

NEW JERSEY HIGHLANDS WATER PROTECTION
AND PLANNING COUNCIL
MINUTES OF THE MEETING OF May 1, 2008

PRESENT)	
JOHN WEINGART)	CHAIRMAN
)	
TRACY CARLUCCIO)	COUNCIL MEMBERS
MIMI LETTS)	
JACK SCHRIER)	
TAHESHA WAY)	
TIM DILLINGHAM)	
JANICE KOVACH)	
SCOTT WHITENACK)	
)	
VIA TELECONFERENCE)	
DEBBIE PASQUARELLI)	
GLEN VETRANO)	
)	
ABSENT)	
KURT ALSTEDE)	
ERIK PETERSON)	
ELIZABETH CALABRESE)	

CALL TO ORDER

The Chairman of the Council, John Weingart, called the 67th meeting of the New Jersey Highlands Water Protection and Planning Council to order at 10:11am.

ROLL CALL

The members introduced themselves.

OPEN PUBLIC MEETINGS ACT

Chairman Weingart announced that the meeting was called in accordance with the Open Public meetings Act, N.J.S.A. 10:4-6 and that the Highlands Council had sent written notice of the time, date, and location of this meeting to pertinent newspapers or circulation throughout the State and posted on the Highlands Council website.

PLEDGE OF ALLEGIANCE was then recited.

APPROVAL OF MINUTES OF APRIL 10, 2008

Mr. Schrier introduced the motion to approve the minutes. Janice Kovach seconded the motion. Mr. Vetrano abstained. All other members present voted to approve. The minutes were APPROVED.

CHAIRMAN'S REPORT

Chairman Weingart noted the letter in the meeting packet from Mr. Alstede who would not be present but wanted the Council members to be aware of his comments on matters on the agenda for today. He then announced that the TDR Committee will meet on May 15, 2008 immediately after

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the Council meeting and reminded the Council that the financial disclosure reports are due on May 15, 2008. He also reminded that Council that the Ethics training needs to be completed by May 15, 2008.

Ms. Kovach wanted to clarify the WQMP discussion from the last meeting explaining that the Council was discussing the appropriate septic density standards for non-conforming municipalities. Ms. Swan confirmed that the staff proposal was to use NJDEP nitrate thresholds would be for non-conforming municipalities during the review of WQMP amendments. All conforming municipalities would be required to use the Highlands thresholds as set forth in the RMP.

EXECUTIVE DIRECTOR'S REPORT

Ms. Swan noted that the following meetings had taken place: the regularly scheduled County Planners meeting, and a meeting with Somerset County, NJDEP and Somerset County municipalities.

COMMITTEE REPORTS

There were no reports.

REGIONAL MASTER PLAN DISCUSSION

a. Water Availability

Ms. Swan noted that the public comments in this area were mostly focused on deficit mitigation policies. She then explained the three major issues that were raised: conditional water availability in deficit areas, certainty of achieving mitigation, and what happens if mitigation isn't possible.

She discussed deficits within subwatersheds showing a table which outlined deficits within HUC14s. Her presentation continued with conditional availability in regards to consumptive and depletive use and the related number of homes to water usage within subwatersheds (HUC14s).

Ms. Swan then outlined the options for improving policies regarding mitigation thresholds. She explained that mitigation thresholds will be scaled based on size of deficit and proposed water use for project reviews prior to a Water Use and Conservation Management Plan approval. Areas with the highest combination of deficits and uses will be recommended to require mitigation prior to construction.

Ms. Swan then discussed information submitted by Randolph Township in connection with their efforts to conserve water. The information was submitted in reference to their WQMP application but is useful for today's meeting to highlight what can be done to mitigate deficits. Specifically she noted three procedures they have utilized:

- revised water use fees
- ordinance requiring odd, even day watering of lawns
- leak detection surveys (showing that repair work saved 440,000 gallons per day)

Based on their report after two years, they found an annual savings of \$280,000 with only \$24,000 being spent.

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She then continued her presentation on the certainty of mitigation and issues of recharge. She pointed out proven recharge technologies and the issues regarding recharge benefits. Ms. Swan then discussed conservation within the certainty of mitigation, explaining that the technology is well proven, the long term benefits that can be expected, and that the requirement of monitoring results would be in place.

Ms. Swan then discussed the certainty of mitigation with a focus on aggregates. She noted that the techniques that will be used in the Highlands Region are fundamentally different than historic water conservation which has been to address significant deficits that required infrastructure. She described the feasibility of the mitigation given the levels of deficits in the area and that while the responses to mitigation may vary, they will address the deficits that are present. Ms. Swan then outlined where mitigation may not be feasible and that the project would have to be redesigned to meet the Council's requirements or be abandoned. It was stressed that the Council would have to be satisfied that the mitigation would occur.

Ms. Pasquarelli questioned the costs in the Randolph report wondering if all cost aspects, including repairs and remediation cost, were taken into account. Ms. Swan stated that the analysis wasn't done by the Highlands staff, but by Randolph, so she believes them to be accurate, but is uncertain of exactly what is included in those costs.

Ms. Carluccio explained her concerns about continued development in deficit areas. She questioned any future analysis that will be done regarding recharge. Ms. Swan stated this will be addressed in the next section of the presentation.

Ms. Carluccio questioned how this mitigation would be measured and maintained especially on a small scale. Ms. Swan explained that it could be done through deed restrictions. Dr. Van Abs also explained that all consumptive use calculations are based on estimations, and that wells will not be metered. There would be a focus on enhanced recharge and the requirements in place would be beyond the DEP requirements.

Ms. Carluccio continued to show her concern about the practicality of this being applied to smaller areas. She also discussed drought conditions and the use of practices that would normally be done during drought being used on a regular basis. Dr. Van Abs explained that the "odd and even" watering would be used to reduce peak daily use not overall usage for irrigation. Ms. Letts explained that Parsippany did use this years ago, that with enforcement it can save a large amount of water. There was then further discussion on collaborative solutions.

Ms. Pasquarelli asked for clarification on the Water Use and Conservation Management Plan and how it will fit into the conformance process and what the implementation would be. Ms. Swan explained the process of Plan Conformance and that not all steps have to be completed to receive conditional Plan Conformance, but that all municipalities will be required to have plans and will need to update their information over time. It will be required for municipalities to implement a Water Use and Conservation Management Plan in order to stay in conformance.

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Ms. Swan continued her presentation discussing GPO and Program suggestions, including the clarification that Conditional Water Availability is a maximum for all projects, and once that threshold has been reached a municipality must have a Water Use and Conservation Management Plan in order to move any further projects. She emphasized that the goal was to get all municipalities to do a plan and that once done it would be used instead of the standard mitigation thresholds being presented. Finally, she discussed the incorporation of the sliding scale mitigation thresholds.

The implementation process was then explained including the need to provide escrow funds or bonding, as well as the requirement for a detailed mitigation plan and cost analysis, within in one year. The requirements before a certificate of occupancy (CO) would be granted were outlined as well as the responsibility of the entity to report annually to the Council.

Dr. Van Abs explained the time requirements within this process, specifically discussing onsite and offsite conservation practices.

Chairman Weingart questioned whether there would be instances where a project could be using water prior to the implementation of a mitigation plan. Dr. Van Abs answered that there could be instances where a relatively small usage could occur at a project within an area with a small deficit.

MR. COGGER JOINED THE MEETING

The concerns about who has the authority for evaluating and enforcing conformance (particularly in regards to mitigation) was then discussed as well as what the process would be for projects within the different stages of conforming. Enforcement through the CO and local authorities was explained. Depending on the project, the entity that would certify whether actions were completed in regards to conformance could vary. The Council members showed some concern regarding follow up on projects actually completing the conservation practices promised in their plans.

Ms. Carluccio questioned whether mitigation is precise. She expressed that mitigation plans need to be looked into further. She discussed how the Council's plan for mitigation needs to be worked on further and should not be implemented now. She also requested that further development not be allowed in deficit areas particularly until it is made clearer how much can be water can be generated through recharge.

Ms. Swan explained that these are policies being discussed and that the details for the implementation of them will be developed and will have to be approved by the Council before implementation. Mr. Dillingham explained that many mitigation projects have failed so that caution needs to be used. Ms. Way expressed concerns about this process and how the Council can agree to a project when the Council will not be certain that the Township Engineer, or the entity approving this project, is giving proper approval.

Chairman Weingart stated that this would require some reliance on the trained individuals within the DEP and within the towns' staff. Ms. Way explained that it isn't an issue of integrity, but that it is important to make sure a proper system is in place to protect and conserve water. Mr. Schrier stated

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that the Council needs to trust that projects are conforming but follow up and verify that it is being done properly. The Council's role in initial approval was then discussed and Ms. Letts suggested that the Council should be following these plans through to completion.

Ms. Carluccio stated her concerns that the Council will not be verifying and measuring the increased water deficit areas will be receiving, especially regarding individual homes. Ms. Carluccio questioned the ability to oversee these plans and stated that she is concerned that this plan may not work, especially with a lack of verification. Ms. Swan clarified that this is an interim program until the Water Use and Conservation Management Plans are in place, and stated that municipalities will be required to plan ahead for conformance. Also municipalities will be able to determine where available water is used once they have a plan in place and that should be an incentive for them.

Ms. Carluccio recommended that the Council not allow growth within deficit areas as an incentive for towns to create and utilize a proper management plan, since many already have a deficit.

Chairman Weingart stated that he found that the recommendations of the staff were an improvement. He expressed his concern about municipalities not having the financial ability to make corrections, without being able to get income from the sale of new homes. Mr. Schrier explained that these are requirements like many of those already in place before COs are granted and that issues that arise should be apparent to the Council ahead of time. Ms. Letts expressed her agreement with Chairman Weingart's concern.

Ms. Pasquarelli expressed her concern about permitting development in deficit areas and how it will worsen the deficit. She stated that the possible mitigation of this deficit through these plans doesn't ensure conservation and protection of the water. Mr. Borden explained that further development doesn't ensure further deficit, as the policy is recommending that 125% mitigation which will ensure that the deficit will actually improve. Ms. Carluccio stated that the Council would benefit from an analysis on buildout.

Chairman Weingart questions whether the Council members would like to revisit the issue of allowing development in deficit with mitigation plans or if they would like to change or abolish the allowance of this development. Chairman Weingart asked whether the Council members would like to change the policy. Mr. Dillingham, Ms. Carluccio, and Ms. Way showed support for that change. Ms. Pasquarelli stated her lack of support for the staff recommendations. Chairman Weingart stated that the Council staff will continue to improve the language of the policy with the strengthened mitigation requirements.

Ms. Letts asked that the staff clarify the policies and procedures in regards to the requirements for mitigation.

WATER TRANSFERS BETWEEN WATERSHEDS:

Ms. Swan continued her presentation with discussion of water transfers between sub watersheds and how transfers would only occur when there was no other viable alternative available. She also outlined that options such as project changes, irrigation restrictions, water transfers, plus any required mitigation for use of conditional water availability in source sub watersheds would be determined. She also reviewed the procedures if a water transfer is required. Transfers from outside of the Highlands into the area should be treated differently, Ms. Swan used the example of

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the WQMP amendment on Trump to illustrate this. She also discussed the beneficial reuse of greywater which should be examined on its merits.

Mr. Dillingham questioned whether “no viable alternative” would be evaluated so to assure appropriate usage of the water. Mr. Borden and Dr. Van Abs clarified the ways that transfers are minimized to allow only approved use.

Ms. Carluccio requested that N.J.A.C. 7:8 should be looked into regarding recharge and soil testing within the Highlands.

Ms. Letts questioned whether detention basins and other flooding partitions will be an issue for recharge within the Highlands. Dr. Van Abs explained that they will not be an issue with regard to loss of water availability. Mr. Cogger discussed the issues in maintaining these basins and the corresponding cost. He recommended that the Council look into the long term affects and issues regarding this upkeep. Dr. Van Abs brought up that some areas require the collection of funds for this type of maintenance and that this is why the RMP has requirements for low impact development.

b. Cluster Development

Ms. Swan continued her presentation to address Cluster Development. She explained that the staff worked on the White Paper on Farm Conservation Plans and Best Management Practices with input from the Department of Agriculture as well as the NRCS. She also stated that the document Cluster Development – Goals, Policies and Objectives would be reviewed during this presentation.

Mr. Dillingham stated that he found this document much clearer and asked for the detailed comments that came from the Department of Agriculture. The Chairman asked that Monique Purcell of the Department of Agriculture, who was in the audience, would discuss those recommendations after Ms. Swan’s presentation.

Ms Swan outlined specific GPO changes within the Cluster development section. She explained that relevant GPOs from Utility, Agricultural Resources, Future Land Use, and Landowner Fairness sections of the RMP were added to the list of Cluster Development GPOs to provide clarity. There was further discussion on the appropriate triggers for a Farm Conservation Plan or Resource Systems Management Plan when using cluster development. Staff recommended implementation of a Farm Conservation Plan focused on soil and water resources when clustering is used. She also discussed that the Final Draft RMP set a goal of 80% preservation in cluster developments but that the staff were now recommending a goal of the development area being 10% of the project when served by public or community on-site systems were used. Clarification was provided on when to use cluster techniques and that the cluster design should maintain and enhance the agricultural industry (Policy 3A6 and Obj. 3A6a – 3A6d).

She then provided visuals of scattered development and clustered development. There were recommendations for how to use clusters to maximize protection and to avoid scattered clusters.

Ms. Swan clarified that there will be no consideration in Preservation Area for extension of sewers except for what the Highlands Act allows. She then discussed TDR and the use of clusters in

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response to Mr. Dillingham's request for clarification. Mr. Cogger expressed his concern regarding multiple dwelling units in the use of clustering. Ms. Swan emphasized that the clusters would be for the development yield and type of units that could have been developed under existing zoning.

Ms. Swan clarified the supporting requirements in place for clustering. She also explained that farmers will be allowed to continue farming their property and assured that these rights will be protected.

Mr. Dillingham requested clarification on appropriate land use and development yield which assure the required preservation of that area. Ms. Carluccio stated her concern that the Farm Conservation Plan is limited and doesn't properly address soil erosion. She believes that a Resource Management Plan will be more appropriate for the water issues in the Highlands. She stated that if the Farm Conservation Plan is utilized it should be adjusted to be appropriate for the mission of the Council.

Ms. Swan explained that the Farm Conservation Plan is what is being recommended as it is consistent with the requirements of the Highlands Act. Dr. Van Abs explained that the critical function of the Farm Conservation Plan that the Council will be utilizing is the focus on water. This will be a special focus version of the Farm Conservation Plan. Ms. Swan stated that the staff will be working with NRCS and the Department of Agriculture to develop this specific plan. Ms. Carluccio stated that she is concerned about the timing of the requirements in these plans. Mr. Dillingham suggested that wildlife concerns also be added if a new plan is being developed.

Monique Purcell of the Department of Agriculture outlined the suggestions of the Department of Agriculture. She clarified the different triggers regarding impervious cover. She explained that agricultural development and general development are being addressed differently. These plans were completely voluntary up until the Highlands Act, so this is a great step in making them mandatory. This plan takes it to the next step, requiring implementation of conservation plans. She explained the issues the Department has with the RMS Plan.

She addressed some of the edits she would like to see in the White Paper. She clarified concerns with statements regarding aquaculture. She asked for corrections on description of confined areas in feeding operations on farms. She then stated that the Department of Agriculture supports the recommendation of farms' participation in the conservation programs as outlined by the Highlands staff.

Ms. Carluccio suggested that the triggers be lowered so that more farms are required to create a Farm Conservation Plans. Ms. Purcell also noted that she doesn't believe the triggers should be lowered, but that incentive based voluntary creation of Farm Conservation Plans should be recommended so that all farms will be involved.

Ms. Carluccio questioned including the impervious cover of the agricultural activity along with the cluster developments. Ms. Purcell clarified that she believes the agriculture activities should be separated from other development on clusters.

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Ms. Purcell clarified that NRCS has already “fleshed out” these conservation plans and that they can be very thorough in resource conservation. She also stated that it is important to look at the limited funding in deciding what will be mandatory.

Mr. Dillingham expressed his concern about these plans being comparable with the requirements of the RMP. He also discussed taking a farm and adding a cluster development, and that this would take that property out of being an agricultural development. He questioned how to best manage these types of properties. He also expressed concern of there being very little property left in this instance for resource protection. He asked that agricultural properties with clusters present be held to cluster development requirements not requirements of agricultural properties.

Ms. Carluccio had questions about Obj. 2J4b regarding the conditions in which sewer extensions will be allowed. There was then discussion about the policies regarding sewer extensions and the fact that little flexibility is allowed. Ms. Carluccio asked for more clarification in the language regarding this change particularly regarding the additional 10% (making 90%). There was further discussion on this recommendation and the fact that the development can be placed on less land when infrastructure is available. There was then discussion about protection of additional areas for conservation; in particular easements were cited.

Mr. Dillingham asked for clarification on the changes of language for Objective 2J4a regarding takings waivers. Mr. Borden explained that it was changed to be consistent with the statutory language.

WATER AND WASTEWATER UTILITIES:

Ms. Swan continued her presentation on water and wastewater utilities. She explained that the policies from the 2007 version have been included for clarification on the changes. She reviewed Objectives 2J4b and 2K3d and how they were revised to recognize different potential for resource protection for septic system clusters and sewer clusters. Ms. Swan explained that it is possible to have protected areas on sewer lots, with deed restrictions, to meet the 10% threshold. She also noted that Policy 2I1 consolidated the Preservation Area provisions for water and wastewater that prohibit extensions or new infrastructure unless there is an exemption or an approved NJDEP waiver.

Mr. Dillingham questioned the builders and municipalities ability and willingness to pay for the extension of sewers. Ms. Swan explained the ways to maximize utilization of sewer areas. She also discussed the use of TDR.

Mr. Dillingham stated his concern about the pressure to waive standards when builders, or other parties, state that they need a certain amount of development to justify the cost of sewer extensions. Dr. Van Abs explained that clustering will be mandatory. He explained the community onsite systems and cost effectiveness in clustering. The concern of the cost of maintenance of these systems was then raised. There was then discussion on clusters and how they would affect the community character. This is also addressed in the plan and would be part of Plan Conformance.

Ms. Carluccio cited page 4, Objective 2B7b and asked for clarification on the DEP providing consistency determination. Mr. Borden verified that this will be handled by the DEP. She then

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discussed 2H2a - Prohibitive Land Uses in Well Head Areas and questioned why Tier 1 was being used for monitoring. Dr. Van Abs clarified that Tier 1 is a 2 year time of travel and that it is unique among the tiers. He explained why Tier 1 should be used. Ms. Carluccio stated her concern about sewer lines being put into the Tier 1 and that it may be impossible to put in a sewer line that will not leak. She suggested that these simply be prevented. There was clarification that a sewer line crossing Tier 1 would be safer than septic system.

Ms. Carluccio stated that she will provide staff with a paper by USGS regarding this issue.

Ms. Swan continued her presentation with the Utility GPOs in the Preservation Area. She explained that Obj. 2J4a and 2K3c clarify infrastructure limits in both the Protection and Conservation Zone and the Environmentally-Constrained sub-zone. She then outlined other language clarifications, particularly those regarding the public health and safety issues and the protection of domestic wells in clusters.

PUBLIC COMMENTS:

ROSS KUSHNER, Pequannock River Coalition: Mr. Kushner discussed concerns about allowing new development in deficit areas and that the mitigation plan will not help the deficit. He is concerned with false statements regarding recharge and mitigation. Mr. Kushner discussed the differences in requirements. He stated his appreciation of the support of Council members mentioning environmental issues, but believes that other members need to stand up and support their constituents.

ELLIOT RUGA, NJ Highlands Coalition: (Written comments submitted) Mr. Ruga brought up the staff suggestions discussed in the last meeting. He discussed the septic densities and their application in WQMPs. He pointed out the technical addenda of the RMP is zone specific. He believes that if the suggestions made at the last Council meeting are adopted into the plan, it will abandon the planning area and encourage municipalities not to conform. Mr. Ruga said there was a lack of clarification on the part of the Council members on this recommendation. He recommended that the Council step up to the plate and represent the people's interests.

CHRISTINE HEPBURN, public individual but also on the board of NJ Highlands Coalition and a US Fish and Wildlife steward: She clarified that the audience was concerned with the idea of the builders' engineers following up and verifying conformance regarding mitigation.

DAVID SHOPE – Mr. Shope explained that the relationship of the person verifying conformance in mitigation is important. He then read a report from the Middlesex Water Company. He went over salaries and income of different entities. Mr. Shope then expressed his disapproval of the water deficit numbers and compared the Council to a dictatorship. He noted Permit #5033 and suggested that the staff look into it. He stated that the policy is incorrect and not necessary.

SYLIVA KOVACS, Warren County – She read sections from pg 107 from the RMP and discussed them, specifically clusters and exemptions. She expressed her concerns about further development having negative effects on the ecosystem. She urged the council to provide clearer standards as well

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as incentives to assist municipalities in creating an intra-municipal transfer program. Ms. Kovacs pointed out what she characterized as inconsistencies, false statements, and the use of outdated information within the RMP and its policies. She then clarified for the public the details of the Mansfield WQMP that was discussed. Lastly, she stated her appreciation for Debbie Pasquarelli and recognized her recent award.

Chairman Weingart noted the Council's previous appreciation for Ms. Pasquarelli's recognition and noted that Ms. Swan had also received this award in the past.

JULIA SOMERS, NJ Highlands Coalition – Ms. Somers discussed the concerns regarding the 125% mitigation. She believes that there needs to be more focus on verification and implementation. She discussed how the Plan is complicated. She stated the support for more conservative thresholds, but that this is another area for verification. Regarding clustering, she discussed the diagrams presented. She noted that the Council should state that clustering the clusters would be a part of conformance. She stated a concern that within clustering, agricultural activities will affect environmentally constrained land.

DAVID PEIFER, ANJEC – Mr. Peifer commented on the management systems that are being created and expressed concern regarding adequate delivery of implementation. He stated that the Council needs to look at whether they have the staffing and the funding for implementing and controlling these systems. In regards to clustering, he discussed the clustering of clusters and questioned what will be allowed to be clustered. He questioned the use of exemptions and TDR within clusters and how they complicate this issue. Regarding impervious surfaces and the related triggers, he mentioned that it is important to look at the entire impervious surface as a trigger.

HELEN HEINRICH, NJ Farm Bureau – (written comments submitted) Ms. Heinrich stated her support of the language changes in the clustering sections. Although, she stated that not many farmers have been considering this option. She stated she will provide a list of the expensive steps that would be required for involvement. She then discussed soil tests. Ms. Heinrich asked for the council's support for farmers and the decisions that are in front of them. Regarding Farm Conservation Plans, she explained that they are difficult to comply with and are costly. She then discussed mitigation and deficits. She reminded the Council that it is their job to provide balance along with water protection.

WILMA FREY, NJ Conservation Foundation: She discussed the topic from last week's meeting of septic density standards. She urged the council to include the septic density standard in the RMP within its review of Waster Water Management Plans. She explained that in Hunterdon County, the Council recommendations could be very helpful in conformance and consistency. She discussed municipalities and their interest in conformance. She believes that these towns would be supportive of the council using its powers to have all towns adhere to the nitrate standards in the RMP. Regarding cluster provisions – she has concerns about community character and the scenic impacts on the conservation zones. She doesn't see how clustering will improve these areas. She suggests limiting development to agricultural activities.

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PETER CRAIG, Holland Twp – He discussed clusters and the clustering of clusters, and that these mechanisms should involve community design. He suggests that the Council look into the areas where cluster provisions are being considered.

Ms. Letts asked if some grant money could be used to help farmers. Ms. Swan clarified that the grants are for counties and municipalities. But that the staff is looking into this assistance being available to farmers through county and municipal entities.

Ms. Carluccio stated that the Council’s money should be used for preservation not on development, even if it is on farms. She stated that the Council shouldn’t be funding farmers so that they can have cluster development.

Chairman Weingart stated that the next meeting is on May 15, 2008 at 10 a.m.

**Vote on the Approval of
 these Minutes**

	<u>Yes</u>	<u>No</u>	<u>Abstain</u>	<u>Absent</u>
Councilmember Alstede	_____	_____	_____	✓
Councilmember Calabrese	_____	_____	_____	✓
Councilmember Carluccio	✓	_____	_____	_____
Councilmember Cogger	✓	_____	_____	_____
Councilmember Dillingham	✓	_____	_____	_____
Councilmember Kovach	✓	_____	_____	_____
Councilmember Letts	✓	_____	_____	_____
Councilmember Pasquarelli	_____	_____	_____	✓
Councilmember Peterson	_____	_____	_____	✓
Councilmember Schrier	✓	_____	_____	_____
Councilmember Vetrano	✓	_____	_____	_____
Councilmember Way	_____	_____	_____	✓
Councilmember Whitenack	✓	_____	_____	_____
Councilmember Weingart	✓	_____	_____	_____

PUBLIC COMMENTS SUBMITTED

WHY IS IT IMPORTANT FOR THE CLUSTERING TOOL TO REMAIN STRONG AND FLEXIBLE IN THE RMP?

1. It **protects water resources more effectively** than conventional zoning by concentrating impervious surfaces, thus managing stormwater, *See EPA 2006 study: Protecting Water Resources with Higher-Density Development.*
2. It is the **only tool available at plan adoption to preserve many acres** of farmland without cost to the public. Preservation through the Highlands TDR may will be a long time in coming. There will never be enough public money to compensate the Highlands landowners for development value lost.
3. It may provide **the only readily available way to tap some farmland equity**. Local ordinances developed through Plan Conformance must enable this tool (designed so that the remaining farmland will be retained by the farmer) or, alternatively, allow the landowner to sell this density to others rather than using it himself on his property.
4. It is necessary to **prevent conversion of large tracts of farmland to housing** through large lot zoning, large-lot use of exceptions, reducing the viability of active agriculture.
5. It is the best planning tool **for preserving the current rural character** of the Highlands: large farms, woodlands, small residential lots, villages etc.
6. It is the best way for towns **to deal with COAH pressures** without withdrawing the best farmland from production for residential use

Highlands municipalities in Bergen Co. proposed 3rd Round obligation:

Mahwah: 1142 units total (incl. 350 from prior rounds)

Oakland: 393 units total (incl. 89 from prior rounds)

WILL CLUSTERING ON FARMLAND BE A THREAT TO THE ENVIRONMENTAL RESOURCES OF THE HIGHLANDS? No because:

The municipal cluster/lot-size averaging ordinance will set requirements. History shows NJ towns have used multiple ways to control the use and size of clustering.

Density: determined by zone septic densities, will produce very low densities.

Nitrates: properly designed and maintained septic or package systems remove nitrates and can release water clean enough to drink.

RPM acknowledges that one future task is to identify farmland tracts with high nitrates. This would be done through the soil tests as part of a cluster application.

Forest lands, wetlands, wildlife habitat, etc.: approval only if sensitive areas can be avoided, protected, or mitigated.

Steep slopes, karst soils: requirements to be set in municipal cluster ordinance.

CAN CLUSTERING BE A THREAT TO CONTINUING PRODUCTION AGRICULTURE? Yes, unless the following are considered:

Right to Farm: must be on the deeds of the new units, supported by the municipality through an ordinance in conformance with the Right to Farm Act.

Location: careful design can isolate the residential land uses, require buffers between the farm and the residences, and use the soils less desirable for agriculture.

Very small lots supported by onsite community wastewater systems will use up less farmland.

WILL MANY HIGHLANDS FARMLAND OWNERS TRY TO MAKE USE OF THIS EQUITY PROTECTION TOOL? No, because:

Most farmers do not want many residential units close to their active agricultural operation because of potential right to farm conflicts.

Use of clustering/lot size averaging to tap into land equity will depend upon whether permanent funding is developed for easement purchase or whether the Highlands TDR Program works successfully.

The numerous expensive tests, studies, and plans needed to gain approvals and permits for a cluster/lot-size averaging application will discourage any but the most needy, well-heeled, or determined farmland owner.

Some hurdles in the November 2007 draft RMP that must be overcome to build in clustered form on a Highlands farm:

- Subdivision, site plan approval from a town with a development ordinance ACCEPTABLE TO THE HLC.
 - Design that leaves 80 or 90% of farmable land undeveloped.
 - Conformance to design standards (RMP says these are being developed).

-Requires a willing town, a willing public, WILLING HLC.

- Soil tests to determine nitrate levels, which kind of wastewater treatment is the most feasible to remove nitrates and any other pollutants.
- Well and wastewater discharge permits.
- Wastewater Management Plan amendment if discharge is large enough WITH HLC APPROVAL.
- Studies to show how degradation of Highlands resources such as prime agricultural soils, wetlands, riparian areas, critical habitat, steep slope analysis, forest resources, etc. is to be avoided, reduced or mitigated ACCEPTABLE TO THE HLC.
- Other requirements set by the HLC or the town.
- Development of easement on the land set-aside for agriculture APPROVED BY THE TOWN AND HLC.

SO THERE IS NO NEED TO MAKE THE REQUIREMENTS EVEN MORE RESTRICTIVE.



NEW JERSEY HIGHLANDS COALITION

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Comments at the May 1, 2008 Highlands Council Meeting

At last week's Council meeting, the very last item of the RMP discussion, staff suggested a fundamental change in the very nature of the Highlands Regional Master Plan—a change that if approved, would modify the RMP's relevance in the entirety of the Planning Area and brings into question the overall necessity of a regional plan; a clear challenge to the Council's commitment to following its mandate under the Highlands Act.

Specifically, staff had recommended that septic density thresholds in the RMP will not be used for Water Quality Management Plan consistency determinations for non-conforming municipalities.

In the Final Draft RMP, if adopted without modification to this section, the Council retains authority in the entirety of the Highlands Region; whether in the Preservation Area or Planning Area—"blind to the line" as it were, to determine whether a municipality or county WQMP is consistent with the RMP. If found to be inconsistent, the Council can request that DEP require that a WQMP be re-submitted until consistency with the RMP is achieved. The nitrate dilution model, as proposed in the November 2007 Draft Technical Addenda, is specific to each LUC Zone. The Technical Addenda is very detailed as to the scientific basis, precedence and the sound principals that justify the model.

This surprising and fundamental proposed change in direction, to abandon the LUC Zone-specific septic density thresholds in WQMP consistency determinations for non-conforming municipalities leaves little else in the Council's quiver to adopt an effective regional master plan. It is a significant component of planning authority you can claim in the Planning Area. To abandon this authority will only discourage RMP conformance by granting greater flexibility as a benefit to non-conformance. The plan will then defeat itself by becoming meaningless in the Planning Area.

Last week, the Chairman had asked for a straw poll among the Council, asking members for a show of hands if they accepted the staff's recommendation. Six Council members raised their hands. Not a majority,

fortunately—although it was only a non-binding poll. However, what is most unsettling is that in later discussions our members and staff had with Council members revealed varying opinions about precisely what it was they were voting on, and equally varied degrees of comprehension as to the implications of the staff's recommendation.

Whatever cliché you prefer, "the rubber hits the road", "pencils hit the paper"; now is the time to take absolute ownership of this plan as it is you who will be held accountable as the plan's authors.

Don't forget that 5.7 million people in NJ who drink Highlands Water are counting on you. Now is the time to reinforce that each of you is indeed the most qualified person in the state to represent our interests.

Thank you.

Elliott Ruga
NJ Highlands Coalition

**DRAFT - FOR CONSIDERATION AT THE MAY 1, 2008
MEETING OF THE HIGHLANDS COUNCIL**

**RESOLUTION 2008-
NEW JERSEY HIGHLANDS WATER PROTECTION AND PLANNING COUNCIL
APPROVAL OF CERTAIN PLANNING ASSISTANCE GRANTS**

WHEREAS, the Highlands Water Protection and Planning Act (Highlands Act) has created a public body corporate and politic with corporate succession known as the Highlands Water Protection and Planning Council (Highlands Council); and

WHEREAS, the Highlands Act authorizes the Highlands Council to enter into any and all agreements or contracts, execute any and all instruments to carry out any power, duty or responsibility under the Highlands Act; and

WHEREAS, Section 18 of the Highlands Act authorizes the Highlands Council to make available grants and other financial and technical assistance to municipalities and counties in furtherance of the Regional Master Plan; and

WHEREAS, on February 28, 2008 the Highlands Council by Resolution 2008-4 authorized the initiation of a grant application process for Initial Assessment grants to municipalities within the seven Highlands counties in furtherance of Plan Conformance, in an annual amount not to exceed \$1,500,000; and

WHEREAS, the Highlands Council staff has reviewed the following grant application and recommends approval by the Highlands Council; and

NOW, THEREFORE, BE IT RESOLVED by the Highlands Council that the Executive Director, or her designees, is hereby authorized to enter into a grant agreement with the following municipalities for an Initial Assessment Grant in an amount not to exceed \$15,000:

CERTIFICATION

I hereby certify that the foregoing Resolution was adopted by the Highlands Council at its regular meeting held on the 1st day of May, 2008.

John Weingart, Chairman

**Vote on the Approval of
this Resolution**

	✓	<u>Yes</u>	<u>No</u>	<u>Abstain</u>	<u>Absent</u>
Councilmember Alstede		_____	_____	_____	_____
Councilmember Calabrese		_____	_____	_____	_____
Councilmember Carluccio		_____	_____	_____	_____
Councilmember Cogger		_____	_____	_____	_____
Councilmember Dillingham		_____	_____	_____	_____
Councilmember Kovach		_____	_____	_____	_____
Councilmember Letts		_____	_____	_____	_____
Councilmember Pasquarelli		_____	_____	_____	_____

**DRAFT - FOR CONSIDERATION AT THE MAY 1, 2008
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**RESOLUTION 2008-
NEW JERSEY HIGHLANDS WATER PROTECTION AND PLANNING COUNCIL
APPROVAL OF CERTAIN PLANNING ASSISTANCE GRANTS**

**Vote on the Approval of
this Resolution**

	✓	<u>Yes</u>	<u>No</u>	<u>Abstain</u>	<u>Absent</u>
Councilmember Peterson		_____	_____	_____	_____
Councilmember Schrier		_____	_____	_____	_____
Councilmember Vetrano		_____	_____	_____	_____
Councilmember Way		_____	_____	_____	_____
Councilmember Whitenack		_____	_____	_____	_____
Councilmember Weingart		_____	_____	_____	_____



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JOHN R. WEINGART
Chairman

EILEEN SWAN
Executive Director

**DRAFT - FOR CONSIDERATION AT THE MAY 1, 2008
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Water Deficit Policy Options

Background

The Final Draft RMP includes the following GPOs on water deficits:

Policy 2B4	To require through Plan Conformance the development and implementation of Water Management Plans to address any Current Deficit Areas or subwatershed that could become deficit areas based on projected development and water uses, to ensure sustainable water supply, water resource and ecological values.
Objective 2B4a	Water Management Plans shall include provisions to reduce consumptive and depletive uses of ground and surface waters as necessary to reduce or prevent deficits in Net Water Availability; or to ensure continued stream flows to downstream Current Deficit Areas from Existing Constrained Areas, to the extent practicable within each zone.
Objective 2B4b	Proposed increases in water use, including consumptive or depletive water uses, within a Current Deficit Area or an area where the proposed increase would cause the HUC14 subwatershed to become a Current Deficit Area shall provide mitigation equal to 125% of the proposed new consumptive or depletive water uses within the same HUC14 subwatershed through: a permanent reduction of existing consumptive and depletive water uses; ground water recharge in excess of the requirements of N.J.A.C. 7:8 (Stormwater Management Rules); or other permanent means.
Policy 2B5	To conditionally provide water availability within Current Deficit Area.
Objective 2B5a	A Current Deficit Area subwatershed that is primarily within the Existing Community Zone shall be assigned a Conditional Net Water Availability of 2 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.
Objective 2B5b	A Current Deficit Area subwatershed that is primarily within the Protection Zone or Conservation Zone shall be assigned a Conditional Net Water Availability of 1 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.

Of the 183 HUC14 subwatersheds, 114 show deficits ranging from less than 100 gallons per day (gpd) to more than 7 million gallons per day (MGD), within the following ranges:

<u>Deficit (MGD)</u>	<u># of HUC14s</u>
0.0001 – 0.050	22
0.051 – 0.100	7
0.101 – 0.250	25
0.251 – 0.500	17
0.501 – 1.000	16
1.000 – 7.100	17
TOTAL	114

The highest deficits are primarily caused by major depletive uses. In some cases, clean water is delivered across subwatershed and watershed lines to users. One example is the Morris County MUA well fields in the Lamington and Drakes Brook watersheds. In other cases, the water is used within the subwatershed but then moved as wastewater to another subwatershed for treatment. The upper Rockaway River watershed is an example. For a few cases, the inter-watershed transfers occur over a very short distance (e.g., just past the subwatershed boundary). Phillipsburg is an example, where the source subwatershed is next to the Delaware River, and the wastewater is to the Delaware River itself. The discharge is calculated as a depletive water use, but may not be an actual problem because the discharge is so close to the area where ground water would normally flow.

Because the largest deficits are primarily caused by inter-watershed transfers, deficit solutions may similarly require infrastructure solutions. Such solutions may have effects outside of the Highlands Region, and therefore NJDEP must be closely involved in the analysis and approval of those deficit reduction approaches.

Conditional water availability is assigned to the 114 deficit subwatersheds based on the dominant Zone, as described in the RMP policies. The largest conditional availability is 54,100 gpd (0.0541 MGD), while the smallest conditional availability within a HUC14 that includes significant area within the Highlands Region is 1,000 gpd. The results are as follows:

<u>Conditional Availability (gpd)</u>	<u># of Potential Homes (Consumptive Use)*</u>	<u># of Potential Homes (Depletive Use)*</u>	<u># of HUC14s</u>
100 to 5,000	<1 to 57	<1 to 17	19
5,001 to 10,000	57 to 115	17 to 33	28
10,001 to 25,000	115 to 287	33 to 83	52
25,001 to 50,000	287 to 575	83 to 166	14
50,001 to 54,100	575 to 622	166 to 180	1
	TOTAL		114

*Based on 300 gpd per single family home for depletive uses, and 29% of 300 gpd for consumptive uses. Values are rounded to nearest whole number.

As can be seen, the conditional availability quantities are very limited, exceeding 25,000 gallons per day in only 15 subwatersheds. The average conditional availability is less than 14,000 gpd per HUC14 subwatershed.

Policy Issues

Three primary policy issues have been raised in public debate regarding public deficits:

1. The appropriateness of providing conditional water availability in deficit areas
2. The certainty of achieving mitigation in a manner that is protective of ecosystems and water resources
3. What happens if mitigation is not feasible

Conditional Availability

The policy of conditional availability and mitigation for new consumptive and depletive water uses was created to provide an opportunity for private and public sector development activity to help reduce or eliminate existing deficits. It also avoids the possibility of a discriminatory policy, where customers of water purveyors (which are regulated by NJDEP) are treated differently than self-supplied water users (which are not). The wide range of deficits, the wide range of potential solutions, and the fact that Plan Conformance is voluntary in the Planning Area make a policy of preventing new water uses a less useful as a tool than might be true in other situations.

It should also be noted that the policy of conditional availability relies on different implementation authorities in the Preservation and Planning Areas. In the Preservation Area, the Council has direct legal authority for project review and mandatory conformance. In the Planning Area, the Council has influence through the RMP on NJDEP permit decisions for new and increased water allocations, which can be limited to those that receive a consistency determination from the Highlands Council. (It should be noted that the largest deficits correspond to areas where NJDEP has the most influence on allocations through its permit programs, while the smaller deficits occur in areas where NJDEP has less influence because its water allocation permits address a relatively small percentage of total use.) The Council also can review local development decisions, but only in conforming municipalities or through the Water Quality Management Plan process. Therefore, the Council's ability to implement a policy preventing new water uses on new consumptive and depletive water uses in the Planning Area is limited, relative to the Preservation Area.

It is critical to note that the very limited quantity of Conditional Water Availability is specifically intended to drive the creation of management plans to reduce and eliminate deficits. Council staff recommends that these plans be called **Water Use and Conservation Management Plans**, rather than Water Management Plans or Water Deficit Management Plans, to better reflect their role in both deficit and non-deficit subwatersheds.

All of these considerations played a role in the staff recommendation and Council decision regarding water deficit policies. Still, there are potential policy alternatives to the provision of conditional availability as currently proposed that retain the central concept but modify its application. They include:

- Splitting the policy so that the Preservation Area (where conformance is mandatory) is treated differently from the Planning Area (where conformance is voluntary). Several issues are specific to the Preservation Area:
 - Most new Preservation Area development will be either on septic systems and very large lots (from 25 to 88 acres), or on exempt properties. Large lot development can

easily be designed so that consumptive water use is more than offset by recharge, through infiltration of rooftop runoff and through use of landscaping techniques such as rain gardens. The domestic supply wells and the recharge are both on site.

- Exempt properties are not subject to RMP controls, but RMP Plan Conformance could require that conforming municipalities ensure offsets to such development. However, the most effective measure, on-site infiltration, will not be available to the municipalities and off-site options may be very limited because much of the landscape is still undeveloped or in dedicate open space.
- The final type of development, and indeed the only major development, anticipated in the Preservation Area, will be on designated redevelopment sites. The application of on-site mitigation requirements to redevelopment is very appropriate for grayfield development, but may be inappropriate in brownfields where recharge could induce movement of pollutants.
- Given the limited existing development in the Preservation Area, enhanced off-site recharge will be difficult in some situations, and off-site water conservation options will be very limited.
- Preservation Area subwatersheds, however, have relatively small water deficits which in nearly all cases are entirely due to consumptive uses rather than depletive uses.

Therefore, Council staff recommends that Water Use and Conservation Management Plans, as a requirement of Plan Conformance, be used as the best option for deficit reduction. These plans could be developed quickly for areas with minor deficits (9-15 months), will require solutions that are entirely within the subwatershed, can be very effective for relatively small deficits, and should incorporate mitigation requirements. Very little development will occur in the Preservation Area during this period due to the NJDEP Preservation Area rules.

- Modification of the 125% mitigation requirement so that it is scaled to the size of the water deficit, the size of the proposed use, or both. A maximum percentage of 200% of the new consumptive/depletive water use is recommended.¹ There are several considerations behind this approach:
 - The larger deficits are related to more highly developed areas. Such areas have a larger water customer base and therefore more opportunities for demand-side (consumer) conservation. They also have more water infrastructure, and therefore more opportunities for supply-side (infrastructure) conservation such as reducing water losses from leaks. These benefits will apply regarding both consumptive and depletive water uses
 - Highly developed areas also have more existing buildings and older stormwater infrastructure, presenting more opportunities for enhanced recharge through retrofits that meet modern standards for stormwater infiltration. However, where the water is from another subwatershed (a depletive use), enhanced recharge in the developed receiving area will provide no benefit to the deficit subwatershed.

¹ It should be noted that this is a completely different metric than NJDEP's requirements for maintenance of 100% of pre-construction recharge; there is no direct linkage between the amount of natural recharge on a site and the amount of proposed water use on that same site. The latter may be smaller or larger than the former.

- Highly developed areas also tend to have higher land values. New water uses will tend to be for development with higher economic yields. Therefore, they should have a greater ability to absorb the costs of mitigation.
 - By linking mitigation requirements to the quantity of the proposed consumptive or depletive use, the RMP would create an incentive for efficient water uses, and would help ensure that only the most economically viable land uses are approved in the highest deficit areas.
 - Having a scaled mitigation project would preferentially reduce the deficits more where higher deficits exist.
- Require that mitigation be provided prior to construction in the HUC14 subwatersheds with the greatest deficits. For the reasons described in the prior point, mitigation through demand- and supply-side conservation will be much easier in high-deficit areas, and on-site mitigation may be more difficult than in less developed areas. Therefore, prior mitigation should be feasible. The following table is provided as a recommendation for application of the combined policies of enhanced mitigation and prior mitigation.

Conceptual Approach to Scaled Mitigation Requirements

Deficit (MGD)	Proposed Consumptive or Depletive Water Use (gpd)				
	<= 1,000	1,001 – 5,000	5,001 – 10,000	10,001 – 25,000	>25,000
0.0001 – 0.050	125%	125%	125%	150%	150%
0.051 – 0.100	125%	125%	125%	150%	150%
0.101 – 0.250	125%	125%	150%	150%	175%
0.251 – 0.500	125%	150%	150%	175%	200%
0.501 – 1.000	125%	150%	175%	175%	200%
1.000 – 7.100	150%	175%	175%	200%	200%

Green shading indicates where mitigation would be required prior to construction. In all other scenarios, mitigation could occur prior to, coincident with or following construction, based on the approved mitigation schedule.

- Inclusion of mandatory provisions for water supply utilities that their water demands from the deficit areas not increase while the water deficits exist. This approach would help ensure further conservation, but would not alone ensure deficit reduction. Constraints include the fact that Plan Conformance is for municipalities and counties, but not for water utilities. Note that this approach is not a moratorium on connections, but rather a constraint on delivered water quantities. It would include a prohibition on increased water allocations.
- Identification within the NJ Statewide Water Supply Plan of areas with the highest water deficits, which will allow NJDEP to work with the Highlands Council under the Water Supply Management Act and the 1981 Water Supply Bond Act to investigate in detail the areas water resources, current and future demands and options for addressing the deficits, and to determine the feasibility of these options.

- Imposing requirements for more detailed and aggressive Water Use and Conservation Management Plans, more restrictive controls on consumptive and depletive uses, and more extensive mitigation regarding the subwatersheds that have such high deficits that mitigation alone is unlikely to make a significant difference in the deficits. The Water Use and Conservation Management Plans should explicitly consider implementation of major water development projects to overcome the deficits.
- Requiring through Plan Conformance that municipalities ensure a timely reduction of water deficits. In many circumstances, the result of such a policy could be that deficit reduction would occur prior to use of conditionally available water, and could be augmented by 125% mitigation in specific developments as they occur. The more limited the existing developed lands in a municipality, the more difficult it will be to meet such a provision.

Certainty of Mitigation

Questions have been raised regarding how certain the technology and requirements would be in achieving mitigation. The Water Deficit Reduction Program calls for the use of formal agreements and escrow accounts to ensure implementation of mitigation plans. However, the questions have been more about technology and impacts rather than process. Issues include:

- **Recharge Technology** – The recharge technology relied upon by the RMP is the same as relied upon by NJDEP in its Stormwater Management Rules and Best Management Practices Manual. These techniques have been incorporated into BMP manuals and both local and state regulations throughout the northeastern part of the country. USEPA and other agencies around the country have conducted research on their effectiveness. If the methods are appropriate for stormwater management practices, then they are also appropriate for deficit mitigation. As these methods currently have the approval of NJDEP, the Highlands Council should endorse their use. The Council should also continue to track ongoing BMP research, and should implement the science agenda components that will monitor subwatershed changes based on development, redevelopment and deficit reduction.
- **Recharge Impacts** – There are several different issues regarding impacts.
 - First is whether impacts of recharge are felt quickly or slowly by the hydrologic system. Technical studies in areas with relatively high water tables (typical of the Highlands Region) show that infiltration of water to the ground water table (recharge) happens relatively rapidly due to the short travel distances involved.
 - Second, confusion sometimes occurs regarding the difference between time necessary for recharge to occur (days to weeks) and time for that water to reach its natural outlet, which can range from years to millennia. However, the time of travel to a natural outlet is not the key issue. Recharge increases the elevation of the water table and therefore the “head” or pressure gradient of an aquifer, which is transmitted through the aquifer much faster than the actual water travel time. So, increased recharge causes an increase in stream base flows relatively rapidly, much as water being pumped from an aquifer creates a relatively fast decrease in stream base flows.

- The third issue is whether the location of the recharge benefits the same aquifer system or streams that are affected by the new consumptive or depletive water use. This legitimate issue is the basis for mandating that the mitigation occur within the same subwatershed as the withdrawal, not the use. There can be situations where the use is from an aquifer, but the recharge moves more directly to stream base flow instead of to the aquifer, or where the timing of the benefit to stream flow differs. This possibility is one reason that the conditional water availability was limited, as discussed above. It is also a reason why NJDEP requires under its water allocation permit process that any new well be tested to ensure that it does not damage nearby wells, wetlands and stream flow. Short of extensive (and expensive) ground water modeling for every new development and aquifer, it is not feasible to ensure that recharge benefits the exact source of the water being used. However, by requiring that the mitigating recharge be in the same subwatershed, stream flow in that subwatershed will benefit regardless.
- A “purest” approach, requiring that ground water uses be allowed only if the mitigation precisely offsets both the quantity and timing of its impact on stream flow, is not feasible and is the equivalent of a declaration that no ground water should be used for water supply. To our knowledge, no regulatory agency uses this approach.
- **Water Conservation Techniques** – Water conservation technology has been proven over time, including major conservation gains in New Jersey based on State and national requirements for improved water using fixtures and appliances. Therefore, the effectiveness of the technology is not in doubt. A more legitimate issue is one of ensuring that conservation technology and techniques actually occur and in a timely manner.
 - Generally, residential appliances and fixtures, once installed, are not removed and retain their effectiveness. The same is true of office building fixtures. In most programs, objectives are established that allow for some loss of effectiveness over time; in essence, the program objectives “overshoots” the actual need to ensure success. Progress can be tracked through billing records of water purveyors.
 - Industries and water-using commercial operations have incentives to maintain water conservation once implemented, as it reduces their costs for both water supply and wastewater treatment. Because these entities are either customers of public utilities or have water allocation permits, their progress can be tracked individually over time.
 - Lawn irrigation systems tend to remain in place once installed, but they may require more monitoring to ensure that upgraded systems are being used properly, as owners can manually override the systems and may not maintain them properly. Progress can be tracked in the aggregate through peak water use rates of water purveyors.
 - Agricultural irrigation practices also tend to remain in place once installed, and NJDEP is strengthening its oversight of agricultural water certifications to ensure proper practices. Where agricultural conservation is implemented as a mitigation project, the contracts should require system maintenance and proper use. Such contracts must consider and address issues of crop changes over time.

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- One potential improvement to the proposed RMP would be to require monitoring and compliance evaluations by an outside expert party as a condition of approval. While this provision can readily be included in water management plans, it should be considered for project-specific mitigation as well.
- Water rates, and in particular inclining block rates or summer peak use rates, have potential for reducing water use through pricing signals to the consumer, especially if combined with customer education so that they notice the link between the rate structure and their water supply bills.
- **Aggregate Impacts of Mitigation** – The final policy issue relates to “proof of concept” for deficit reduction. The history of water deficits in the northeastern United States (and most other locations) is that they are addressed only when a major drought endangers supplies to major developed areas. The solutions are nearly always primarily based on new infrastructure (e.g., reservoirs, interconnection pipelines, well fields), though many include conservation to reduce infrastructure costs. The RMP is fundamentally different in that it focuses on ecological impacts of deficits that are in many cases very small relative to historic norms. Can Water Use and Conservation Management Plans and the recommended mitigation requirement truly achieve deficit elimination? The difficulty of deficit reduction is proportional to deficit size.
 - As discussed above, nearly half (54) of the 114 deficit subwatersheds have deficits of less than 250,000 gpd, or 0.25 MGD. 71 deficits are less than 500,000 gpd or 0.5 MGD. 29 are less than 100,000 gpd or 0.1 MGD. These deficits are very small relative to the deficits historically addressed by major infrastructure projects. It should be relatively easy for deficits of this nature to be addressed through Water Use and Conservation Management Plans and mitigation projects, especially for deficits less than 0.25 MGD.
 - Seventeen subwatersheds have deficits above 1 MGD, primarily driven by depletive water uses. Deficits of this size and cause will be more difficult and perhaps impossible to address without a major infrastructure project. However, in some cases the infrastructure project could involve a concerted recharge enhancement effort, rather than a new reservoir or importation of water. At any rate, a conditional water availability of less than 0.025 MGD (the norm) represents a very limited use compared to the water availability deficit, and even more limited compared to total water use. In such situations, project-specific mitigation will not affect the deficit much at all in any direction. Within existing water supply service areas for major public systems, the impacts of new development may not even be noticeable relative to total system use. True deficit reduction will require implementation of Water Use and Conservation Management Plans and major water resource and conservation projects. In the most severe cases, deficit elimination will require coordinated action with NJDEP. Fortunately, these areas are also identified by NJDEP as being in deficit based on the upcoming Statewide Water Supply Plan methods, and so cooperative efforts should be possible.
 - Sixteen subwatersheds have intermediate deficits, of between 0.5 and 1.0 MGD. These subwatersheds will benefit less from project-specific mitigation, and will have fewer structural options for water resources projects.

- In some cases, more detailed evaluations of the subwatersheds and their deficits may show that the subwatersheds should be managed as an aggregate unit, modifying the deficits and the feasible solutions. Where subwatersheds with major deficits are close together, creating a combined water resources project may be more appropriate than having separate projects for each subwatershed.

In summary, the smaller deficits can legitimately be resolved through a combination of project-specific mitigation, water conservation and water resource projects emphasizing recharge augmentation. The largest deficits will only be resolved through intensive water conservation and water resource projects, and the inclusion of these subwatersheds as deficit areas in the Statewide Water Supply Plan will help with the identification of those solutions. The middle-sized deficits may be the most difficult to resolve, except where they can be included within a larger sub-regional solution.

It should be noted that where a municipality is in conformance, they gain control over where the conditional water availability may be used, and they also gain access to Council funds for development of the Water Use and Conservation Management Plans.

Where Mitigation is Infeasible

The RMP requires that a new water use within a deficit subwatershed “shall provide mitigation equal to 125% of the proposed new consumptive or depletive water uses within the same HUC14 subwatershed...” There are several steps to this process. First, the applicant must calculate the new consumptive or depletive water use. Second, the applicant must show that conditional water availability exists that will meet the project needs. Third, the applicant must show that the mitigation can be provided within the same subwatershed. Fourth, the applicant must either include the mitigation within the project site, prove the existence of mitigation that has already occurred, or commit to implementation of the mitigation off-site within a scheduled time.

The question has been raised – what if an applicant is unable to complete any of these steps? Conditional water availability for a subwatershed may already have been used by other projects, or may be inadequate to the project. Mitigation may be deemed infeasible or financially nonviable. In any of these cases, the project should not be approved. The applicant would then need to revise the project, abandon the project, or seek a waiver based on one of the Act’s provisions (e.g., public health and safety, takings, redevelopment area).



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EILEEN SWAN
Executive Director

**DRAFT - FOR CONSIDERATION AT THE MAY 1, 2008
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**Mitigation of New Consumptive or Depletive Water Uses in
Subwatersheds Having Water Deficits**

The Final Draft RMP includes Objectives regarding Conditional Water Availability in HUC14 subwatersheds that are Current Deficit Areas. The “Efficient Use of Water” Program (Chapter V) includes the provisions related to implementation of these objectives. Some public comments indicated that the assurances for mitigation were insufficient. The following procedure is recommended for ensuring that appropriate mitigation occurs:

1. Revise Objective 2B4b to clarify that the objective refers to the use of conditional water availability and is limited to the amount identified in Objectives 2B5a and 2B5b for the aggregate of all applications in a subwatershed. As currently written, Objective 2B4b has no apparent limitation on new consumptive and depletive water uses. The Council staff would track new uses against the conditional water availability over time. A cross-reference to Objective 2B4a makes clear that conformance with an approved Water Use and Conservation Management Plan can be used to replace the standard mitigation requirement. In addition, Objective 2B4b should not allow the creation of a new deficit area. Finally, the 125% mitigation requirement should be revised to reflect a range of thresholds (see white paper on “Water Deficit Policy Options”).

Objective 2B4b	Proposed increases in consumptive or depletive water uses within a Current Deficit Area shall provide mitigation equal to 125% of the proposed new consumptive or depletive water uses (up to an aggregate of the total conditional water availability of Objectives 2B5a or 2B5b) or as required by a Water Use and Conservation Management Plan approved under Objective 2B4a within the same HUC14 subwatershed through: a permanent reduction of existing consumptive and depletive water uses; ground water recharge in excess of the requirements of N.J.A.C. 7:8 (Stormwater Management Rules); or other permanent means.
Objective 2B5a	A Current Deficit Area subwatershed that is primarily within the Existing Community Zone shall be assigned a Conditional Net Water Availability of 2 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.
Objective 2B5b	A Current Deficit Area subwatershed that is primarily within the Protection Zone or Conservation Zone shall be assigned a Conditional Net Water Availability of 1 percent of Ground Water Capacity, based on the Low Flow Margin Method, conditioned upon prior implementation or commitment for implementation of the 125% mitigation requirement in Objective 2B4b.

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2. Modify the Planning Area and Preservation Area thresholds in the “Efficiency of Water Use” program to lower values more in keeping with the maximum conditional water availability values of approximately 50,000 gpd per subwatershed. Use 20,000 gpd in the Planning Area and 10,000 gpd in the Preservation Area; both values are consumptive plus depletive uses.

**Ensuring
Implementation of
Water Management
Plans**

Where a water utility or water user chooses to make a commitment to implementation of water use efficiency rather than implementing the measures prior to a new consumptive or depletive use, the following requirements shall apply:

1. All implementation measures shall be completed within one year of approval if the amount is less than 20,000 gallons per day in the Planning Area or 10,000 gallons per day in the Preservation Area, on average. Implementation may occur within a longer time period for larger amounts, up to five years from approval;
 2. If the implementing entity is a public agency, the commitment must be in the form of a binding resolution or ordinance of the governing body, and the cost of implementation must be bonded to ensure sufficient resources;
 3. If the implementing entity is a private corporation or individual, they must establish either an escrow account or provide bonding to ensure that the commitments are met. A public entity must be named as recipient of the escrow account or bonds in the event of default by the implementing entity, to be used by the public entity to complete implementation.
4. Each applicant shall identify the amount of total water use, new consumptive or depletive water use, the subwatershed(s) from which the water supply is derived, and (where applicable) the public water supply and wastewater systems that would provide service to the project site. The Highlands Council shall determine whether sufficient conditional water availability exists for the project. If not, the project shall be revised so that the conditional water availability for the relevant subwatershed is not exceeded.
 5. Where a Water Use and Conservation Management Plan has been approved by the Highlands Council, the applicant shall demonstrate compliance with that plan, including mitigation amounts, implementation schedules, cost contributions, monitoring, etc.
 6. Where a Water Use and Conservation Management Plan has not been approved by the Highlands Council, the applicant shall identify the amount of mitigation required, relative to the new consumptive or depletive water use.
 7. The applicant shall provide a **detailed mitigation plan**, including engineering drawings where constructed mitigation facilities are proposed, of the mitigation measures that will provide the necessary mitigation. The mitigation plan must include sufficient information to demonstrate that the mitigation measures are individually feasible and in the aggregate will meet or exceed the mitigation need. Where recharge is used, either off site or on site, the mitigation plan must show that the facility will recharge the ground water table such that it reasonably can be expected to support aquifer recharge or stream flow; in the latter case the estimated time of travel must be two months or more. The mitigation plan must also include operation, maintenance and monitoring requirements to ensure that sufficient recharge is maintained over time. An entity

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responsible for the mitigation plan must be identified and approved by the municipality and Highlands Council. Proof of acceptance of the mitigation plan by the responsible entity must also be provided. Where water conservation is used, either off site or on site, the mitigation plan must include a means by which water savings will be verified over time, such as metered flows. Any project unable to provide sufficient mitigation shall modify the project to reduce the consumptive or depletive water uses such that full mitigation is feasible.

8. The applicant shall provide a cost estimate with 10% contingency for implementation of the mitigation plan.
9. As a condition of Highlands Project Review or local approval for site development, the applicant shall provide an **escrow fund** or performance/maintenance bond (at the discretion of the entity responsible for the mitigation) equal to the mitigation plan cost estimate, to be available to the municipality and the Highlands Council for implementation of the necessary mitigation measures should the applicant fail to properly implement the measures according to the mitigation plan schedule. The escrow fund shall be established in the normal manner for a project development escrow account, and shall remain in effect until two years after implementation of all mitigation measures.
10. Where mitigation measures are to be implemented **on site through water conservation** (applicable only where the site includes existing land uses), the applicant shall implement the measures prior to receiving a certificate of occupancy for the new construction. If conservation measures include reduced irrigation of landscaping, protective covenants (e.g., homeowners association by-laws) must be enacted so that these measures are enforceable. Where the project development is in phases, implementation of mitigation measures must at a minimum be phased in proportionally over the same period, but can be implemented more quickly.
11. Where mitigation measures are to be implemented **off site through water conservation** in existing land uses, the applicant shall contract with the site owner(s), water utility or municipality for implementation, permanent operation and maintenance and routine monitoring of the mitigation measure(s). The measures shall be implemented prior to local approval of a certificate of occupancy for the new construction or within one year of project approval, whichever is later, if the mitigation amount is less than 20,000 gallons per day in the Planning Area or 10,000 gallons per day in the Preservation Area. Where the project development is in phases, implementation of mitigation measures must at a minimum be phased in proportionally over the same period, but can be implemented more quickly. Where the mitigation amount is greater than these Planning Area and Preservation Area thresholds, the mitigation plan must include a detailed schedule for implementation that maximizes the conservation achieved in the early years of the schedule, achieves full implementation in the shortest feasible time, and shall require no more than five years from project approval for complete implementation.
12. Where mitigation measures are to be implemented **on site through recharge**, the applicant shall include the mitigation measures in the project stormwater management plan, stormwater operation and maintenance manual, and site design. The stormwater management plan and O&M manual shall achieve permanent maintenance and routine monitoring of the mitigation measure(s) so that it continually achieves the required rate of recharge. Implementation shall occur within the same schedule as project development. Where the project development is in phases or longer than two years, implementation of mitigation measures must at a minimum be phased in proportionally over the same period, but can be implemented more quickly. If on-site recharge is

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not feasible due to site conditions, then provisions for off-site recharge must be provided. On-site conservation may still be implemented subject to the conditions described above.

13. Where mitigation measures are to be implemented **off site through recharge**, the applicant shall contract with the site owner(s) for construction, permanent operation and maintenance and routine monitoring of the mitigation measure(s) so that it continually achieves the required rate of recharge. Implementation must occur within the same schedule as project development, up to five years, if the mitigation amount is less than 20,000 gallons per day in the Planning Area or 10,000 gallons per day in the Preservation Area. Where the project development is in phases or longer than two years, implementation of mitigation measures must at a minimum be phased in proportionally over the same period, but can be implemented more quickly. Where the mitigation amount is greater than these Planning Area and Preservation Area thresholds, the mitigation plan must include a detailed schedule for implementation that maximizes the conservation achieved in the early years of the schedule, achieves full implementation in the shortest feasible time, and shall require no more than five years from project approval for complete implementation.
14. The responsible entity identified through #7, above, is responsible for reporting annually to the Highlands Council regarding implementation of the mitigation plan through the life of the escrow account, unless reporting is achieved through the Water Use and Conservation Management Plan. The applicant is responsible for establishing an ongoing system of reporting to the Highlands Council prior to release of the escrow account. The reporting system must operate until net water availability is no longer in deficit for the relevant subwatershed, or until the responsibility is absorbed into implementation of the Water Use and Conservation Management Plan.



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Guidance for Evaluation of Water Transfers between Subwatersheds

The Regional Master Plan (RMP) is proposed to include the following requirement, with the amendment as underlined:

Objective 2B10f: Allow water resource transfers between or from Highlands subwatersheds only when there is no other viable alternative and where such transfers would demonstrably not result in impairment of resources in any subwatershed. Potential effects on upstream and downstream subwatersheds should be included in any such evaluation.

This policy applies to transfers within the Highlands Region and between subwatershed within and outside of the Region. The question then is what constitutes proof that there is no “viable alternative” to the proposed interbasin transfer, and that such transfers have acceptable impacts. Council staff recommends that the following steps be used as guidance for project sponsors:

1. Update to at least the most recent full calendar year the net water availability calculations for the HUC14 subwatersheds from which water for the development will be derived, based on the methods in the Regional Master Plan (RMP) at Policy 2B2 and Water Resource Technical Report (as amended in the Technical Report Addenda, November 2007). It is not appropriate to consider the net water availability from a subwatershed not directly used as a water source for the project unless the applicant can show that the subwatershed is hydrogeologically connected to and is a significant source of water to the directly affected subwatersheds. Note: Well pumping tests completed in compliance with NJDEP water allocation rules address localized impacts of well pumping and do not address the issues of net water availability for a subwatershed.
2. Show that ground water recharge upon completion of development will at least equal pre-construction recharge in compliance with N.J.A.C. 7:8. Note: any additional recharge required for the project as mitigation (see #7, below) is in addition to the NJDEP stormwater management rule requirements. Encroachment on Prime Ground Water Recharge Areas, as identified in the RMP, may also affect the recharge requirement.

3. Develop a water demand profile for the proposed project based on anticipated water needs, showing anticipated monthly demands and total seasonal demands. Water usage should be quantified, both in terms of total demand and consumptive demand. The proposed wastewater treatment alternative should be identified so its potential depletive effects (exportation to another subwatershed) can be evaluated.
4. Develop a detailed water use protocol for the project, showing how the various sources of water will be used over a drought year. What sources will be relied upon under what conditions, and to what extent and at what rate, over the growing season months and other seasons, by month? Show how limits in water storage, surface water diversions, stormwater runoff capture, on-site reclaimed water for beneficial reuse (RWBR), and ground water allocation restrictions affect the use of each water source under the water use protocol. Show that the water source used for each major type of water demand (e.g., potable, irrigation, cooling) relies on the lowest quality water source that is both appropriate for that use and economically viable, as defined by NJDEP Water Allocation Rules. For instance, the interbasin transfer of RWBR shall be used for irrigation in preference to ground water or potable surface water supplies unless the transfer will create significant harmful environmental or growth impacts; conversely, use of on-site stored stormwater for irrigation shall have preference over interbasin transfers of RWBR.
5. Show and commit to (as a condition of approval) that (a) any proposed ground water use during the months of June through August or (b) any proposed surface water diversion in September will result in a consumptive or depletive water use that is less than the water availability (net or conditional) for the affected subwatersheds. The proposed consumptive and depletive use must not exceed Net Water Availability (if positive) for the subwatershed, or exceed the Conditional Water Availability for a deficit subwatershed unless a Water Use and Conservation Management Plan has been approved for that subwatershed by the Highlands Council. Where a Water Use and Conservation Management Plan has been approved, see #7 below.
6. Determine whether and the extent to which the use of all proposed water supplies based on #4 (e.g., stormwater storage, wells, on-site RWBR, off-site RWBR) is not sufficient to meet anticipated monthly demands without violation of RMP policies and objectives.
7. Determine the management response to any shortfalls identified in #6, including consideration of options such as project changes, irrigation restrictions and importation of untreated water or potable water to the subwatershed. If Conditional Water Availability in any subwatershed is used, then show and commit to (as a condition of approval) compliance with the approved Water Use and Conservation Management Plan for that subwatershed (if any) or mitigation of the consumptive and depletive use based on reduction of water demands or increases in ground water recharge in the same subwatershed in accordance with Objective 2B4b of the RMP.
8. If a water transfer (other than RWBR, see #4) between or from Highlands subwatersheds is determined to be the only viable option to meet any predicted shortfalls, then determine the minimum amount of imported water required while maximizing use of appropriate sources based on #4. Determine the feasibility of providing that amount of water to the proposed project. If economically infeasible at this minimum delivered flow, determine

the minimum imported water flow that would be necessary to achieve economic feasibility.

9. Based on the transfer need identified in #8, determine whether the source subwatershed has sufficient water supply based upon the relevant threshold below:
 - a. Net water availability for a Highlands Region subwatershed as described by the RMP;
 - b. Conditional water availability for a Highlands Region subwatershed as described by the RMP, including compliance with the adopted Water Management Plan for that subwatershed (if any) or the mitigation requirement as discussed in #7;
 - c. Safe yield available under contract from a surface water supply, with approval of the contract from NJDEP-Division of Water Supply;
 - d. Water availability for a non-Highlands Region HUC11 watershed, including approval from NJDEP-Division of Water Supply and, where applicable, from the NJDEP-Division of Watershed Management.
10. Where a transfer is proposed to the Highlands Region from an outside subwatershed, or where a transfer is proposed within the Highlands Region that will reduce the potential water availability (e.g., reservoir supplies) to an area outside of the Region, the transfer must have approval of the NJDEP-Division of Water Supply and be for the purpose of either reducing an existing Highlands Region deficit or supporting development that is otherwise in conformance with the RMP.
11. The Highlands Council may approve an interbasin transfer in advance of the process above, subject to approval as necessary from the NJDEP-Division of Water Supply, as necessary to address an imminent public health and safety threat that cannot be addressed in another manner within a reasonable schedule and where a binding commitment is made to address the requirements of this policy within one year of Council approval.



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Cluster Development Goals, Policies, and Objectives

RMP Policies and Objectives Addressed

Objective 1A2d To prohibit through Plan Conformance, local development review and Highlands Project Review the expansion or creation of public water supply systems or public wastewater collection and treatment systems or community-based on-site wastewater facilities into forested areas of the Forest Resource Area within the Planning Area except as provided for in Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and within the Preservation Area except as provided for in Policy 2I1 and Objectives 2I1a and 2I1b.

Objective 2B9e. Give highest priority for the use of Net Water Availability for non-agricultural water uses to clustered or compact development, Highlands Redevelopment Areas as designated by the Highlands Council, and Receiving Zones that result in the preservation of agricultural and environmentally sensitive lands.

Note: Policies 2J1, 2J4, 2K3 and 3C1 with their Objectives, plus Objectives 6B1e and 6B7a, are Utilities GPOs related to cluster development, which are being proposed for modification to the wording shown here. These will also be presented for Council discussion with other Utilities GPOs. The original GPOs are shown in ~~strikeout~~, followed by the new GPOs underlined.

Policy 2I1 To prohibit the expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area unless approved through a Highlands Applicability Determination or a Highlands Preservation Area Approval with waiver pursuant to N.J.A.C. 7:38.

Policy 2J4 To minimize, through Plan Conformance, local development review and Highlands Project Review, the creation or extension of public water supply systems within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area, and to allow for the creation or extension of public water supply systems where appropriate within the Existing Community Zone.

Objective 2J4a Prohibit new, expanded or extended public water systems

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within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below, and will maximize the protection of sensitive environmental resources including avoidance of Open Water buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands within the Agricultural Resource Areas, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat Areas. The extension or creation of such systems shall follow the requirements in Objective 2J4b (parts 2 and 3). The applicable purposes are:

1. To address a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety. Such needs shall have highest priority for allocation of existing system capacity;
2. To serve a designated Highlands Redevelopment Area;
3. To serve a cluster development that meets all requirements of Objective 2J4b; or
4. To avoid the taking of property without just compensation.

Objective 2J4b Clustered development served by public water supply within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in Agricultural Resource Areas pursuant to Policy 3A6;
2. Extension of an existing public water system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a new public water system will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity;
4. The clustered development preserves at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes, and to the maximum extent feasible the developed portion of the project area (i.e., not including wetlands, open water buffers, recreational lands) is no more than 10 percent if served by a public or community on-site wastewater system.
5. Where the preserved land in the cluster project area is preserved for agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan requires continued agricultural viability of the agricultural land and the implementation of best management practices, including development and implementation of a Farm Conservation Plan focused on the protection of soil and water resources and prepared by the USDA Natural Resources Conservation Service or appropriate NJDA staff and approved by the local Soil Conservation District

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(SCD).

Objective 2J4d (Former 2J4c) All development within the Highlands Region, in areas that are not served by public water systems, shall be at a density that can be supported by on-site wells. Where cluster development in the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster design in combination with the Agriculture Retention/Farmland Preservation Plan required by Objective 2J4b shall provide for best management practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands.

Policy 2K3 To provide adequate, appropriate, efficient and cost-effective wastewater management to all development in the Highlands Region, through Plan Conformance, local development review and Highlands Project Review.

Objective 2K3c Prohibit new, expanded or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below, and will maximize the protection of sensitive environmental resources including avoidance of Open Water buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of the Agricultural Resource Area, Steep Slopes, Prime Ground Water Recharge Areas, and Critical Habitat Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:

1. To address a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety. Such needs shall have highest priority for allocation of existing system capacity;
2. To serve a designated Highlands Redevelopment Area;
3. To serve a cluster development that meets all requirements of Objective 2K3d; or
4. To avoid the taking of property without just compensation.

Objective 2K3d Clustered development served by a public wastewater collection and treatment system or community on-site treatment facility within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:

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1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in Agricultural Resource Areas;
2. Extension of an existing public wastewater collection and treatment system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity;
3. Creation of a community on-site treatment facility will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity, where the proposed system is designed, permitted and constructed at a capacity limited to the needs of the clustered development, and where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served; and
4. The cluster development preserves at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes, and to the maximum extent feasible the developed portion of the project area (i.e., not including wetlands, open water buffers, recreational lands) is no more than 10 percent if served by a public or community on-site wastewater system.
5. Where the preserved land in the cluster project area is preserved for agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan requires continued agricultural viability of the agricultural land and the implementation of best management practices, including development and implementation of a Farm Conservation Plan focused on the protection of soil and water resources and prepared by the USDA Natural Resources Conservation Service or appropriate NJDA staff and approved by the local Soil Conservation District (SCD).

Objective 2K3e (Former 2K4a, 2K4b) Allow the expansion or creation of wastewater collection systems within the Existing Community Zone of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs equivalent to Objective 2K3c within the Existing Community Zone, or to serve new areas for development that meet all other requirements of the RMP. The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served. TDR Receiving Areas, where designated, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than other developments requiring expansion of sewer service areas within this Zone.

Objective 2K3f All development within the Highlands Region, in areas which are not served by public wastewater collection and treatment system or community on-site treatment facility, shall be at a density that can be supported by septic systems under Goal 2L. Where cluster development in the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is

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preserved for agricultural purposes in perpetuity, the cluster design and the Agriculture Retention/Farmland Preservation Plan required by Objective 2K3d in combination shall include provisions for best management practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands.

Objective 2L2e New residential development using septic systems where clustering or conservation design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the LUCM Zone, but with the density for the developed portion of the site based on a nitrate dilution target not to exceed 10 mg/L or any more stringent requirement as required by N.J.A.C. 7:15.

Policy 3A6 Where it is not feasible to preserve agricultural lands within the Agricultural Resource Area (ARA) by such methods as fee simple acquisition, easement acquisition, or a TDR program, require mandatory clustering through Plan Conformance, local development review, and/or Highlands Project Review for residential development in an ARA. Cluster development within the Planning Area that incorporates public or community on-site wastewater utilities shall adhere to Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, within the Preservation Area shall adhere to Policy 2I1 and Objectives 2I1a and 2I1b, and where reliant on septic systems shall adhere to Objective 6G1b.

Objective 3A6a Implement regulations requiring that cluster or conservation design within an Agricultural Resource Area support the preservation of farmland, avoid conflicts with agriculture, maintain and enhance the sustainability and continued viability of the agricultural industry, protect important farmland soils, and meet resource management and protection requirements of the RMP.

Objective 3A6b Implement regulations requiring that all cluster or conservation design development proposed in an Agricultural Resource Area be buffered appropriately with existing natural resources, such as hedgerows or trees, or with new buffers to avoid conflicts between non-agricultural development and agricultural activities, and to protect existing agricultural uses and sensitive environmental resources.

Objective 3A6c Implement regulations requiring that all land preserved in perpetuity for environmental protection or agricultural purposes as a result of clustering be subject to a conservation easement enforceable by the Highlands Council and at least one of the following: the appropriate municipality, the County Agriculture Development Board, the State Agriculture Development Committee, or Green Acres.

Objective 3A6d Where the preserved land in the cluster project area is preserved for agricultural purposes, require continued agricultural viability of the agricultural land and the implementation of best management practices through the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan, including development and implementation of a Farm

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Conservation Plan focused on the protection of soil and water resources and prepared by the USDA Natural Resources Conservation Service or appropriate NJDA staff and approved by the local Soil Conservation District (SCD).

Policy 3C1 To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in an Agricultural Resource Area within the Protection Zone and the Preservation Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the preservation of agricultural lands within the Agricultural Resource Area.

Policy 6B1 To limit through Plan Conformance, local development review and Highlands Project Review, to the maximum extent permitted by law, development and use of undeveloped lands that are critical to protect, restore, or enhance sensitive environmental resources of the Highlands Region, including but not limited to Forests, Critical Habitat, Highlands Open Waters and their buffers, Riparian Areas, Steep Slopes, Prime Ground Water Recharge Areas, Wellhead Protection Areas, and Agricultural Resource Areas.

Objective 6B1e Prevent the extension or creation of water and wastewater utility services in the Protection Zone, Conservation Zone and Environmentally Constrained Sub-zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the protection of agricultural and environmentally sensitive resources.

Objective 6B1f Cluster and conservation design development plans and regulations shall incorporate smart growth design principles including but not limited to: locating development adjacent to existing infrastructure such as water, wastewater, transportation, and public facilities to limit the degree of new impervious surface, and permitting smaller residential lots in order to incorporate community open space and existing natural resources into the design.

Objective 6B7a Center based development initiatives should be planned within the Existing Community Zone to meet minimum density thresholds consistent with the State Development and Redevelopment Plan. Higher densities of five dwelling units and above are encouraged in areas designated as TDR Receiving Zones where benefits under the Highlands Act will be applied. Attainment of these density thresholds is discretionary, and shall be consistent with the resource and capacity goals and requirements in this plan. Centers in the Protection Zone and Conservation Zone, potentially including clustered development, shall be at densities appropriate to the zone, the community character and the use of septic systems or community wastewater systems.

Policy 6D3 To encourage owners of lands which are eligible for exemptions under the Highlands Act to voluntarily offer their land for acquisition, participate in the TDR program, or engage in contiguous or non-contiguous clustering in cooperation with other exempt landowners, and comply with standards and

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criteria which protect the land and water resources of the Highlands Region from any adverse impacts.

Objective 6G1b Adopt municipal and county master plans and land development regulations which require that cluster developments preserve in perpetuity for environmental protection or agricultural purposes at least 80 percent of the project area, and to the maximum extent feasible that the developed portion of the project area (i.e., not including wetlands, open water buffers, recreational lands) is no more than 10 percent if served by a public or community on-site wastewater system.

Policy 6G2 To require conforming municipalities and counties to include site development programs, such as clustering to preserve land in perpetuity for environmental protection or agricultural purposes.

Objective 6N1c Implement flexible site development review programs that allow for adjustments such as reduction of minimum setbacks, modification of uniform road frontage requirements, increase in maximum permitted height or allowing non-contiguous clustering of development entitlements where necessary to mitigate or eliminate adverse impacts on Highlands natural resources.

Objective 6N1g Restrict site disturbance, clearing and grading to the minimum necessary to make reasonable use of the designated building envelope for the parcel proposed for development.

Objective 7G1b Establish municipal clustering programs which allow for the clustering of development rights from willing landowners whose property is entitled to an exemption under the Highlands Act, for both contiguous and non-contiguous properties, so as to minimize the impact of such exempted development on the ecological integrity of the Highlands Region or the fiscal integrity of the municipality.



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Conservation Plans and Best Management Practices

The Final Draft Regional Master Plan (RMP) include objectives that require specific conservation plans when a portion of an existing area of agricultural land is preserved and the remainder is proposed for clustered residential development in the Agricultural Resource Area (Objective 3A10c), and for clustered development in general (Obj. 2J4b): "Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service." The Highlands Act states the impervious cover is measured after the date of enactment of the Act, so it would not include impervious cover prior to August 10, 2004. The 3% and 9% are established by the Highlands Act for agricultural development, but may not be the most appropriate triggers with regard to Objectives 2J4b and 3A10c to require best management practices that enhance and restore natural resources in the Highlands Region. In determining appropriate triggers the preservation of the agricultural landscape and the sustainability of the agricultural industry must be considered.

The purpose of this white paper is to define the Farm Conservation Plan and the Resource Management System Plan and the differences between these two plans. In addition, the paper examines if the 3% and 9% impervious cover triggers are appropriate, the best management practices (BMPs) currently used in the region, and the difference in pollutant levels when these plans are implemented properly. If the conservation plans and the impervious cover limits are not appropriate targets for enhancing and restoring natural resources in the Highlands Region, the RMP should provide new language for goals, policies, and objectives and promote ways to encourage BMPs. Council staff recommends that, for the purposes of Objective 2J4b and similar objectives regarding non-agricultural compact or clustered development, the approval of the cluster development should trigger development and implementation of a Farm Conservation Plan that is focused on water and soil resource protection, to address the issues of greatest concern for the Highlands Region.

Farm Conservation Plan (FCP) vs. Resource Management System Plan (RMSP)

There are two types of conservation plans: a Farmland Conservation Plan (FCP) and a Resource Management System Plan (RMSP). Conservation plans are developed to make the farm eligible for United States Department of Agriculture (USDA) cost-share grants, for farms preserved through the State Agriculture Development Committee (SADC) Farmland Preservation Program, and for farms that use USDA Natural Resources Conservation Service (NRCS) Farm and Ranchland Protection Program (FRPP) monies

through preservation. The basic difference between an FCP and an RMSP is the FCP will not address the following five resources on the entire farm: soil, water, air, animals, and plants (SWAAP).

Typically the FCP will address soil erosion on the farm to meet the requirements of the USDA Farm Program. The USDA Farm Program compliance allows a higher erosion level than the sustainable erosion rate, which the New Jersey office of the Natural Resources Conservation Service (NJNRCS) refers to as 'T'. An example of a typical conservation plan would examine a farm with a poor erosion rate. Through the implementation of the FCP the farmer would employ a number of practices to get closer to, but not meet the 'T' (sustainable erosion rate). The farm would then meet the minimum compliance for USDA programs, but off-site erosion problems would still exist.

The NJNRCS uses New Jersey Quality Criteria for the SWAAP resources. Each resource has the following number of criteria assigned to it: soil (seventeen), water (twenty-five), air (twelve), animal (eleven), and plant (six). Some of the criteria mimic the national criteria and other criteria are specific to New Jersey, such as the water quantity and water quality criteria (300' buffer) specific to the Highlands Preservation Area. Out of seventy-one criteria, six are specific to New Jersey and the remaining criteria are based on national criteria. When a conservation plan is developed that meets the New Jersey Quality Criteria for all five resources, the plan is considered an RMSP. The requirements for the RMSP are much more stringent, the plan is more complex, and implementation is financially taxing for the owner.

NJNRCS considers the financial hardship on a farming operation when deciding to develop an FCP or an RMSP. The goal of the NRCS is to "develop the most optimal conservation system for an operation" and maintain or enhance the financial sustainability of the operation. The development of the conservation plan and the final paper copy (FCP or RMSP) is at no cost to the farmer. The greatest cost is plan implementation. Plan implementation can span several years and is dependant on a schedule of target dates to develop and implement the plan's conservation practices. The USDA has several cost-share grant programs administered by the NRCS and the Farm Service Agency (FSA) to subsidize the cost of conservation plan implementation. State cost-share funding may also be used for this purpose, and in one case a water purveyor (NJ Water Supply Authority) has provided cost-share funding for RMSP implementation.

FCP vs. RMSP - Development and Implementation

There is no uniform template for the FCP or the RMSP; however there is a standard approach. A computer program allows the NRCS to populate fields and create a plan unique to each farm. Therefore, no two plans are exactly alike. Once the plan is created and printed for the file, it might not be revisited again unless there is a USDA conservation program cost-share contract associated with the plan or if the farm is participating in the SADC Farmland Preservation Program. This essentially means the plan may sit in a drawer and not be re-evaluated. There is no NJNRCS procedure in place to re-evaluate the plan for implementation status. Only a select few farms have cost-share grants (data presented below) or participate in farmland preservation programs.

There is no NJNRCS database summarizing information about the conservation plan or agricultural uses, such as the type of plan, requirements to implement the plan, or the location, size, or type of farming operation. This is due to several factors. The privacy restrictions of the Farm Security Rural Investment Act of 2002 requires NRCS to keep these plans confidential, though applications for cost-share funds from State or other sources may include one or more parts of the plans. For instance, USDA statistics on several of the conservation programs for best management practices will not have information for entire states. While most of the data exists for New Jersey, specific counties are excluded and specific data about each individual plan is not available to the general public. The second factor is that the NJNRCS does not have the funding or resources to track conservation plan status or implementation.

FCP vs. RMSP - Quantifying Benefits and Differences in Pollutants

How can the benefits from implementation of these plans be measured in the Highlands, New Jersey, or on a national level? To answer this question, four aspects are analyzed in the Highlands: the types of agriculture in the Highlands, the impervious cover typically associated with it, the types of conservation programs, and the degree to which the programs are being used. The Highlands Act and the RMP require an FCP with increased impervious cover between 3% and 9%, and a RMSP with increased impervious cover greater than 9%. The Highlands Act states the impervious cover is measured after the date of enactment of the Act, so it would not include impervious cover prior to August 10, 2004. These thresholds apply to agricultural development, and may not be the best target points within the Highlands Region for triggering plans related to cluster development.

Agriculture Types and Impervious Cover

The NJNRCS stated there are few farms in the Highlands Region with high impervious cover. Agricultural uses associated with high impervious cover include nurseries or greenhouse operations, equine (farms for breeding, training, and boarding horses), semi-confined or confined feeding operations (cattle, poultry, and specialty farms), and aquaculture (fish hatcheries). A table generated from NJDEP 2002 LULC data in the Highlands Sustainable Agriculture technical report illustrates the breakdown of agricultural uses in the region (see Page 12). Out of approximately 118,216 acres of agricultural land in the Highlands (805,682 acres in NJ) approximately 7.5% is attributed to uses that would have a high impervious cover. The 7.5% as shown in the table below also includes other uses such as orchards and experimental fields, so the percentage may be closer to approximately 5% to 6%. The NJDA prepared figures by Highland's municipalities for agricultural land use based on the New Jersey Farmland Assessment Summary for the 2004 tax year. Out of approximately 119,571 acres of agricultural land under farmland assessment in the Highlands, equine land use accounted for 0.42% or 922 acres. The breakdown of other agricultural land uses with high impervious cover was not available.

There are few statistics in the Region noting the impervious cover on farms. In 2005, in response to the SADC equine rules, Morris County did a study on the equine operations in the County. The study covered preserved and non-preserved equine farms to determine impervious cover figures. Out of twenty-three equine farms, only four farms had impervious cover above 3%. The three of the farms with impervious cover above 3% ranged from 3.5% to 3.8% and the fourth had the highest impervious cover rate at 5.8%.

The average size of a farm in the Highlands Region is 55 acres. A typical 55-acre farm including a residence (2-car garage/driveway) and two small general purpose barns would have an impervious coverage of approximately 0.33% (8,000 sq. ft.). Adding a very large general purpose hay barn or pole barn (20,000 sq. ft.) would be approximately 0.83% new impervious coverage. A 25-acre farm with identical structures as the 55-acre farm would have approximately 0.73% (8,000 sq. ft.) existing impervious cover and 1.84% (20,000 sq. ft.) new impervious cover to add a very large general purpose hay barn. The largest type of agricultural structure would be a general purpose barn or livestock barn for high-intensity crop production for a feeding operation (150,000 sq. ft. cattle/poultry). A 25-acre farm with this type of structure would yield 13.76% additional impervious cover and a 55-acre farm would yield 6.25% impervious cover. The Highlands Region has minimal to no high-density agricultural uses; for example, confined feeding operations at 0.17% of the agricultural land base.

If the farmer constructed two 20,000 sq. ft. barns this would increase impervious cover more than 3% on a 25-acre farm. The types of agriculture in the Highlands largely don't require multiple structures of this size. The majority of the agricultural land in the region under the 2002 LULC data is classified as cropland/pastureland at approximately 100,824 acres or 85%. The NJDA prepared figures by Highland's municipalities for agricultural land use based on the New Jersey Farmland Assessment Summary for the 2004 tax year. The total pastureland/cropland under farmland assessment for the tax year of 2004 was

118,649 acres.¹ Under the above impervious cover scenarios, assuming the farm unit constructs a very large general purpose hay barn (maximum size 20,000 sq. ft.), the impervious cover will not exceed 3% to trigger an FCP. These calculations used maximum square footage figures from the New Jersey Real Property Manual for appraisals. See the table below with impervious surface calculations for agricultural structures (page 11).

The primary agricultural development that would add more than 3% or 9% impervious cover will be greenhouse operations, high-intensity feeding operations, and equine operations on small farm parcels.

If the impervious cover limits of 3% and 9% are not met, few farms will be required to develop conservation plans and implement best management practices (BMPs) that maintain and enhance soil and water quality in the Region. Farms in the region will need incentives to develop conservation plans and implement BMPs, such as a tax credit program. Maryland and Pennsylvania have similar programs. Technical support and grant funding opportunities would also be important. With the USDA privacy restrictions these programs would need to be administered by the NRCS or the Farm Services Agency (FSA), or a non-profit such as the North Jersey Resource Conservation & Development (NJRC&D). To explore the use and benefits of best management practices in New Jersey and the Highlands the section below analyzes New Jersey farms enrolled in four significant USDA Conservation Programs.

New Jersey Enrollment in USDA Conservation Programs

There are a number of USDA Conservation Programs authorized through the Farm Bill. These programs are administered by the NRCS and the FSA. Data on many of these programs are limited due to the privacy restrictions required by the Farm Security and Rural Investment Act of 2002. The four most significant programs in terms of funding, acreage, and best management practices are the Conservation Security Program (CSP), the Conservation Reserve Program (CRP), the Conservation Reserve Enhancement Program (CREP), and the Wildlife Habitat Incentive Program (WHIP). The statistics below are broken down between national, the northeastern states (CT, DE, ME, MD, MA, NH, NJ, NY, PA, RI, VT, MA), and New Jersey. Federal funding for all of these programs fluctuates due to budget constraints and interest in the programs. Funding for these programs is allocated through annual payments based on five to ten year contracts.

Conservation Security Program (CSP)

The first green payment program created through the 2002 Farm Bill is the CSP administered by the USDA NRCS. CSP rewards farmers who use best management practices (BMPs) on their farms and creates incentives for others to develop these practices to protect soil and water quality. Only specific watersheds are eligible for the funding. This program was not launched until 2004, so the first year of funding began in 2005. Funding allocation in New Jersey was allocated to the Cohansey-Maurice Watershed (South Jersey) in 2005, the Raritan Watershed in 2006, and the Lower Delaware in 2007. The allocations are based on the budget for this program, but also on the interest and participation in these areas. There are approximately 6,144 acres currently enrolled in CSP in the Cohansey-Maurice Watershed and the Raritan Watershed.

In 2005 out of approximately \$146 Million (M) payments approved nationwide, \$7 M (4.8%) was allocated to the northeastern states and \$57,397 (0.82%) to New Jersey (NJ). The northeastern states had 197,036 acres enrolled or 1.9% of the total acreage (9.9 M acres) enrolled nationwide. The Cohansey-Maurice Watershed had 820 acres enrolled in 2005 or 0.42% of the total northeast acreage. In 2006 out of \$45 M payments approved nationwide, \$6 M (13%) was allocated to the northeastern states, and \$104,464 (0.82%) to NJ. The northeastern states had 203,441 acres enrolled or 5.6% of the total acreage (3.6 M acres) enrolled nationwide. The Raritan Watershed had 5,324 acres enrolled in 2006 or 2.6% of the total northeast acreage. In 2007 approximately \$237 M payments were approved, \$12.6 M to the northeastern states (5.3%), and \$168,052 (0.82%) to NJ. There are no acreage figures readily available for 2007, but of the total acreage

¹ This figure includes modified agricultural wetlands; a total percentage of cropland/pastureland to the total agricultural land use is not available.

enrolled nationwide from 2005 through 2006 (13.5 M acres) only 2.96% is enrolled in the northeastern states and 0.05% in New Jersey.

In the northeast, New Jersey is consistent for allocation and acreage with Vermont and New Hampshire. Maryland, Pennsylvania, and New York have the highest allocations, but also have a much larger amount of agricultural acreage. The USDA NRCS data on New Jersey are not available by county, but the 2006 allocation to the Raritan Watershed included eighteen contracts distributed in the following Highlands counties: eight in Hunterdon County (2,497 acres), three in Morris County (550 acres), and two in Somerset County (2,032 acres). The distribution in New Jersey as compared to the northeast is relatively low in allocations and acreage and only covers the counties in the Raritan Watershed (Hunterdon, Mercer, Middlesex, Monmouth, Morris, Somerset, and Union). Therefore the program is not available to several Highlands counties including Warren County, which has the largest amount of cropland/pastureland (45%) of the total Highlands Region.

Conservation Reserve Program (CRP)

CRP provides cost-share assistance to farmers that establish long-term resource conservation mechanisms on eligible agricultural land and is administered by the New Jersey Office of the FSA. The CRP began in 1987 and seeks to protect topsoil from erosion by reducing water runoff and sedimentation. There are approximately 2,253 acres of agricultural land currently enrolled in New Jersey.

In 2005 out of approximately \$1.8 Billion (B) payments approved nationwide, \$37 M (2.1%) were allocated to the northeastern states and \$120,000 (0.69%) to NJ. The northeastern states had 385,045 acres enrolled or 1.1% of the total acreage (34.9 M acres) enrolled nationwide. New Jersey had 2,295 or 0.56% of the total northeast acreage. In 2006 out of \$1.8 B payments approved, \$44 M (2.4%) to the northeastern states, and \$303,000 (0.69%) to NJ. New Jersey had 2,535 or 0.56% of the total northeast acreage. No summary figures are readily available for 2007.

As of February 2008 approximately \$1.8 B payments were approved nationwide, \$38 M to the northeastern states (2.2%), and \$138,000 (0.69%) to NJ. In the northeast New Jersey is consistent for allocation and acreage with Vermont. Maryland, Pennsylvania, and New York have the highest allocations. The USDA FSA data on New Jersey is presented by county, but much of the county data is kept confidential. Of the total 2,253 acres enrolled in the CRP as of February 2008 four Highlands counties have active contracts: Hunterdon County (1,250 acres), Somerset County (169 acres), Sussex (29 acres), and Warren (105 acres). Again the distribution within these counties is low, especially for Warren which occupies 45% of the cropland/pastureland in the Highlands Region. CRP enrollment tends to be low in high-cost states due to limitations on the amount of rent available per acre.

Conservation Reserve Enhancement Program (CREP)

CREP is a subset of the CRP and also administered by the FSA. Land is placed under a rental contract or under a permanent easement with a contract agreement to reduce non-point source impairment through the preservation of stream buffers and implementation of conservation practices on existing farmland. There are approximately 399 acres of agricultural land currently enrolled in New Jersey. The CREP relies on more advanced levels and methods of conservation than CRP or CSP and requires a greater commitment from the farmer. CREP has higher rental schedules than CRP (through funding from NJDA and NJDEP) and provides funding for implementation of stream buffers.

In 2005 out of approximately \$81 M payments approved nationwide, \$25 M (31%) were allocated to the northeastern states and \$2,000 (0.10%) to NJ. The northeastern states had 225,409 acres enrolled or 33% of the total acreage (675,977 acres) enrolled nationwide. New Jersey had 15 acres or 0.14% of the total northeast acreage. In 2006 out of \$100 M payments approved, \$28 M (28%) to the northeastern states, and \$28,000 (0.10%) to NJ. The northeastern states had 252,281 acres enrolled or 30% of the total acreage (831,577 acres) enrolled nationwide. New Jersey had 215 acres or 0.14% of the total northeast acreage. No

summary figures are available for 2007. As of February 2008 approximately \$135 M payments approved, \$32 M in the northeastern states (24%), and \$53,000 (0.10%) to NJ. The northeastern states had 285,718 acres enrolled or 26% of the total acreage (1.1 M acres) enrolled nationwide. New Jersey had 399 acres or 0.14% of the total northeast acreage.

In the northeast New Jersey has the lowest funding allocation and acreage for the CREP with the exception of the states that do not participate: Connecticut, Delaware, Massachusetts, and New Hampshire. Maryland, Pennsylvania, and New York have the highest allocations and Vermont has about 1,000 acres enrolled. The USDA FSA figures on New Jersey are presented by county, but much of the county data is kept confidential. Of the total 399 acres enrolled in the CREP as of February 2008, only two Highlands counties have active contracts: Hunterdon County (12 acres) and Warren (16 acres). The majority of the acreage (324 acres) is in Salem County. The participation in this program is significantly low in New Jersey as compared to the other northeastern states. The low figures in New Jersey may be due to CREP being a more stringent program that addresses high priority conservation issues. The NJ Office of the FSA has also been slower to promote and develop this program than other states, such as Maryland. However, it is pertinent in the Highlands Region that these programs are incentivized and used much more frequently.

Wildlife Habitat Incentives Program (WHIP)

NRCS administers the WHIP and assists landowners through funding and technical assistance with habitat restoration and management activities specifically targeting fish and wildlife, including threatened and endangered species. WHIP is one of the most popular programs in New Jersey and has been widely accepted and highly effective throughout the country, because it provides benefits for protecting habitat on land that requires less cultivation. However, reports are not as readily available on WHIP as the other programs. Allocation history is only published by state and it would require manipulation to understand how New Jersey ranks amongst the other northeastern states.

In New Jersey sixteen out of the twenty-one counties participate in WHIP and all of the Highlands counties participate with the exception of Bergen and Passaic. Only figures for 2004 and 2005 are available by county. The allocations for 2004 were approximately \$360,500 and the Highlands counties accounted for 65% or \$236,000 of the allocation. In 2005 there was approximately \$348,000 allocated to New Jersey and the Highlands counties accounted for 66% or \$230,000. The funding allocations for New Jersey increased significantly in 2006 (approximately \$750,000), but the acreage decreased. No exact acreage numbers are available.

The majority of these USDA cost-share conservation programs are relatively new and New Jersey has increased the acreage enrolled in these programs in the last few years, except for CREP which has substantially low acreage enrolled. However, the funding and acreage at the northeastern level and the nationwide level are staggering compared to the percentages attributed to New Jersey. With the exception of WHIP, farms in only a few Highlands counties, mainly Hunterdon, are taking advantage of these programs. Warren County has the highest percentage of cropland/pastureland, (45% or 44,758 acres) 2002 LULC figures and (46% or 54,017 acres) 2004 Farmland Assessment figures, in the Highlands Region and has farmland enrolled in CRP, CREP, and WHIP. Only 121 acres are enrolled in Warren County in the CRP and CREP. Hunterdon County has the second largest amount of cropland/pastureland, (29% or 29,098 acres) 2002 LULC figures and (26% or 31,231 acres) 2004 Farmland Assessment figures, in the Highlands Region and is participating in all of the programs, but only 3,759 acres are enrolled in the entire county in the CSP, CRP, and CREP.

Pennsylvania, Maryland, and New York are the leaders in these programs in the northeast and have significantly more agricultural land. New Jersey is one of the leaders in the nation in the preservation of the agricultural landscape, and is significantly ahead of all the northeastern states with the exception of Maryland, Pennsylvania, and New York. The USDA conservation programs need greater promotion throughout New Jersey. One specific roadblock in New Jersey is the shortage of staff to promote the

programs. Some of the programs have sufficient implementation funds, but lack funding for technical support; NJDEP and other entities have been providing funds for this purpose, but resources are still limited.

USDA NRCS Natural Resources Inventory (NRI)

The NRI is a national statistical survey of data on natural resource conditions and trends on all public (includes state and local governments) and privately owned non-federal land in the United States. Several legislative acts authorize the NRI survey. The NRI is used to develop national conservation policies and programs and serves as a basis for the USDA NRCS/FSA cost-share programs and the CEAP described below.

Data have been compiled in five-year periods from 1977 through 1997. The NRI data include total surface area by land cover/use by state and includes survey data from approximately 800,000 sample sites. Starting in 1997, data were collected annually and are available through 2003. Annual data are only collected on approximately 25% of the 800,000 sample sites. The locations of these sites are kept confidential and not released to the public due to privacy restrictions. Data are collected through remote-sensing and on-site field investigations. The survey data are then analyzed to develop trends for natural resources, most predominantly soil and water.

USDA NRCS Conservation Effects Assessment Project (CEAP)

In 2003 the USDA launched the CEAP, a multi-agency study to quantify the environmental effects of conservation practices used by private landowners participating in selected USDA NRCS/FSA conservation programs. CEAP has three components and uses NRI data and watershed modeling methods to quantify the effects of conservation practices. The first component is a national assessment to quantify the benefits of conservation practices associated with USDA conservation programs. The second component consists of a series of watershed assessment studies. Watersheds were selected nationwide and conservation practices in these watersheds are being studied to develop a framework to evaluate and improve the performance of national assessment models. The third component will develop an index of references on conservation programs.

Prior to the development of this study in 2003, there were no national studies to quantify the benefits of conservation plans and programs since a similar but less detailed project in the 1980's. The CEAP described below is the first of its kind. No watersheds in New Jersey are part of this national study, mainly due to the location of the NRI sample sites. However, the North Jersey Resource Conservation and Development Council (NJRC&D) has recently applied for a grant from the USDA to undertake such a study in the North Jersey region. Data collection has recently begun in many of these studies and will continue over many years. The bulk of the CEAP watershed studies are in the Midwest. There are approximately thirty-seven watershed studies and fourteen benchmark watershed studies. The purpose of the fourteen benchmark watersheds studies is to provide a more in-depth assessment of soil, water, air quality, and wildlife habitat; and create a framework for national assessment models. Several of the benchmark watershed studies received grant funding in 2006 and 2007; therefore only preliminary results are available. The NJ NRCS was contacted to isolate CEAP watershed studies that could be similar to the Highlands Region. Three studies were identified: Choptank River Watershed in Maryland, Town Brook Watershed in New York, and Spring Creek in Pennsylvania.

Choptank River Watershed (CRW), Maryland

A major tributary of the Chesapeake Bay, the Choptank River is located on the Delmarva Peninsula and spans 675 square miles (580,000 acres). The CRW is one of the fourteen benchmark studies and data collection began in 2006 and will sunset 2011. Agricultural use accounts for 58% of the CRW and the remaining land uses are urban (9%) and forested (33%). The types of agricultural use are cover crops (approximately 40% corn and 40% soybeans, remainder wheat and barley) and poultry industry confined feeding operations. Portions of the Choptank River have been identified as an impaired water body under the Clean Water Act for a high level of nutrients and sediments. Several stakeholders are involved in this

process including the University of Maryland, NRCS, National Oceanic and Atmospheric Administration (NOAA), US EPA, and the Maryland Department of Agriculture (MDA). For this study NRCS is collecting individual datasets at the county level for the CSP, CRP, and CREP.

The study is using the USDA Agricultural Research Service (ARS) AnnAGNPS REMM water quality model to quantify the effects of riparian buffers, cover crops, and nutrient management on water quality. AnnAGNPS REMM stands for Annualized Agriculture Non-Point Source, Riparian Ecosystem Management Model. The model requires climate data and parameters for the physical watershed, land use, soil, and management data. After data are collected and entered into the model, the model can determine which conservation practices and what combination of conservation practices will reduce nitrogen loads and establish Total Maximum Daily Loads (TMDLs). The model can be used to create a planning tool that depicts Best Management Practice (BMP) placement in the landscape. For instance, winter cover crops were shown to improve water quality within the CRW. In 2006 the MDA implemented a state-wide commodities winter grain/cover crop program allowing grain harvest, in addition to the traditional cover crop program without harvest. Although the distribution of agricultural land in this watershed is much greater than in the Highlands Region, the method of study would be compatible with the Highlands to determine how nitrogen loads are being reduced by BMPs and the specific types of BMPs that should be implemented to improve water, soil, and air quality.

Town Brook Watershed (TBW), New York

The TBW lies within the Upper West Branch of the Delaware River and drains into the Cannonsville Reservoir, which is a major part of New York City's drinking water supply system. TBW is also one of the fourteen benchmark studies and is substantially smaller than Choptank at 14.3 square miles (9,143 acres). Land use in the watershed consists of 49% agro-forestry, 48% cropland (2% corn and alfalfa, 48% pasture and hay), and 1% developed. There are approximately 230 dairy (2/3) and beef (1/3) animal feeding operations (confined and semi-confined). The Cannonsville Reservoir is designated as phosphorus-restricted because of algal blooms, which interfere with non-filtered water treatment. The TBW is also participating in Section 319 of the Clean Water Act – Nonpoint Source Pollution Program. Partners in this collaboration include NRCS, ARS, US Geological Survey, Delaware County Soil and Water Conservation Districts, the NYC DEP and the NY State DEP, Cornell University, and the Watershed Agricultural Council (WAC) - a non-profit supporting the NYC watershed region. The success of this project and others is highly dependant on collaboration between agencies; \$750,000 has been provided through New York State to ARS from its Safe Drinking Water Act funds. Studies on this watershed began in 2003 and will be completed in July 2008. There was an interim progress report available outlining progress in the TBW.

The study is using the USDA ARS Soil and Water Assessment Tool (SWAT) watershed manual to evaluate areas in the watershed where phosphorus levels and erosion levels can be lowered at minimal costs through BMPs. New York City is supporting a 100% cost-share program to implement BMPs through a whole-farm planning process supported by the WAC and Delaware County. Of the 230 feeding operations, the majority of the stock is concentrated in seven primary farms. The seven primary farms are all enrolled in CREP and/or Environmental Quality Incentives Programs (EQIP). Since the whole-farm program was instituted approximately 160 out of the 230 (70%) feeding operations are also enrolled in the CREP and/or EQIP. WAC has set a goal of participation for the program at 85% or 196 of the 230 farms. The main concerns associated with these farms are soil quality due to erosion from corn silage and water quality due to the high levels of phosphorus from the dairy farms. A critical component identified in the study is the sustainability and economic viability of these farms as they implement BMPs. Currently these farms are implementing eighteen different types of BMPs. All of the farms are under private ownership, but watershed planners have developed good working relationships with the farmers, which permits smooth implementation of BMPs in most instances.

Spring Creek Watershed (SCW), Pennsylvania

The SCW is centrally located in Centre County, Pennsylvania and the Spring Creek drains into the Susquehanna River. SCW is not one of the fourteen benchmark studies. Land use in the watershed consists of 41% forested, 52% agriculture (44% cover crops, 7% hay, 1% other grass), and 7% development (5% low-intensity, 2% high-intensity). There are approximately 1,215 farms (164,000 acres) and approximately half of the farms (600) have confined or semi-confined feeding operations (91% dairy and beef cattle the largest distribution). Information is not readily available on this project. Pennsylvania State University is compiling the data and collaborating with the USGS, NOAA, PA DEP, the Centre County Planning Office, the Clear Water Conservancy (CWC), and two Spring Creek non-profit organizations: the SCW Community, and the SCW Commission.

Similar to the other two studies above, SCW is analyzing stream condition relative to the implementation of nutrient management and conservation buffer BMPs. There were no preliminary results readily available for this study. However, long-term datasets are available to use in several different models to evaluate the effects of several types of BMPs. One of the major factors in all of these studies is to examine how implementation, maintenance, and performance of BMPs affect landowners and the viability of the farm unit. Although these three studies have a significant amount of feeding operations, the studies also have significant nitrate levels from the use of pesticides on cropland. The Highlands could use the ARS models developed through these projects to evaluate BMPs. New Jersey is not part of the CEAP, because there is a limited percent of site surveys being conducted across the country, only 25% of 800,000 sites annually.

Conclusion – Conservation Plans and Best Management Practices

Wells in the Highlands Region have been measured for shallow ground-water quality. Of the twenty-three wells in the Highlands, eight are in agricultural areas, six are undeveloped, and nine are in urban areas. Three of the eight (38%) of the wells in agricultural areas exceed the water standard of 10mg/L for nitrate plus nitrate. Pesticides were detected in seven out of eight (88%) of the wells in agricultural areas. These data provided direct evidence that shallow ground-water is being affected by nitrogen-based fertilizers in agricultural land areas within the Highlands. The approximate highest concentration of nitrates was less than 30 mg/L with a median around 10mg/L. Sewer-system leakage in urban areas is also considered a major source of nitrogen pollutant.

A paper published in 2007 by the magazine of *Food, Farm, and Resource Issues* estimated nitrate loadings for farms from approximately 120 to 135 lbs/acre using the NRCS Natural Resource Inventory and the Soil and Water Assessment Tool (SWAT) model. This figure is derived from what is applied and not the amount that moves below the root zone. If the pesticide is diluted only by drought recharge and the entire load goes past the root zone, the nitrate loadings would be between 1,600 and 1,800 mg/L. These figures were determined by entering the 120 to 135 lbs/acre figure, and a drought recharge assumption of 9.4 inches/year into the Trela-Douglas model. Crops can and do uptake more nitrate than they actually need. Using the same model to look at the mixed nitrate concentration of a 200 acre farm parcel; assuming a 40 acre cluster development with a maximum target nitrate concentration of 10 mg/L from septic systems and a 160 acre active farm, an impervious surface of 5.5% would result in 10 mg/L over the 40 acre developed area. If the mixed nitrate concentration of the 160 acre farm and 40 acre cluster is plotted against the nitrate concentration for the 200 acre farm parcel, the septic system input provides a net benefit once the agricultural concentration is above 10 mg/L, but above 10 mg/L already exceeds the Safe Drinking Water Standards. Therefore no net benefit would be realized. Although the Private Well Testing Act will ensure that no wells are used that exceed the 10 mg/L, one question that does occur regarding both clustered and non-clustered development in agricultural areas is whether the RMP should include special policies for well construction in these areas, to require that the wells tap aquifers at a depth or location that minimizes the potential for agricultural contamination.

Certain USDA conservation programs provide incentives for farmers applying lower levels of pesticides based on the actual amount crops require. The overview of the USDA conservation programs above shows

minimal acreage enrolled in New Jersey. These programs need to be encouraged throughout the Highlands. Currently, the USDA ARS Annualized Agriculture Non-Point Source, Riparian Ecosystem Management Model (AnnAGNPS REMM) and the USDA ARS SWAT watershed manual are not being used to evaluate farms in the Highlands Region. One proposal would be to examine cost effectiveness and reductions in pollutants for several farms in the Highlands Region. The AnnAGNPS REMM and the SWAT watershed manual could be used to determine the benefits of the BMPs, and what BMPs to apply to other farms in the Region. Warren County and Hunterdon County would be good models for this type of analysis, since these two counties include approximately 75% of the cropland/pastureland in the Region. The NJRC&D would be a good partner for this type of program, since they are formally supported by the NRCS and are familiar with the USDA NRCS/FSA cost-share programs. In addition privacy restrictions would prevent most stakeholders, except those affiliated with NRCS from collecting the data and reviewing the conservation plans.

If the run-off from impervious surface on an agricultural landscape is still a major issue the Farmland Conservation Plan could address a single resource concern such as excess water (water quantity). Since few, if any farms will exceed the 9% impervious cover trigger for a RMSP and few will trigger the 3% impervious cover trigger for an FCP, other alternatives to trigger these conservation plans should be evaluated. If the 3% and 9% triggers are not met, reducing pollutants from agricultural lands linked to a cluster will be a difficult task.

A Farm Conservation Plan is required when agriculture is preserved in perpetuity. The recommendation of this white paper would be to require the development and implementation of a USDA NRCS Farm Conservation Plan that focuses on the protection of water and soil resources, instead of the typical plan which focuses on soil resources. The language in the RMP goals, policies, and objectives, and the cluster program would be changed to reflect this recommendation. Once the RMP is adopted the Highlands Council staff should conduct further research and develop a grant program to analyze model farms, determine the benefits of BMPs on those farms, and identify what BMPs to apply to other farms in the Region. In order for implementation to be successful, there needs to be incentives for conservation plan implementation including grants or dedicated funding, technical assistance, and a tax credit program for best management practices.

In the cluster scenario, one option to fund implementation of the conservation plan is for the developer to create an escrow account. The escrow could also be funded from the homeowners that are part of the homeowner's association within the cluster. If the homeowner desires the view of the agricultural landscape, they should support the enhancement of the landscape with a minimal fee. New York City and New York State provide watershed funding in the Town Brook Watershed project. The New Jersey Water Supply Authority is currently working on a program with the NJ RC&D to assist farmers in providing 90% of the funding for implementation of conservation plans. The Authority would assist the landowner in maximizing federal and state funds and guarantee up to 90% of the funding. This model program has been put in place on several farms in Lebanon Township, Hunterdon County and could be translated to a regional scale to the South Branch Raritan watershed and the Spruce Run and Round Valley Reservoirs.

The Highlands Region has received national recognition. In order to protect and enhance the quality of the natural resources within the Region, best management practices (BMPs) are a necessity. Preliminary studies of the nitrate levels in the Region show the need for BMPs. Simultaneously, the viability of the agricultural industry must be protected and enhanced. Few conservation plans are being implemented in the Highlands and the farmers are not taking advantage of USDA cost-share programs to implement these plans. The Highlands Council must develop model examples for farm conservation plans and model examples of cost-effective implementation of BMPs. The goals, policies, and objectives and the programs in the RMP should reflect these issues and provide specific funding and incentives for the Highlands Region that will simultaneously sustain the agricultural industry and protect natural resources.

Impervious Surface Calculations - Agricultural Structures

Size of Farm (Acres)	Average				
	55	25	75	100	
Low Impervious Cover Use	55-acre	25-acre	75-acre	100-acre	
Cover Crops, 2 Large Barns	5,000	5,000	5,000	5,000	
residence + 2 car garage (3,500 sq. ft./2,500 foundation)	2,500	2,500	2,500	2,500	
driveway	500	500	500	500	
total square footage	8,000	8,000	8,000	8,000	
convert to acres:	0.1837	0.1837	0.1837	0.1837	
% Impervious Cover	0.33%	0.73%	0.24%	0.18%	
High Impervious Cover Use	55-acre	25-acre	75-acre	100-acre	
total square footage	10,000	10,000	10,000	10,000	
convert to acres:	0.2296	0.2296	0.2296	0.2296	
% Impervious Cover	0.42%	0.92%	0.31%	0.23%	
total square footage	20,000	20,000	20,000	20,000	
convert to acres:	0.4591	0.4591	0.4591	0.4591	
% Impervious Cover	0.83%	1.84%	0.61%	0.46%	
Adding the maximum size pole barn and hay barn (cover crops)	55-acre	25-acre	75-acre	100-acre	
total square footage	40,000	40,000	40,000	40,000	
convert to acres:	0.9183	0.9183	0.9183	0.9183	
% Impervious Cover	1.67%	3.67%	1.22%	0.92%	
Adding the maximum size stall barn, hay barn, riding arena (equine)	55-acre	25-acre	75-acre	100-acre	
total square footage	55,000	55,000	55,000	55,000	
convert to acres:	1.263	1.263	1.263	1.263	
% Impervious Cover	2.30%	5.05%	1.68%	1.26%	
NJ Real Property Manual	Square Footage	Acres	% on 55-Acres	% on 25-Acres	% on 75-Acres
Max General Purpose Barn (Class 150) High-Density Feeding Op	150,000	3.44	6.25%	13.76%	4.59%
Max Livestock Barn (Class 151) High-Density Feeding Op	150,000	3.44	6.25%	13.76%	4.59%
Max Size Farm Shed/Outbuildings	3,000	0.07	0.13%	0.28%	0.09%
Max size of a Stall Barn/Stable (cattle/equine)	15,000	0.34	0.63%	1.38%	0.46%
Max size of an Indoor Riding Arena (equine)	20,000	0.46	0.83%	1.84%	0.61%
Max size of a Turn Out Shed (equine)	720	0.02	0.03%	0.07%	0.02%
Max size of a General Purpose Hay Barn (Class PF 160)	20,000	0.46	0.83%	1.84%	0.61%
Max size of a Livestock Barn w/storage (Class 161)	20,000	0.46	0.83%	1.84%	0.61%
Max size of a Poultry House, Pole Barn	20,000	0.46	0.83%	1.84%	0.61%
Max size of a Greenhouse	10,000	0.23	0.42%	0.92%	0.31%
Temporary Seed Greenhouses (no max or min)					

NJDEP LULC Data for Agriculture by Type - 2002

County	Total Cropland/Pastureland	% Total	Total Wetlands	% Total	Total Former Ag Wetlands	% Total	Total Orchards, Vineyards, Nurseries, Horticulture	% Total	Total Confined Feeding Ops	% Total	Total Other (Equine, Dikes, Access Rds, Experimental Fields)	% Total
Bergen	98	0.10%	41	0.52%	0	0.00%	24	0.81%	0	0.00%	37	0.65%
Hunterdon	29,098	28.86%	1,063	13.48%	76	11.64%	1,094	36.72%	11	5.34%	1,681	29.62%
Morris	11,306	11.21%	798	10.12%	67	10.33%	642	21.56%	4	1.97%	987	17.38%
Passaic	158	0.16%	94	1.20%	2	0.38%	19	0.65%	0	0.00%	159	2.81%
Somerset	8,328	8.26%	268	3.40%	18	2.78%	179	6.00%	0	0.00%	671	11.82%
Sussex	7,079	7.02%	1,694	21.48%	256	39.43%	161	5.40%	4	2.13%	477	8.40%
Warren	44,758	44.39%	3,926	49.79%	230	35.44%	859	28.85%	184	90.57%	1,664	29.32%
Total	100,825	100.00%	7,885	100.00%	649	100.00%	2,978	100.00%	204	100.00%	5,676	100.00%

Tot Acres: 118,216

Agricultural Use % of Total Acres

Crop/Past: **85.29%** Wetlands: **6.67%** Former Wet: **0.55%** Orchard: **2.52%** Confined: **0.17%** Other: **4.80%** 100.00%

Approximate % Associated with High Impervious

Orchard/Confined/Equine **7.49%**

Approximate % Associated with Cropland (nutrient mgmnt/nitrogen load)

Crop/Pasture **85.29%**



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Water Supply and Wastewater Utility Service Area GPOs

Public comments to the Final Draft RMP raised several critical issues that made clear a need for significant clarifications and consolidation of policies and objectives related to the potential for creating or expanding public water supply infrastructure, public wastewater infrastructure, and community on-site wastewater systems. Comments suggested GPO changes regarding the following issues, which are followed by a summary of the recommended changes from Council staff. The extent of the changes and consolidation of language made it very difficult to provide a simple mark up of the existing text. Instead, a new draft of the GPOs is provided, with two columns to the right indicating the status (c = changed; nc = no change; d = deleted) and the original location of the concept addressed by the new policy or objective:

1. Clarify that the RMP policies and objectives regarding infrastructure in the Preservation Area are fully in conformance with the requirements of the Highlands Act;
 - The language at Policy 2I1 as revised consolidates the Preservation Area prohibitions for both water supply and wastewater infrastructure extensions except where it is exempt from the Highlands Act or a waiver is approved under N.J.A.C. 7:38. This language replaces Preservation Area language in the original Objective 2K5c regarding wastewater infrastructure, and adds language regarding water supply infrastructure. New objectives are included under Policy 2I1 to clarify the method by which the restrictions will be enforced, the effects of waivers, and the requirement for maximum protection of various Highlands resources where a waiver is approved.
2. Clarify how policies regarding Highlands resource areas (e.g., open water buffers, steep slopes, wetlands), and the Agricultural Resource Area and Forest Resource Area, apply.
 - Objectives 2J4a (for water supply) and 2K5c (for wastewater) as revised clarify infrastructure limits regarding specific types of sensitive Highlands environmental resources (where infrastructure is prohibited unless exempt or subject to a Highlands Act waiver), and the Agricultural and Forest Resource Areas (where infrastructure is prohibited except for cluster development plus the exemptions and waivers that apply in the Preservation Area). The previous wording was unclear regarding the intent.

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3. Ensure that projects to provide sewerage to areas with high density septic systems or public health and safety issues do not create additional environmental and public health issues, such as creating or exacerbating water availability deficits.
 - Objective 2K3c, as revised, includes more detailed language regarding the issue of public health and safety threats from septic systems, and includes language requiring that projects addressing these threats must “maximize the protection of sensitive environmental resources.” Further, the waiver provisions of N.J.A.C. 7:38 require that the waiver be for the minimum extent necessary to address the purpose of the waiver, and that six narrative criteria be met. Finally, policies of the RMP prohibit actions that create or exacerbate water availability deficits. Therefore, actions under this objective and waiver will be tightly constrained. Further details are in the draft RMP Program on “Water and Wastewater Utilities” in Chapter V.
4. Provide more detailed information on how “public health and safety issues” related to septic systems will be identified.
 - More detailed information on the process has been provided in the draft RMP Program on “Water and Wastewater Utilities” for Chapter V. The Highlands Council will develop detailed procedures for implementation of that program.
5. Clarify policies and objectives regarding infrastructure extensions within the Existing Community Zone, regarding areas outside of sensitive environmental areas and the Environmentally-Constrained Sub-zone.
 - Objectives 2J4c and 2K3e have been revised to clarify this issue, noting that extensions are allowable if capacity exists, the sensitive environmental areas and the Environmentally-Constrained Sub-zone are avoided, and all RMP policies are met. Where utility extensions in the ECZ are proposed that are not in the environmentally-constrained sub-zone, minimum densities apply to ensure efficient use of utility capacity. These extensions are not cluster development, and the development yields are not affected by septic system capacity or any other policies other than the minimums shown.
6. Clarify where affordable housing projects (where the affordable units exceed 10% of the total units) fit in the priority for use of available public water supply and wastewater utility capacity.
 - Existing utilities are located within the Existing Community Zone, and Objectives 2J4c and 2K3e have been revised, in part, to include affordable housing projects (where the affordable units exceed 10% of the total units) within the Existing Area Served as a higher priority for the use of remaining utility capacity (along with public health and safety projects, redevelopment and TDR Receiving Zones) than expansion of infrastructure to other parts of the Zone. In a related issue, Objective 6B1e as revised clarifies that the density requirement for center-based voluntary growth will be consistent with the State Development and Redevelopment Plan, and that the 5 DU/acre for TDR Receiving Zones applies only where the Highlands Act benefits for TDR programs will be used.
7. Clarify the policies and objectives regarding cluster development in the Planning Area that relies on public water supply infrastructure, public wastewater infrastructure or community on-site wastewater systems.

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- Objectives 2J4b and 2K3d as revised include language regarding the use of infrastructure within clusters in the Protection Zone, Conservation Zone and Environmentally-Constrained Sub-zones of the Planning Area, and specify (as a change from the Final Draft RMP) that between 80% and 90% of the project area be preserved where wastewater infrastructure or community on-site wastewater systems will be used. Otherwise, the 80% minimum from the Final Draft RMP is still recommended. Development yields for the clusters are based on the relevant septic system density for the project area (all affected properties that would either contain the cluster or be preserved as part of the cluster). As an example, if development density on septic systems in the Conservation Zone would allow one house per ten acres, and a 200 acre property is involved, then the 20 houses would need to be placed on no more than 40 acres if septic systems are used, but on no more than 20 acres if sewers are used. If two more adjacent parcels are added that total 200 acres, then the cluster would be 40 houses on no more than 40 acres with sewers, all of which could be placed on the initial property with the remainder of that property plus the two new parcels preserved. The concept also works with non-contiguous clustering (where all parcels are under one owner) or intra-municipal TDR (where the parcels are under various owners). Clustering of 1000 acres would yield 100 homes on no more than 100 acres with sewers. In each case, the density of 1 unit per acre is actually low for sewer service, even including roads, neighborhood parks, etc. This issue will be addressed in greater detail during the discussion on clusters.
8. Ensure that cluster development that uses agricultural preservation for the remaining lands will ensure continued agricultural viability and application of best management practices. Clarify the application of best management practices for the preserved agricultural lands.
- Objectives 2J4b and 2K3d as revised include language (as a change from the Final Draft RMP) requiring the development and implementation of Farm Conservation Plans that focus on the protection of water resources as a condition of approval. This issue will be addressed in greater detail during the discussion on clusters.
9. Clarify the priority for agricultural preservation versus cluster development.
- This issue will be addressed during the discussion on clusters, making clear that the highest priority is on preservation through easement or Highlands Development Credit purchases, and in the absence of those preservation methods, clustering.
10. Reduce redundancy among the policies and objectives, and to ensure that provisions with the same intent are worded in exactly the same manner to reduce confusion over meaning.
- Extensive consolidation of text, use of cross-references and new language is used to minimize redundancies and to avoid the need for excessive repetition of language.

Water and Wastewater Utility Service Area Policies and Objectives

Final RMP Proposed Language	Status*	Prior #
<p>Objective 1A2d Prohibit through Plan Conformance, local development review and Highlands Project Review the expansion or creation of public water supply systems or public wastewater collection and treatment systems or community-based on-site wastewater facilities into forested areas of the Forest Resource Area within the Planning Area except as provided for in Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and within the Preservation Area except as provided for in Policy 2I1 and Objectives 2I1a and 2I1b.</p>	c	1A2d
<p>Policy 2B7 To require through Plan Conformance, local development review, Highlands Project Review, and interagency coordination that proposed public water supply and wastewater service areas, water allocations and bulk water purchases will not directly or indirectly cause or contribute to a Net Water Availability deficit, and where feasible will help mitigate any existing deficit.</p>	c	2B7
<p>Objective 2B7a Wastewater Management Plans or amendments shall ensure that the proposed service area will not directly or indirectly cause or contribute to, or could help mitigate, a Net Water Availability deficit.</p>		2B7
<p>Objective 2B7b NJDEP Water Allocation decisions shall ensure that any new or increased water allocation permits do not result in significant reductions in safe yields for any water supply facility with an existing water allocation permit and NJDEP-approved safe yield.</p>	c	2B8e, 2B9f, 2B10h
<p>Objective 2H2a Prohibit land uses that have a significant potential to result in the discharge of pathogens (including but not limited to septic systems and engineered stormwater infiltration from surfaces with significant potential for contact with pathogenic contaminants) to ground water or to the land surface within a designated Tier 1 Wellhead Protection Area, such that they may degrade or contribute to the degradation of ground water quality. Require that the construction of sewer lines within Tier 1 of a Well Head Protection Area prevent seepage of untreated sewage into ground water.</p>	c	2H2a, 2K4c
<p>Policy 2I1 To prohibit the expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area unless approved through a Highlands Applicability Determination or a Highlands Preservation Area Approval with waiver pursuant to N.J.A.C. 7:38.</p>	c	2I1, 2K5c
<p>Objective 2I1a Designated sewer service areas in the Preservation Area shall be restricted to the Existing Area Served as of August 10, 2004, except to serve development that is approved through a Highlands Applicability Determination or a Highlands Preservation Area Approval with waiver pursuant to N.J.A.C. 7:38.</p>	c	2I1
<p>Objective 2I1b The expansion or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities in the Preservation Area as approved through a Highlands Preservation Area Approval with waiver pursuant to N.J.A.C. 7:38 shall maximize the protection of sensitive environmental resources including avoidance of Open Water buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural</p>	c	2K5c

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lands of Agricultural Resource Areas, Steep Slopes, Prime Ground Water Recharge Areas, and Critical Habitat Areas.		
Policy 2I2 To identify through Plan Conformance and Highlands Redevelopment Area designation procedures those lands of the Preservation Area that may be appropriate for the extension or creation of public water supply systems, public wastewater collection and treatment systems and community on-site treatment facilities for redevelopment that would meet the waiver requirements of N.J.A.C. 7:38.	c	2I2
Policy 2J1 To establish and maintain an inventory of Highlands Public Community Water System infrastructure, including developed parcels with current connections to existing utility service areas.	nc	2J1
Objective 2J1a The development and maintenance of an inventory of Existing Areas Served.		2J1a
Objective 2J1b The development and maintenance of an inventory of the service areas and capacity of Highlands Public Community Water Supply Systems, including a comprehensive data base of water utilities that are dependent on Current Deficit Areas or Existing Constrained Areas as a source of water, with estimates of the extent to which service area demands and water allocation permits may exceed available water.		2J1b, 2J5b
Objective 2J1c The development of an estimate of available water supply capacity for each Highlands Public Community Water Supply System.		2J1c
Objective 2J1d The identification of remaining available water supply system capacity to support regional growth opportunities within the Highlands Region.		2J1d
Policy 2J2 To ensure, through Plan Conformance and Highlands Project Review, that Highlands Public Community Water Systems conform with Policy 2B7.	c	2J2
Objective 2J2a Limit future water system demand and reduce existing demand where feasible by water systems that are dependent on Current Deficit Areas or Existing Constrained Areas as a source of water.	c	2J5c
Objective 2J2b Limit future water system demands to levels that will not create a Current Deficit Area where one does not currently exist.	c	2J5d
Policy 2J3 To identify, through Plan Conformance, the RMP Water Resources Science Agenda and other means, areas of the Highlands Region with existing or imminent threats to public health and safety from contaminated domestic and other on-site water supplies that are of sufficient scale to potentially justify the extension or creation of a public water supply.	c	2J3
Policy 2J4 To minimize, through Plan Conformance, local development review and Highlands Project Review, the creation or extension of public water supply systems within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area, and to allow for the creation or extension of public water supply systems where appropriate within the Existing Community Zone.	c	2J4
Objective 2J4a Prohibit new, expanded or extended public water systems within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below.	c	2J4a

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<p>For approvals regarding parts 1, 2 and 4, the project must maximize the protection of sensitive environmental resources such as Open Water buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat Areas. For approvals regarding part 3, the project must avoid disturbance of Open Water buffer areas, Riparian Areas, Steep Slopes and Critical Habitat Areas, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas, and Prime Ground Water Recharge Areas. The extension or creation of systems shall follow the requirements in Objective 2J4b (parts 2 and 3). The applicable purposes are:</p> <ol style="list-style-type: none"> 1. to address a documented existing or imminent threat to public health and safety from contaminated domestic and other on-site water supplies that is of sufficient scale to justify a public water supply and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety. Such needs shall have highest priority for allocation of existing system capacity; 2. to serve a designated Highlands Redevelopment Area; 3. to serve a cluster development that meets all requirements of Objective 2J4b; or 4. to avoid the taking of property without just compensation . 		
<p>Objective 2J4b Clustered development served by public water supply within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:</p> <ol style="list-style-type: none"> 1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in Agricultural Resource Areas pursuant to Policy 3A6; 2. Extension of an existing public water system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity; 3. Creation of a new public water system will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity; 4. The clustered development preserves in perpetuity for environmental protection or agriculture purposes the following portion of the project area: <ol style="list-style-type: none"> a. If served by septic systems, at least 80 percent; b. If served by a public or community on-site wastewater system, at least 80percent, and to the maximum extent feasible the developed portion of the project area (i.e. not including wetlands, open water buffers, recreational lands) is no more than 10 percent 5. Where the preserved land in the cluster project area is preserved for agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan requires continued agricultural viability of the agricultural land and the implementation of best management practices, including development and implementation of a USDA Natural Resources Conservation Service Farm Conservation Plan focused on protection of water resources. 	c	2J4b
<p>Objective 2J4c Allow the expansion or creation of public water systems within the Existing Community Zone of the Planning Area, other than the Environmentally-</p>		2J5a

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Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2J4a within the Existing Community Zone, or to serve new areas for development that meet all other requirements of the RMP. TDR Receiving Zones, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than expansion of public water service areas within this Zone.		
Objective 2J4d All development within the Highlands Region, in areas that are not served by public water systems, shall be at a density that can be supported by on-site wells. Where cluster development in the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster design in combination with the Agriculture Retention/Farmland Preservation Plan required by Objective 2J4b shall provide for best management practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands.	c	2J4c
Policy 2J5 and Objectives – moved to other Policies	d	
Policy 2J8 through Objective 2J8b	nc	
Objective 2J8c Require that new residential development served by public community water systems, except where also served by septic systems, be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space), to ensure cost-effective utility service.		2J8c (1 st one)
Objective 2J8d Require that new non-residential development served by public water systems, except where also served by septic systems, be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational lands) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.	c	2J8c (2 nd one)
Policy 2K1 and Objectives	nc	
Policy 2K2 To base projected demand for current needs, appropriate economic revitalization and opportunities for designated TDR Receiving Zones within Existing Areas Served on existing maximum three month demands plus an estimate of redevelopment needs based on either Highlands Council regional analyses or more detailed local analyses, to assess whether there is adequate treatment capacity to encourage redevelopment.	c	2K2
Policy 2K3 To provide adequate, appropriate, efficient and cost-effective wastewater management to all development in the Highlands Region, through Plan Conformance, local development review and Highlands Project Review.	c	2K5, 2K3
Objective 2K3a Areawide Water Quality Management Plan, including Wastewater Management Plan and project-specific amendments, shall be consistent with requirements of this Plan.	c	2K5f
Objective 2K3b Existing wastewater collection and treatments systems which are non-compliant with state water quality standards for wastewater treatment and effluent discharge shall be prohibited from collecting and treating additional	c	2K5e

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<p>wastewater until the treatment systems are fully compliant with State permit requirements.</p> <p>Objective 2K3c Prohibit new, expanded or extended public wastewater collection and treatment systems and community on-site treatment facilities within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area unless they are shown to be necessary for and are approved by the Highlands Council for one or more of the purposes listed below. For approvals regarding parts 1, 2 and 4, the project must maximize the protection of sensitive environmental resources such as Open Water buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas, Steep Slopes, Prime Ground Water Recharge Areas and Critical Habitat Areas. For approvals regarding part 3, the project must avoid disturbance of Open Water buffer areas, Riparian Areas, Steep Slopes and Critical Habitat Areas, and must minimize disturbance of the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas, and Prime Ground Water Recharge Areas. The choice of extension or creation of systems shall follow the requirements in Objective 2K3d (2 and 3). The applicable purposes are:</p> <ol style="list-style-type: none"> 1. to address a documented existing or imminent threat to public health and safety from a pattern of failing septic systems (where the failing systems cannot reasonably be addressed through rehabilitation or replacement) or highly concentrated septic systems, where the threat is of sufficient scale to justify a public wastewater collection and treatment system or community on-site treatment facility and where no alternative is feasible that would sufficiently assure long-term protection of public health and safety. To address other issues of public health and safety, such needs shall have highest priority for allocation of existing system capacity; 2. to serve a designated Highlands Redevelopment Area; 3. to serve a cluster development that meets all requirements of Objective 2K3d; or 4. to avoid the taking of property without just compensation . 	c	2K3a, 2K3b, 2K3c, 2K4a, 2K5a, 2K5c
<p>Objective 2K3d Clustered development served by a public wastewater collection and treatment system or community on-site treatment facility within the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be approved only if the following conditions are met:</p> <ol style="list-style-type: none"> 1. The development impacts are otherwise consistent with the requirements of the RMP, including provisions for mandatory clustering in Agricultural Resource Areas; 2. Extension of an existing public wastewater collection and treatment system will occur only where the cluster development is within or immediately adjacent to an Existing Area Served with available capacity; 3. Creation of a community on-site treatment facility will occur only where such development is not within or immediately adjacent to an Existing Area Served with available capacity, where the proposed system is designed, permitted and constructed at a capacity limited to the needs of the clustered development, and where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served; 	c	2K3d, 2K3f

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<p>4. The cluster development preserves at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes, and to the maximum extent feasible the developed portion of the project area (i.e. not including wetlands, open water buffers, and recreational lands) is no more than 10 percent.</p> <p>5. Where the preserved land in the cluster project area is preserved for agricultural purposes, the cluster development ordinance and an Agriculture Retention/Farmland Preservation Plan requires continued agricultural viability of the agricultural land and the implementation of best management practices, including development and implementation of a USDA Natural Resources Conservation Service Farm Conservation Plan focused on protection of water resources.</p>		
<p>Objective 2K3e Allow the expansion or creation of wastewater collection systems within the Existing Community Zone of the Planning Area, other than the Environmentally-Constrained Sub-zone, to serve lands which are appropriate for designated TDR Receiving Zones, infill or redevelopment, to meet needs and protection requirements equivalent to Objective 2K3c within the Existing Community Zone, or to serve new areas for development that meet all other requirements of the RMP. The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served. TDR Receiving Areas, where designated, affordable housing projects (where the affordable units exceed 10% of the total units), infill and redevelopment shall have higher priority for capacity than other developments requiring expansion of sewer service areas.</p>	c	2K4a, 2K4b
<p>Objective 2K3f All development within the Highlands Region, in areas which are not served by public wastewater collection and treatment system or community on-site treatment facility, shall be at a density that can be supported by septic systems under Goal 2L. Where cluster development in the Protection Zone, the Conservation Zone and the Environmentally-Constrained Sub-zones of the Planning Area shall be served by on-site wells, and the undeveloped land is preserved for agricultural purposes in perpetuity, the cluster design and the Agriculture Retention/Farmland Preservation Plan required by Objective 2K3d in combination shall include provisions for best management practices that protect the on-site wells from contamination resulting from agricultural practices and shall include provisions to minimize or reduce net pollutant loadings from the total project area including the preserved agricultural lands.</p>	c	2K3e
<p>Policy 2K4 -- moved or deleted as redundant. Objective 2K4c – Combined with 2H2a</p>	c	2K4
<p>Policy 2K5 -- moved or deleted as redundant.</p>	c	2K5
<p>Policy 2K6 To ensure the efficiency and cost-effectiveness of public wastewater collection and treatment systems, through Plan Conformance, local development review and Highlands Project Review.</p>	nc	2K6
<p>Objective 2K6a Require that new residential development served by public wastewater collection and treatment systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, and recreational space) to ensure cost-effective utility service.</p>	nc	2K6a

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Objective 2K6b Require that new non-residential development served by public wastewater collection and treatment systems be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.	nc	2K6b
Objective 2K6c Require the use of recycled or re-used water wherever possible including aesthetic purposes and non-potable purposes such as fountains, golf courses, and other recreational, commercial or agricultural uses.	c	2K5d
Policy 3C1 To prohibit through Plan Conformance, local development review and Highlands Project Review the development of additional water and wastewater infrastructure in a Agricultural Resource Area within the Protection and Conservation Zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the preservation of agricultural lands within the Agricultural Resource Area.	c	3C1
Policy 3C2 Delete – folded into 3C1	d	
Objective 6B3e Prevent the extension or creation of water and wastewater utility services in Protection Zone, Conservation Zone and Environmentally Constrained Sub-zones of the Planning Area, unless they meet the requirements of Policy 2J4 with Objectives 2J4a through 2J4d, and Policy 2K3 with Objectives 2K3a through 2K3e, and will maximize the protection of agricultural and environmentally sensitive resources.	c	6B1e
Objective 6B7a Center -based development initiatives that will rely upon public wastewater collection and treatment system or community on-site treatment facility should be planned within the Existing Community Zone to meet minimum density thresholds consistent with the State Development and Redevelopment Plan. Higher densities of five dwelling units and above are encouraged in areas designated as TDR Receiving Zones where benefits under the Highlands Act will be applied. Attainment of these density thresholds is discretionary, and shall be consistent with the resource and capacity goals and requirements in this plan. Centers in the Protection Zone and Conservation Zone, potentially including clustered development, shall be at densities appropriate to the zone, the community character and the use of septic systems or community wastewater systems.	c	6B7a
Policy 6J1 To encourage Preservation Area redevelopment of sites with 70% or greater impervious surfaces or a brownfield in areas designated by the Highlands Council as Highlands Redevelopment Areas in accordance with N.J.A.C 7:38-6.6.	nc	6J1
Policy 6J2 To encourage redevelopment activities in the Existing Community Zone in the Planning Area on sites that meet the Preservation Area redevelopment site designation criteria, <u>or are</u> grayfields and other previously developed lands that have adequate water, wastewater, transportation capacity and are appropriate for increased land use intensity or conversion to greenfields.	c	6J2
Policy 6J3 To encourage redevelopment activities in the Conservation and Protection Zones in the Planning Area on sites that meet the Preservation Area Highlands Redevelopment Area designation criteria, <u>or are</u> grayfields, and that have adequate water, wastewater, transportation capacity and are appropriate for increased land use intensity or conversion to greenfields.	nc	6J3

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Subpart d. Sustainable Development and Water Resources

The Highlands Regional Master Plan includes a variety of measures to ensure that future development is at densities necessary to remain within the carrying capacity of water resources for both quality and quantity, and to ensure that water supply and wastewater utility capacities are made available in ways that provide maximum regional benefit within the constraints of water availability and water quality protection, and are used in ways that provide cost-effective and efficient service.

GOAL 2I	LIMITATION OF THE EXPANSION OF WATER AND WASTEWATER INFRASTRUCTURE IN THE PRESERVATION AREA.
Policy 2I1	To ensure compliance with the statutory revocation of designated sewer service areas unless the wastewater collection systems had been installed by August 10, 2004, and unless extensions are warranted to address documented threats to public health and safety or are exempt from the Highlands Act.
Policy 2I2	To identify water and wastewater infrastructure necessary for appropriate and environmentally-sensitive redevelopment of Highlands Redevelopment Areas in the Preservation Area.
GOAL 2J	ALL EXISTING AND FUTURE DEVELOPMENT IN THE HIGHLANDS REGION THAT USE PUBLIC WATER SUPPLY SYSTEMS ARE SERVED BY ADEQUATE AND APPROPRIATE INFRASTRUCTURE.
Policy 2J1	To establish and maintain an inventory of Highlands Public Community Water System infrastructure, including developed parcels with current connections to existing utility service areas.
Objective 2J1a	The development and maintenance of an inventory of Existing Areas Served.
Objective 2J1b	The development and maintenance of an inventory of the service areas and capacity of Highlands Public Community Water Supply Systems.
Objective 2J1c	The development of an estimate of Available Water Supply Capacity for each Highlands Public Community Water Supply System.
Objective 2J1d	The identification of remaining available water supply system capacity to support regional growth opportunities within the Highlands Region.
Policy 2J2	To ensure, through Plan Conformance and Highlands Project Review, that the service areas, water allocation permits and bulk water purchases of Highlands Public Community Water Systems shall be limited such that the maximum monthly demand shall not exceed or contribute to an exceedance of the water availability of its source waters.
Policy 2J3	To identify potential opportunities for public water systems where domestic water supplies have been documented as a threat to public health due to source contamination.

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Policy 2J4	To minimize, through Plan Conformance, local development review and Highlands Project Review, the extension of public water supply systems within the Protection Zone and the Conservation Zone for the protection of water resources.
Objective 2J4a	Prohibit new, expanded or extended public water systems unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a designated Highlands Redevelopment Area, or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.
Objective 2J4b	Accommodate compact development served by existing or proposed public water systems only where such development is within or immediately adjacent to an existing service area and provides for the clustering or aggregation of development that will preserve at least 80 percent of the project area in perpetuity for environmental protection or agriculture purposes and the development impacts are otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.
Objective 2J4c	All development in areas which are not served by public water systems shall be at a density which can be supported by on-site domestic wells.
Policy 2J5	To allocate available water supply in the Existing Community Zone to provide for the maximum direct and indirect protection of water resources in the Highlands Region.
Objective 2J5a	The highest priority for the allocation of available utility capacity in Existing Community Zones shall be given to areas of regional growth opportunities that constitute designated Receiving Zones.
Objective 2J5b	Develop a comprehensive data base of water utilities that are dependent on Current Water Availability Deficit Areas or Existing Water Availability Constrained Areas as a source of water, with estimates of the extent to which service area demands and water allocation permits may exceed available water.
Objective 2J5c	Limit future water system demand and/or reducing existing demand by water systems that are dependent on Current Water Availability Deficit Areas or Existing Water Availability Constrained Areas as a source of water.
Objective 2J5d	Limit future water system demands to levels that will not cause a Current Water Availability Deficit where one does not currently exist.
Policy 2J6	To prohibit, through local development review and Highlands Project Review, new or increased water resource transfers between subwatersheds unless it is demonstrated that no other option exists to meet public health, safety and welfare objectives and where such transfers do not result in impairment of resources in the subwatershed from which water is proposed to be transferred.
Policy 2J7	To encourage water recycling/reuse measures, such as domestic and institutional gray water systems, where appropriate, to minimize water use in existing land uses.

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Policy 2J8	To require water resource management for all development in the Highlands Region, through local development review and Highlands Project Review.
Objective 2J8a	Require the maximum feasible water conservation and recycling for any redevelopment or development activity, including renovations to existing single family residences and commercial/industrial buildings.
Objective 2J8b	Require consideration of and the cost-effective use of recycled or re-used water rather than potable public water for non-potable purposes such as fountains, nonessential uses such as golf courses, certain recreational, commercial, or agricultural uses.
Objective 2J8c	Require that new residential development served by public community water systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space), to ensure cost-effective utility service.
Objective 2J8c	Require that new non-residential development served by public wastewater collection and treatment systems be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.
Policy 2J9	To ensure continued refinement and development of the Regional Master Plan.
Objective 2J9a	Implement a coordinated program with NJDEP to track ground water and surface water withdrawals and water allocations within the Highlands Region to maintain current estimates of net utility capacity and to fill critical missing data gaps.
Objective 2J9b	Coordinate with NJDEP, water purveyors and water utilities to ensure that service areas and franchise areas are supplied by and consistent with sustainable yields from their designated sources.
Objective 2J9c	Determine where water quality improvements are necessary or beneficial for the improvement of Net Water Availability or protection of existing drinking water supplies, develop watershed-based plans to achieve such improvements, and develop mechanisms to implement these plans
GOAL 2K	ALL EXISTING AND FUTURE DEVELOPMENT IN THE HIGHLANDS REGION THAT USE PUBLIC WASTEWATER TREATMENT SYSTEMS ARE SERVED BY ADEQUATE AND APPROPRIATE INFRASTRUCTURE.
Policy 2K1	To establish and maintain an inventory of Highlands public wastewater management infrastructure, including developed parcels with current connections to existing utility service areas.
Objective 2K1a	The development and maintenance of an inventory of Existing Areas Served.
Objective 2K1b	The development and maintenance of an inventory of the service areas and capacity of Highlands Domestic Sewerage Facilities.
Objective 2K1c	The development of an estimated Available Wastewater Treatment Capacity for each Highlands Domestic Sewer Facility.

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Objective 2K1d	The identification of remaining available wastewater treatment capacity to support regional growth opportunities within the Highlands Region.
Policy 2K2	To base projected demand for appropriate economic revitalization and opportunities for designated Receiving Zones within Existing Areas Served on existing maximum three month demands plus an estimate of redevelopment needs based on either Highlands Council regional analyses or more detailed local analyses, to assess whether there is adequate treatment capacity to encourage redevelopment.
Policy 2K3	To provide new growth and development in the Protection Zone and the Conservation Zone with adequate and appropriate wastewater treatment through Plan Conformance, local development review and Highlands Project Review.
Objective 2K3a	Allocate any available sewer system capacity to address documented threats to public health from failing septic systems on a priority basis.
Objective 2K3b	Prohibit new, expanded, or extended wastewater collection or treatment outside of Existing Areas Served unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, to serve a Highlands Redevelopment Area, or cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.
Objective 2K3c	Expansion of wastewater service shall be permitted in areas where there is a demonstrated threat to public health caused by a pattern of documented failing septic systems located within Existing Areas Served, or adjacent to Existing Areas Served where the failing septic systems cannot reasonably be addressed through rehabilitation or replacement of the existing septic system.
Objective 2K3d	Permit cluster development served by existing or expanded wastewater collection and treatment systems in an Agricultural Resource Area only where such development is within or immediately adjacent to an Existing Areas Served and adequate provision is made for the preservation of at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes and provided that the proposed development is otherwise consistent with the goals and requirements of the Plan. Where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service.
Objective 2K3e	Ensure that new growth and development that is not served by public wastewater collection and treatment systems is limited to densities suitable for on-site wastewater treatment.
Objective 2K3f	Cluster development utilizing community-based on-site treatment facilities shall be permitted: (1) where such development is not within an Existing Area Served or adjacent to an Existing Area Served with available capacity, (2) where the system is designed and has capacity only for the cluster development, (3) where the system does not create the potential for future expansion into areas that are not the subject of cluster developments immediately adjacent to the initial cluster served, (4) where adequate provision is made for the preservation of at least 80 percent of the project

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	<p>area in perpetuity for environmental protection or agriculture purposes, (5) where agricultural purposes are involved, increased impervious surfaces of greater than 3% but less than 9% of the agricultural lands requires the approval of a Farm Conservation Plan from the USDA Natural Resource Conservation Service and impervious surfaces of 9% or greater requires the approval of a Resource Management System Plan from the USDA Natural Resource Conservation Service , and (6) provided that the proposed development is otherwise consistent with the goals and requirements of the Plan.</p>
Policy 2K4	<p>To provide new growth and development in the Existing Community Zone with adequate and appropriate wastewater treatment, through Plan Conformance, local development review and Highlands Project Review.</p>
Objective 2K4a	<p>The highest priority for allocation of excess or additional wastewater treatment capacity is to areas where there are clusters of failed septic systems that are located within or adjacent to Existing Areas Served.</p>
Objective 2K4b	<p>The second highest priority for the allocation of excess or additional wastewater treatment capacity is to regional growth and redevelopment areas that can serve as designated Receiving Zones.</p>
Objective 2K4c	<p>Allow the expansion or creation of wastewater collection systems beyond Existing Areas Served to serve lands which are appropriate for infill or redevelopment, or to serve areas if they are shown to be necessary for and are approved by the Highlands Council to address a documented threat to public health and safety where no alternative is feasible, to serve cluster development, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of sensitive environmental resources.</p>
Policy 2K5	<p>To provide adequate, appropriate, efficient and cost-effective wastewater management to all development in the Highlands Region, through Plan Conformance, local development review and Highlands Project Review.</p>
Objective 2K5a	<p>Allow community-based on-site treatment facilities for those areas located outside Existing Areas Served that are shown to be necessary for and are approved by the Highlands Council to address a documented threat to public health and safety due to failing septic systems; these facilities shall only serve existing wastewater and shall not include infrastructure to support future growth.</p>
Objective 2K5b	<p>Prohibit the construction of sewer lines within Tier 1 of Well Head Protection Areas that may result in seepage of untreated sewage into ground water supplies.</p>
Objective 2K5c	<p>Prohibit expansion of a public wastewater collection and treatment systems and community on-site treatment facilities within the Preservation Area except as provided by the Highlands Act and within Open Water buffer areas, Riparian Areas, the forested portion of the Forest Resource Area, agricultural lands of Agricultural Resource Areas, Steep Slopes, and Critical Habitat Areas unless they are shown to be necessary for and are approved by the Highlands Council to address documented threat to public health and safety where no alternative is feasible, cluster development (see Objectives 2K3d and 2K3f), Highlands Redevelopment Areas, or to provide for minimum practical use in the absence of any alternative through issuance of a waiver by NJDEP or the Highlands Council, and will maximize the protection of these sensitive environmental resources.</p>

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Objective 2K5d	Require the use of recycled or re-used water wherever possible including aesthetic purposes and non-potable purposes such as fountains, golf courses, and other recreational, commercial or agricultural uses.
Objective 2K5e	Existing wastewater collection and treatments systems which are non-compliant with state water quality standards for wastewater treatment and effluent discharge shall be prohibited from collecting and treating additional wastewater until the treatment systems are fully compliant with State permit requirements.
Objective 2K5f	Wastewater Management Plan or amendments thereto, or to an Areawide Water Quality Management Plan, shall be consistent with requirements of this Plan.
Policy 2K6	To ensure the efficiency and cost-effectiveness of public wastewater collection and treatment systems, through Plan Conformance, local development review and Highlands Project Review.
Objective 2K6a	Require that new residential development served by public wastewater collection and treatment systems be at a minimum density of 1/2 acre per dwelling unit for the developed part of the site (i.e., not including wetlands, open water buffers, and recreational space) to ensure cost-effective utility service.
Objective 2K6b	Require that new non-residential development served by public wastewater collection and treatment systems be designed to target a floor area ratio (FAR) of 0.84 for the developed part of the site (i.e., not including wetlands, open water buffers, recreational space) to the maximum extent feasible, as a means to maximize parking and employment efficiency and compact development.

GOAL 2L	ENSURE THAT ON-SITE WASTEWATER SYSTEM DISCHARGES DO NOT EXCEED THE NATURAL CAPACITY OF GROUND WATER TO ATTENUATE LOADINGS, EXACERBATE EXISTING NITRATE IMPAIRMENT, OR CONTRIBUTE TO POTENTIAL NITRATE IMPAIRMENT FOR SUBWATERSHEDS OF THE HIGHLANDS REGION.
Policy 2L1	To use nitrate concentrations in ground water as an indicator of water quality, and to use nitrate dilution modeling as the primary method for assessing the carrying capacity of lands for development that relies on septic systems for wastewater treatment.
Objective 2L1a	Determine background median concentrations of nitrate in ground water by HUC14 subwatershed.
Objective 2L1b	Identify the factors affecting the suitability of densities for development that relies on septic systems for wastewater treatment.
Objective 2L1c	Develop appropriate protection measures to minimize contamination of ground water from septic systems.
Objective 2L1d	Develop drought ground water recharge estimates by HUC14 subwatershed for use in the NJDEP nitrate dilution model.
Policy 2L2	To use the median background nitrate concentrations in ground water in the Highlands Region as a basis for establishing on-site wastewater treatment densities through Plan Conformance, local development review and Highlands Project Review.
Objective 2L2a	Use the median concentrations of nitrate in ground water for Planning Area HUC14 subwatersheds where the Protection Zone is predominant as the nitrate target for new

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Objective 2L2b	development reliant on septic systems within the Protection Zone. The median is 0.72 mg/L. Use the median concentrations of nitrate in ground water for Planning Area HUC14 subwatersheds where the Conservation Zone is predominant as the nitrate target for new development reliant on septic systems within the Conservation Zone. The median is 1.87 mg/L.
Objective 2L2c	Use the NJDEP Highlands Preservation Area rules and nitrate thresholds for the Preservation Area.
Objective 2L2d	Use a nitrate target of 2 mg/L for the Existing Community Zone within Planning Area, on a project-by-project basis, where new development will rely on septic systems.
Objective 2L2e	New residential development using septic systems where lot-size averaging, clustering or open space subdivision design techniques are employed shall have a gross density (for all parcels involved in the development proposal) based on the nitrate dilution target appropriate for the LUCM Zone, but with the density for the developed portion of the site based on a nitrate dilution target not to exceed 10 mg/L or any more stringent requirement as required by N.J.A.C. 7:15.
Objective 2L2f	Carrying capacity shall be documented through the Land Use Capability Septic System Yield Map as the number of allowable septic systems per Conservation and Protection Zone for each HUC14 subwatershed, taking into account the nitrate target, the HUC14 subwatershed drought ground water recharge, and the acreage that is privately owned, undeveloped or underdeveloped, and not preserved.
Objective 2L2g	Municipalities may choose to include preserved lands in the analysis of septic system yields for the Conservation and Protection Zone as an alternative to the approach in Objective 2L2f if allowed by NJDEP pursuant to the Water Quality Management Planning Rules at N.J.A.C. 7:15 and where: (1) the municipality demonstrates that including the septic system yields from the preserved lands results in a development density and pattern that is not greater than that allowed by existing zoning and is compatible with the pattern of development associated with the affected Zone; and (2) the municipality implements or causes to be implemented (by development applicants benefiting from the increased septic system yields either directly or through contribution to an implementation fund) agricultural management practices that will reduce nitrate loadings to the same HUC14 subwatershed by: <ul style="list-style-type: none">• at least the same amount as the estimated septic system loadings from the additional density where the HUC14 subwatershed median nitrate concentration is lower than the relevant Conservation or Protection Zone median concentration, or• at least equal to double the estimated septic system loadings from the additional density where the HUC14 subwatershed median nitrate concentration is higher than the relevant Conservation or Protection Zone median concentration.
Objective 2L2h	New residential development utilizing septic systems shall be designed in a manner that minimizes the risk of well contamination due to the flow of septic system plumes within or between developed lots, addressing general ground water flow patterns, major fracture systems and other appropriate geological, geophysical and hydrogeological issues.
Policy 2L3	To prepare and maintain an inventory of areas where existing ground water or surface water quality is impaired to such a degree that any increase in nitrate concentration

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	would have an adverse impact on water quality.
Policy 2L4	To establish methods for restoration of ground water quality for subwatersheds where existing ground water is impaired on a subwatershed by subwatershed basis.
Policy 2L5	To establish minimum standards for the placement, design, monitoring and maintenance of septic systems necessary to protect, restore, and enhance ground water quality.
GOAL 2M	REFINEMENT AND IMPROVEMENT OF THE GROUND WATER RESOURCE MANAGEMENT ELEMENT.
Policy 2M1	To monitor and assess nitrate-related impacts to water resources within the Highlands Region.
Policy 2M2	To develop appropriate and innovative resource management programs to protect, restore, and enhance subwatersheds where existing ground water quality is impaired.
Objective 2M2a	Identify innovative technologies that may be appropriate for the design, installation, and maintenance of on-site wastewater treatment systems to minimize impairment to ground water or surface water quality due to elevated nitrate concentrations and other pollutant loads from septic systems provided the systems meet the minimum standards of N.J.A.C 7:9A.

Issues for Council Discussion

May 1, 2008

Water Availability

Water Deficit Policy Options

Water Deficit Policy Options

- Public comments focused primarily on deficit mitigation policies, requirements and procedures
- No issues raised requiring changes to thresholds or calculation methodology for Net Water Availability
- Water Use and Conservation Management Plans
- Three fundamental issues from comments and Council discussions:
 - Conditional water availability in deficit areas
 - Certainty of achieving mitigation that addresses deficit issues
 - What happens if mitigation is not feasible ?

Net Water Availability Summary

- 114 of the 183 subwatersheds have deficits:

<u>Deficit (MGD)</u>	<u># of HUC14s</u>
0.0001 – 0.050	22
0.051 – 0.100	7
0.101 – 0.250	25
0.251 – 0.500	17
0.501 – 1.000	16
1.000 – 7.100	17
TOTAL	114

- Highest deficits are from depletive uses
- Nearly half less than 250,000 gallons per day

Conditional Water Availability

- Limited to 1% or 2% of total water availability **in aggregate** – not per project
- Nearly all subwatersheds less than 25,000 gpd

<u>Conditional Availability (gpd)</u>	<u># of Potential Homes (Consumptive Use)</u>	<u># of Potential Homes (Depletive Use)</u>	<u># of HUC14s</u>
100 to 5,000	<1 to 57	<1 to 17	19
5,001 to 10,000	57 to 115	17 to 33	28
10,001 to 25,000	115 to 287	33 to 83	52
25,001 to 50,000	287 to 575	83 to 166	14
50,001 to 54,100	575 to 622	166 to 180	1
		TOTAL	114

Options for Improving Policy: Mitigation Thresholds

- Scaled mitigation thresholds for project reviews prior to Water Use and Conservation Management Plan approval, based on size of deficit and use:
 - Larger deficits related to highly developed areas, with more opportunities for water conservation.
 - Highly developed areas have more opportunities for stormwater retrofits of older buildings.
 - Land values also higher, driving higher value development that can better afford mitigation.
 - Scaled mitigation thresholds reduces deficits more where deficits are higher.

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Conceptual Mitigation Thresholds

Deficit (MGD)	Proposed Consumptive or Depletive Water Use (gpd)				
	<= 1,000	1,001 – 5,000	5,001 – 10,000	10,001 – 25,000	>25,000
0.0001 – 0.050	125%	125%	125%	150%	150%
0.051 – 0.100	125%	125%	125%	150%	150%
0.101 – 0.250	125%	125%	150%	150%	175%
0.251 – 0.500	125%	150%	150%	175%	200%
0.501 – 1.000	125%	150%	175%	175%	200%
1.000 – 7.100	150%	175%	175%	200%	200%

Recommendation to require mitigation prior to construction where the highest combination of deficits and proposed uses .

Certainty of Mitigation: Recharge

- Recharge Technology – same BMPs as already used by NJDEP, USEPA and many states in their rules and guidance manuals.
- Issues Regarding Recharge Benefits:
 - Recharge happens relatively fast. Days to weeks, not years to decades.
 - Completely different issue from travel time from point of recharge to point of discharge.
 - Not all recharge gets to aquifers, but does get to streams. Uncertainty regarding flow path led to constraints on conditional water availability.

Certainty of Mitigation: Conservation

- Technology well proven, used in Safe Drinking Water and USEPA WaterSense programs, etc.
- Long-term benefits expected from many techniques.
“Overshoot” objective to ensure sufficient results.
Monitor through billing records of water purveyors.
 - Residential appliances and fixtures
 - Industries and water-using commercial – benefits for profits
 - Lawn irrigation (may need monitoring)
 - Water loss reductions (especially for depletive uses)
- Agricultural irrigation also provides long-term benefits
- Require monitoring results as condition of approval-
project specific and in Plans.

Certainty of Mitigation: Aggregate

- Historic water conservation was forced by droughts or loss of supplies, and usually addressed through new water supplies (e.g., reservoirs).
- RMP is fundamentally different. Feasibility:
 - Nearly half of the deficits less than 0.25 MGD. Small relative to deficits triggering new supplies.
 - 17 deficits exceed 1 MGD. Conditional availability of 0.025 MGD is minimal. Deficit reduction will require concerted efforts, possibly infrastructure.
 - Some deficits can be addressed in combination through more regional planning.
- Responses will vary by deficit, area, available infrastructure.
- Where deficit is minimal, conditional availability and mitigation may erase deficits.

Where Mitigation is Infeasible

- Project may not be able to meet requirements.
- Conditional water availability may be completely used.
- Response: project cannot be approved as proposed. Revise to meet requirements or abandon.
- Alternative: participate in Water Use and Conservation Management Plan development to determine if collaborative solutions are possible.

Mitigation of Consumptive or Depletive Water Uses

GPOs and Technical Approach

GPO and Program Suggestions

- GPO recommendations:
 - Clarify that Conditional Water Availability is a maximum for all projects, not allowed for each project.
 - A Water Use and Conservation Management Plan will be used instead of the standard mitigation thresholds.
 - Incorporate the sliding scale mitigation thresholds.
- Program change: require implementation with construction, or within one year at most, if less than 20,000 (Planning Area) or 10,000 gpd (Preservation Area), not 100,000/50,000.

Implementation Process

Provide detailed mitigation plan, with:

- Engineering drawings of mitigation facilities or detailed plans if not based on facilities.
- Demonstration that each measure is feasible, and that combination will meet requirement.
- Recharge shown to support aquifer recharge, or stream flow beyond 2 months time of travel.
- O&M and monitoring requirements, including responsible entity and metrics for success.

Provide cost estimate with 10% contingency

Implementation Process 2

Provide escrow fund or bonding to ensure implementation.

If on-site conservation, conditioned before issuance of CO.

If on-site recharge, include in stormwater management plan and construct as part of project before CO.

Responsible entity for mitigation plan must report annually to Highlands Council through the life of the escrow account/bond, and must establish a long-term reporting system prior to release of escrow/bond. Reporting continues until deficit eliminated or alternate reporting system is established through a Water Use and Conservation Management Plan.

Water Transfers Between Subwatersheds

General Approach

Water Transfers Between Subwatersheds

- Public comments and discussions with NJDEP confirmed the need for procedures to confirm that no other viable alternative exists:
 1. Update net water availability to recent year.
 2. Recharge must meet N.J.A.C. 7:8 standards.
 3. Show projected monthly and seasonal demand.
 4. Provide detailed water use protocol based on drought year impacts. Rely on lowest quality water appropriate unless unacceptable environmental impacts projected.
 5. Show that proposed July/August ground water and September surface water use is less than net or conditional water availability.
 6. If all available sources are not sufficient to meet project needs, identify shortfalls.

Water Transfers 2

7. Determine options such as project changes, irrigation restrictions, water transfers, plus any required mitigation for use of conditional water availability in source subwatershed.
8. If water transfers required, identify minimum quantity required and economically feasible.
9. Determine if proposed source subwatershed has sufficient water availability – net, conditional, safe yield (reservoirs) or non-Highlands.
10. Transfers from non-Highlands sources and surface water safe yields must also have NJDEP approval (as will most intra-Highlands transfers).
11. Council may approve transfers outside this process for public health and safety, subject to NJDEP approval and commitment to above analysis.

Cluster Development

Cluster Development GPO Changes - General

- Added relevant GPOs from Utility, Agricultural Resources, Future Land Use, and Landowner Fairness sections of the RMP to list of Cluster GPOs to provide clarification on when to use cluster techniques and cluster design principles:
 - Recommended change (underlined): The cluster development preserves at least 80 percent of the project area in perpetuity for environmental protection or agricultural purposes. To the maximum extent feasible the developed portion (i.e., not including wetlands, open water buffers, recreational lands) occupies no more than 10 percent of the project area if served by a public or community on-site wastewater system.

Cluster Development

GPO Changes – Agricultural Resources

- Clarification has been provided on when to use cluster techniques and that the cluster design should maintain and enhance the agricultural industry (Policy 3A6 and Objectives 3A6a through 3A6d):
 - Cluster development is mandatory in the Agricultural Resources Area when other preservation tools (e.g. fee simple, easements, TDR) are not feasible.
 - Cluster development ordinance and Agriculture Retention and Farmland Preservation Plan require continued agricultural viability and implementation of best management practices.
 - Instead of using impervious cover triggers to dictate the type of conservation plan, an NRCS Farm Conservation Plan would be developed and implemented that focuses on soil and water resources.

Benefits of Clustering

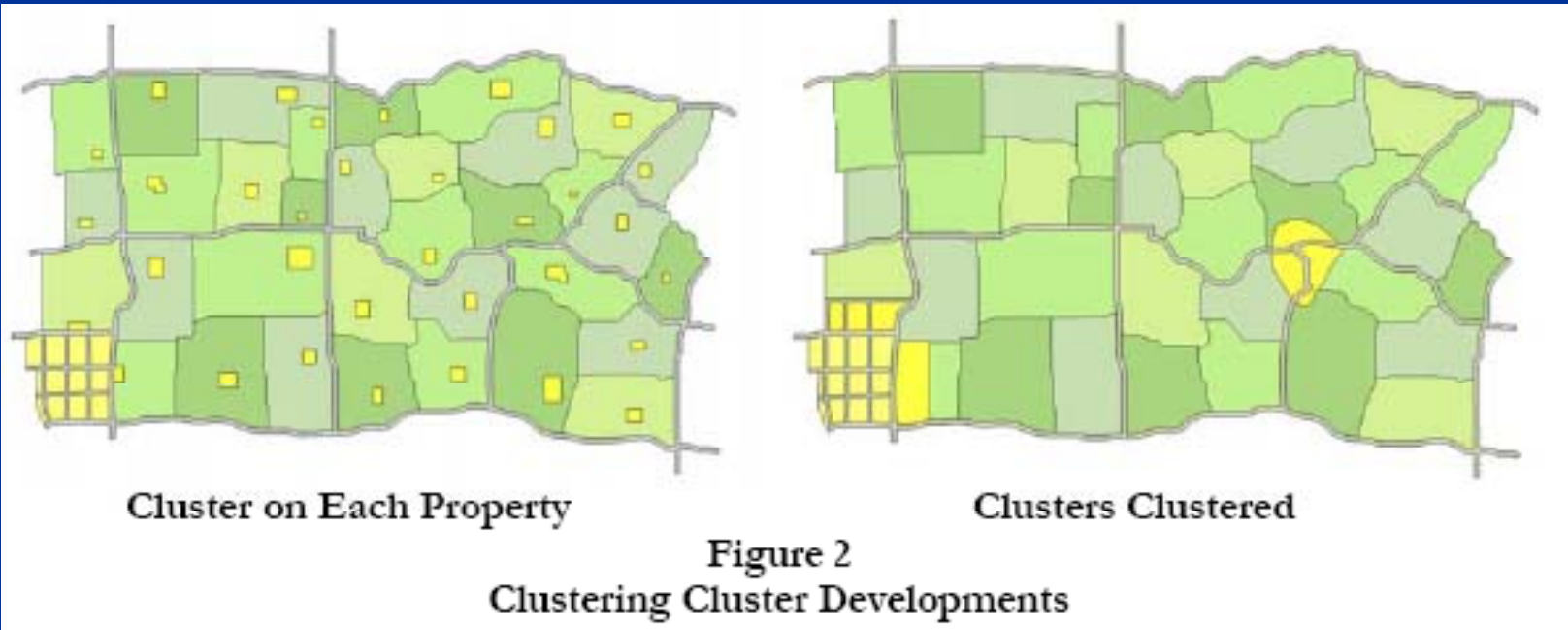


Scattered Development

Clustered Development
Without Density Bonus

Clustering Clusters

- Concern about potential for multiple, uncoordinated clusters
- Encourage municipal planning for best and fewest cluster sites



Water and Wastewater Utilities

GPO Recommendations

Utility GPOs: Clusters

- Objectives 2J4b and 2K3d revised to recognize differing potential for resource protection for septic system clusters (80% minimum) and sewer clusters (sewered area no more than 10% of area, with preserved acreage also no less than 80%).
- Can have protected areas (e.g., environmental resources) on the sewer lots, with deed restrictions, to meet the 10% threshold.
- Thresholds apply to “project area” – all parcels affected by the clustering proposal, whether using municipal TDR, non-contiguous clustering, contiguous clustering, or single parcel.
- Cluster examples on septic systems and sewers within the Conservation Zone :
 - 200 agricultural acres, with a septic system density of 1 DU per 10 acres.
 - On septic systems, preserve 160 acres, with 40 acres available for 20 DU (1 DU/2 acres).
 - On sewers, preserve at least 160 acres, at least 20 of the remaining 40 acres is deed restricted (as part of developed parcels or attached to 160 acres). Effective housing density is 1 DU/acre, which is still low for sewer development.
 - Farm Conservation Plan applies in both situations.

Utility GPOs: Preservation Area

- Policy 2I1 consolidates Preservation Area provisions for water and wastewater that prohibit extensions or new infrastructure unless exempt or NJDEP waiver approved.
- Clarifies that where waivers are approved, the project should maximize protection of sensitive environmental resources.

Utility GPOs: Resource Protection

- Objectives 2J4a and 2K3c clarify infrastructure limits in Protection and Conservation Zone, Environmentally-Constrained Sub-zone. Prohibited except for: exempt projects, waivers as allowed by Act, and Council approved cluster development.
- Clusters must avoid sensitive environmental resources, such as Open Water buffers, Riparian Areas, Steep Slopes and Critical Habitat, forested portion of Forest Resource Areas and agricultural lands of Agricultural Resource Areas.

Utility GPOs: Water Quality

- Public Health & Safety Waiver: Language in Objectives 2J3, 2J4a and 3K3c clarifies that public health and safety issues.
- Protection of domestic wells in clusters: Objectives 2J4d and 2K3f revised to further emphasize BMPs and cluster design to minimize potential for well water quality problems.