1, 2 and 3: MassDEP's proposed redundant well policy was developed to remove any disincentives that might exist for registered-only suppliers to develop redundant sources of supply. System redundancy is an important concept the Department stands behind for public health and safety reasons. The limited universe of suppliers for whom the Policy may be an option (registered-only ground water suppliers) are still subject to the environmental review that any other supplier must complete. Site specific issues related to the operation of this new source will need to be addressed in the permit application review process. Provided those issues are addressed, the new well may provide an environmental benefit by providing another source from which to spread around existing demands and impacts.

X. PILOT APPLICATION OF SWMI

1. MassDEP should ground-truth the Framework with pilots before it is instilled in permit requirements. MassDEP should hold off drafting regulations until pilots are complete.
2. Some commenters recommend that the SWMI Framework be moved forward as soon as possible and in a logical sequence – they support a concurrent process of conducting pilot projects and releasing regulations for public comment.

Response to questions 1 and 2: MassDEP will be drafting regulations as the pilot studies commence. Experience from the pilot studies will be incorporated into the draft regulations before they are released for public comment.

The goal of the pilots is to test implementation of the draft Sustainable Water Management Initiative (SWMI) permitting framework for community Public Water Suppliers (PWS) that have Water Management Act permits. The Pilots will evaluate the draft Framework for four PWSs in a voluntary, non-binding exercise. The PWSs participating represent a broad range of environmental conditions including varying volumes of water withdrawals relative to the August median streamflow, varying wastewater disposal methods (i.e., on-site domestic septic systems versus large surface water discharges), groundwater supply sources located in one or multiple major basins, presence or absence of

cold-water fisheries resources, and varying Groundwater Withdrawal Levels (GWL) and Biological Categories (BC).

Phase 1 of the pilot project began in May of 2012 and was completed with the submission of a DRAFT Report in June 2012. Phase 1 activities included:

- 1) Gather background data and identify existing studies;*
- 2) Evaluate how to take wastewater discharges into account;*
- 3) Evaluate minimization of impacts in GWL 4 and 5 subbasins;*
- 4) Evaluate options for mitigating and offsetting proposed water withdrawal increases;*
- 5) Coordinate with PWSs, Watershed Groups, and EEA Agency Staff; and*
- 6) Prepare a Phase 1 Draft Report.*

Phase 2 activities began in August 2012 and they include:

- 1) Supplement activities from Phase 1*
- 2) Desktop pumping evaluation, optimization, and evaluating alternative sources;*
- 3) Mock permitting exercise and consultation with EEA agencies and one pilot PWS;*
- 4) Conducting a data review process, reviewing water use volume changes, and preparing a scope of work for a site-specific study for two of the pilot PWSs;*
- 5) Creating a SWMI evaluation data checklist;*
- 6) Coordinate with PWSs, Watershed Groups, and EEA Agency Staff; and*
- 7) Prepare Phase 2 Draft and Final Reports.*

XI. INCENTIVES/FUNDING SOURCES

1. The SWMI Framework will increase costly regulations on cities and towns, reduce revenue and limit economic growth.

Response: Implementation of the SWMI Framework is intended to allow for increased water use and development in an environmentally sound manner. Cost feasibility will be considered with respect to minimization and mitigation. The Department's five-year capital plan includes a total of \$11 million over 5 years to assist in implementing minimization and mitigation requirements. MassDEP intends to use approximately \$1M in FY13 towards a grant program to assist municipalities in preparing for the implementation of SWMI requirements.

2. Greater incentives for community water conservation should be mandated in all watersheds, whether currently stressed or not.

Response: Standard Conditions 1-8 for Water Management Act permits will require compliance with Massachusetts Water Conservation Standards for all permit holders. These new conservation standards will result in demand reduction in many communities. In addition, the state water conservation standards are incorporated into the Water Needs Forecasts, assuring that future water allocation reflects achievement of the aggressive conservation requirements.

3. Some commenters strongly urge increased funding for MassDEP to support sufficient staffing for proper implementation.

Response: While additional staff resources are unlikely, measures to improve database tools to assist staff with implementation have been ongoing. SWMI implementation will be a significant resource challenge, particularly as we develop guidance and a case history on identifying appropriate minimization and commensurate mitigation.

XII. GENERAL/OTHER

1. The SWMI Framework does not work well for registered and permitted users that are not public water suppliers. There could be unintended consequences of the implementation of the Framework on users such as cranberry growers.

Response: MassDEP permit reviewers will consider appropriate implementation of SWMI principles to non-municipal Water Management Act permit holders, in accordance with the revised regulations.

2. The SWMI Framework changes permitting from protecting health and safety to protecting and increasing fluvial fish. The Framework ignores the more important environmental impacts of impervious cover, dams, and nutrient pollutants on water quality.

Response: The SWMI Framework is intended to maintain the benefits of public water supply while mitigating the effects of these withdrawals on aquatic habitat to the extent feasible. Impervious cover and nutrient impacts are regulated under programs other than the Water Management Act. Dams are acknowledged as impacting river resources but were not primary variables on fluvial fish resources identified from the modeling studies. Many small dams in the state are "run-of-river" and do not cause significant impacts to downstream flow. Additional work is needed on mitigating effects of larger dams. Nutrients are being addressed under other regulatory programs.

3. The public water supply metric is underutilized.

Response: While the public water supply metric was not directly incorporated into the SWMI Framework in a quantitative way, the importance of public water supplies is acknowledged and considered within the Framework. Existing water supplies are given the lesser Tier 1 permitting requirements with the potential to increase withdrawals by up to 5 percent over baseline.

4. The SWMI Framework includes far too many discretionary provisions that may be subject to the influence of outside interests.

Response: The SWMI Framework was designed to accommodate most common situations but there are many complications associated with water supply systems and environmental conditions. Agency staff need flexibility for dealing with these complexities. Some permit conditions and mitigation in particular will have to be negotiated between the municipality and agency reviewers. The entire permitting process is also subject to public review.

5. Registered withdrawals should be integrated into the SWMI Framework. MassDEP should promulgate regulations imposing conditions on registered users.

Response: The SWMI Framework is a balance between recognition of existing demands, efforts to minimize existing impacts, and the need to mitigate future withdrawal impacts. The Department expects to revisit conditioning registrations through the regulatory process in the future. About 60 public water suppliers (25% of all registered and permitted suppliers in MA) hold only a WMA registration. These systems have not increased, and many in fact have reduced demands well below their historic registered withdrawal volumes from 30 years ago. Because registered and permitted volumes cannot be separated, public water suppliers holding both a registration and a permit are effectively subject to the permit conditions for all withdrawals.

Following the SWMI Framework, which requires increased minimization and mitigation as withdrawals and impacts increase, registered-only withdrawals will be considered Tier 1 withdrawals (below baseline). Registered-only systems are not making conditions worse and have in all likelihood been able to stay below their registered volumes because: 1) they have implemented many of the demand management measures 2) water use has been reduced by production improvements and/or contraction within their industrial/commercial water use sector; 3) they now purchase water from an alternative source; or 4) some combination of the above items. Demand and impacts from many of these systems continues to fall. Should registered-only suppliers increase withdrawals over their registered volumes, they will be subject to conditions through the permit process.