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JOHN R. WEINGART
Chairman

EILEEN SWAN
Executive Director

MEETING AGENDA

Thursday, July 10, 2008 - 10:00 a.m.

1. CALL TO ORDER
2. ROLL CALL
3. OPEN PUBLIC MEETINGS ACT
4. PLEDGE OF ALLEGIANCE
5. APPROVAL OF MINUTES – June 26, 2008
6. CHAIRMAN'S REPORT (and Council Member Reports)
7. EXECUTIVE DIRECTOR'S REPORT
8. COMMITTEE REPORTS
9. CONSIDERATION OF RESOLUTION – *Approval of Certain Planning Assistance Grants* - (voting matter with public comment)
10. REGIONAL MASTER PLAN DISCUSSION
    a. Overview of Petition for Plan Endorsement
    b. Update on Plan Conformance Standards
    c. County Conformance Standards and Grants
    d. Further Discussion on RMP
    e. Members list (without vote) of possible RMP revisions to be proposed by Council Members on July 17
11. PUBLIC COMMENTS
12. EXECUTIVE SESSION (if deemed necessary)
13. ADJOURN

NEW JERSEY HIGHLANDS WATER PROTECTION
AND PLANNING COUNCIL
MINUTES OF THE MEETING OF JULY 10, 2008

PRESENT

JOHN WEINGART	)	CHAIRMAN
MIMI LETTS	)	COUNCIL MEMBERS
KURT ALSTEDE	)	
ERIK PETERSON	)	
BILL COGGER	)	
ELIZABETH CALABRESE	)	
TAHESHA WAY	)	
SCOTT WHITENACK	)	
JACK SCHRIER	)	
GLEN VETRANO	)	
JANICE KOVACH	)	
DEBBIE PASQUARELLI	)	
TRACY CARLUCCIO	)	

TELECONFERENCE

TIM DILLINGHAM	)

CALL TO ORDER

The Chairman of the Council, John Weingart, called the 73rd meeting of the New Jersey Highlands Water Protection and Planning Council to order at 10:10am.

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 JUNE 26th, 2008

Mr. Schrier introduced the motion to approve the minutes. Mr. Cogger seconded the motion. Mr. Alstede was absent. All other members present voted to approve. The minutes were APPROVED.

CHAIRMAN'S REPORT

Chairman Weingart reviewed the schedule – with the next meeting being July 17th at 10 am in Morristown at the Frelinghuysen Arboretum to accommodate more people if they should want to attend. He stated that the purpose of this meeting was the Council's consideration of the adoption of the Regional Master Plan. The following meeting will be July 24th and that will be largely to

approve the minutes of the July 17th so that the process of the Governor's review can commence. He noted that contrary to some expectations, the Council does not cease to exist but will have many other functions after adoption. There will also be a meeting on August 21st.

EXECUTIVE DIRECTOR'S REPORT
Ms. Swan stated that the staff has been working on the RMP so that it will be in a final form for review by the Council. Ms. Swan explained that, in terms of staff outreach, the meetings have been cut back in order to focus on recommendations in regards to the drafting of the final RMP. However, on June 27th, there was a law international seminar with a session on regional planning and the staff was there to discuss the Highlands Act and RMP, and on June 20th staff met with the applicant for Borealis to continue discussions regarding redevelopment. Other than those meetings, staff has focused on the RMP.

COUNCIL MEMBER PASQUARELLI JOINED VIA TELECONFERENCE.

COMMITTEE REPORTS – There we no Committee reports.

CONSIDERATION OF RESOLUTION – Approval of Certain Planning Assistance Grants (voting matter with public comment)

General Summary: *The Highlands Council initiated a grant application process, as mandated by the Highlands Act, 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. These resolutions are for set forth before the Highlands Council for consideration of a grant agreement with the municipality listed on the application.*

1. Consideration of Resolution – Initial Assessment Grant for Bloomsbury Borough
   Summary: The Borough of Bloomsbury is applying for an initial assessment grant in the amount not to exceed $15,000.
   Ms. Swan explained that this is the first grant that Bloomsbury is requesting. No public comment was received. ***Mr. Schrier moved the motion. Ms. Carluccio seconded it. Mr. Alstede was absent. All other members present voted to approve. The resolution was APPROVED.***

COUNCIL MEMBER ALSTEDE JOINED THE MEETING

2. Consideration of Resolution – Initial Assessment Grant for Lopatcong Township
   Summary: The Township of Lopatcong is applying for an initial assessment grant in the amount not to exceed $15,000.
   Ms. Swan explained that they had a COAH grant which has been successfully closed. They also have a TDR feasibility grant and they have received 50% payment on that grant and their progress to date has been satisfactory. There was no public comment. ***Mr. Cogger moved the motion. Mr. Schrier seconded it. All other members present voted to approve. The resolution was APPROVED.***

REGIONAL MASTER PLAN DISCUSSION

Ms. Swan noted that a PowerPoint presentation will be used to guide the discussion and that this presentation will be emailed to the members joining via teleconference.

A. Overview of Petition for Plan Endorsement

Ms. Swan explained that in accordance with Section 8 of the Highlands Act, within 60 days of adoption of the RMP the Council must submit the RMP to the State Planning Commission (SPC) for Plan Endorsement (PE) of the Planning Area. Also, in accordance with Section 69 of the Highlands Act, any portion of a municipality or county located in the Preservation Area shall be exempt from the SPC PE process. The staff has recommended submitting the RMP PE petition for the Planning Area as soon as possible after adoption of the RMP so as to expedite the PE process and support Planning Area Conformance activities. Upon endorsement of the RMP by the SPC, municipalities and counties in the Planning Area will be eligible for additional State benefits from Plan Conformance.

Staff would like to be ready to go forward with this process as soon as possible after adoption, not after 60 days. She noted that this endorsement by the SPC is important in that the benefits that flow to plan endorsed communities will automatically flow to the municipalities the Planning area that chose to conform.

Ms. Swan explained that on December 19, 2007, the Council, SPC and OSG signed a MOU in support of developing a cooperative planning process. The current PE rules and guidelines address similar requirements for county and regional PE petitions. On June 16, 2008, the SPC published proposed PE Rules with a 60 day comment period that include criteria for Special Resource Area Plans. The RMP PE petition in accordance with the MOU has been waived from select PE petition requirements.

Ms. Swan acknowledged that Joy Farber from the Office of Smart Growth was in the audience. She stated that OSG has shared the State Plan policy map results of the most recent Cross-Acceptance process (deliberative document) though this mapping has not yet been approved. The information from the policy map will facilitate the PE Process for the RMP.

B. Update on Plan Conformance Standards

Ms. Swan noted that these are standards for municipal guidance regarding conformance. There is a stand alone plan endorsement guidance document, but the Plan Conformance standards are more detailed. These standards are not a part of the RMP but will assist in conformance.

Ms. Swan noted that the standards will change over time and will be updated regularly throughout Plan Conformance. The consistency with the RMP is determined by the Plan itself; these standards reflect what is in the Plan. She noted that comments have been received from both the public and Council members, and these have been used for updates within these standards. She reiterated that these documents will not be included in the RMP but will be consistent with the GPOs. Consistency is determined by the RMP and the Plan Conformance Standards are guidelines to assist municipalities to achieve that conformance.

The Draft Plan Conformance includes standards for: Steep Slopes Protection, Critical Habitat, Land Preservation and Stewardship, Carbonate Rock Areas, Lake Management Areas, Well Head Protection Agricultural Resource Areas, Right to Farm, Redevelopment, Housing, Community Facilities, and Sustainable Economic Development.

C. County Conformance Standards and Grants

Ms. Swan noted that at a prior meeting municipal plan conformance documents were distributed. She stated that the standards for the counties are limited to the issues that the counties have authority over. So while the lists are quite extensive, they will be limited and will apply where appropriate.

Ms. Swan then reviewed County Plan Conformance and summarized that the planning analyses will involve: Capacity constraints, natural resource protection, open space and farmland preservation, historic preservation, optimizing use of public infrastructure, transportation constraints and opportunities, fiscal impact and economic sustainability, county needs and obligation, and principles of sustainability and smart growth.

Ms. Letts asked about the legal abilities of the county planning boards. She noted that municipalities may or may not accept their recommendations. Ms. Swan responded that the staff looked at the county planning boards' authority and how this will affect planning.

Ms. Swan then discussed the environmental and infrastructure capacity analyses, including the RMP Update Analysis, Environmental Resource inventory, Conservation, Water and Wastewater Analyses, "Limiting Factor" Analysis, and the Build-out Analysis.

IT WAS NOTED THAT COUNCIL MEMBER KOVACH WAS ON THE PHONE AND THAT COUNCIL MEMBER PASQUARELLI JOINING THE MEETING IN PERSON.

Ms. Swan continued her presentation with the review of the County Master Plan Components, including: Policies, Goals, and Objectives; Land Use Plan; Relationship of Master Plan to other Plans (SDRP and RMP); Environmental Resource Inventory; Conservation Plan; Wastewater Utilities Plan; Water Use and Conservation Plan; Transportation/Circulation Plan; Open Space and Recreation Plan; Agricultural Retention/Farmland Preservation Plan (if applicable); County Facilities Plan; and the Historic Preservation Plan. She explained that the following supporting regulations were updated for consistency: Steep Slopes, Forest Areas, Open Water and Riparian Areas, Ground Water Recharge

Ms. Swan then discussed the County Self Assessment process which requires the counties to complete a self-assessment as a result of the environmental/infrastructure analyses and the planning analyses. They are also to identify areas requiring coordination with the Highlands Council and/or affected municipalities and other agencies. The County Self-assessment Report is to be provided to the Highlands Council, the report will list all items necessary to achieve Plan Conformance and provide a schedule for completion.

Ms. Swan stated that Basic Plan conformance, which is Plan Conformance with conditions, must be achieved within 15 months of RMP adoption for Preservation Area lands. She emphasized that Full Conformance is what all counties must achieve. As with municipalities, counties are now eligible to receive an Initial Assessment Grant of up to $15,000 to assist in the Conformance process.

D. Further Discussion on RMP

Chairman Weingart noted that at this point the Council members have seen all of the sections of the RMP and have had the ability to review these and comment upon them. The staff will be providing

the final RMP online by next Tuesday and will providing it to the Council members as well. Ms. Swan reminded members and public that these updates are posted on the Calendar section of the website. All of these discussions are revisions to the November 2007 Final Draft Regional Master Plan release.

She first reviewed revisions that the staff would like to bring to the Council's attention. Regarding the Historic, Cultural, and Archaeological – as directed by the Council on June 12th, the GPOs area being modified to encourage the creation of advisory historic preservation body rather than requiring the creation of a historic commission. She pointed out that the language in the GPOs is being changed where necessary to be consistent with that directive.

Mr. Schrier asked what the title of that body will be. Mr. Borden clarified that there is flexibility under the MLUL to allow for the creation for a formal municipal historic commission and there is also the ability to simply create an advisory committee.

Regarding Water Conservation, Ms. Swan stated that, as suggested by Council members, the RMP should include a GPO for agency coordination with NJDEP to promote water conservation, reuse, recycling, and other related measures and mitigate for water distribution system losses both in Highlands municipalities and in municipalities supplied with Highlands-derived water.

Next, Ms. Swan discussed a modification to the Highlands Open Waters Policy for Highlands Redevelopment Areas (Objective 1D4i Step 5). She stated that the current language permits Council approval of buffer modifications for Highlands Redevelopment Areas adjacent to Category Two waters. She noted that this provision should have also included Category One waters. The modification would permit nothing less than what is already allowed under State regulation. Presently, State regulation does limit the amount of buffer modification for all Category One waters. Importantly, the modification is consistent with the waiver provision in the Highlands Act.

She explained that the Council has to determine what area qualifies as a redevelopment site under the Highlands Act and then NJDEP has to give the appropriate waivers under their authority (to the minimal practical extent) to allow such redevelopment to occur. Ms. Swan stated that staff did not want to limit the waivers that are allowed by the Highlands Act.

Chairman Weingart noted that this is a correction, not a change in policy. Ms. Swan clarified that the Council will decide whether it is a redevelopment area and NJDEP would determine which, if any waivers are appropriate. Ms. Carluccio asked what the process would be for this. Would the Council make their own decision and NJDEP will make their own decision? Ms. Swan explained that the staff and Council will meet with the applicant, an analysis will be done on the site, its constraints and the imperious surface and the proposal will be reviewed. The impact will be studied. A preliminary meeting with NJDEP would prevent misleading information being given to the applicant. The Council will have to review the proposal first and then NJDEP will determine the waivers necessary for the redevelopment to occur.

Ms. Carluccio asked what would happen if the Council and NJDEP didn't agree. She stated that she thinks it is a policy change. The Council could say that for Category One waters it is always 300 feet. She supports that idea. Chairman Weingart disagreed stating that it was not a conscious decision that led to this modification. Ms. Letts asked what the NJDEP limit was for Category 1 waters. Mr. Borden stated it was 150 feet. For Category 2 waters he believes it is 50 feet.

Chairman Weingart noted that he believes there will be very limited redevelopment opportunities within the Highlands and that they will be reviewed on a site by site basis. It was clarified that this change would be voted on with the Plan. Chairman Weingart clarified that if any members wanted it changed, they can bring it up as an amendment.

Mr. Cogger stated that modification would allow the Council to review proposed redevelopment within Category One waters. Ms. Swan noted that as previously written, the policy would limit the ability to identify Highlands redevelopment areas for buffer reduction in Category one waters, and that as such would have been inconsistent with the waiver provision of the Highlands Act which was not limiting.

Ms. Swan then continued with the review of the Agricultural Cluster revisions. As suggested by a Council member, a minor revision was included in the agricultural cluster GPOs in Objective 3A5d to "encourage that the original or new farmstead remain attached to the preserved land wherever feasible."

Ms. Carluccio had a question about one of the revisions she proposed regarding the Historic section. She noted that the revision was about referencing the Delaware Wild and Scenic River, both middle and lower (under Objective 4b5c). Ms. Swan apologized that it had not been addressed in the document but noted that it was agreed upon and passed on to staff for inclusion.

With respect to the proposed modification of Category One water buffers, Mr. Dillingham stated that he believed this isn't a minor revision and that all prior conversations were based on Category Two. He stated that he does have a problem with proposed change language and that he views it as a new policy.

Chairman Weingart decided to take a straw vote as to whether potential redevelopment should be limited to Category One or limited Category Two waters. Ms. Swan again clarified that the staff recommended that the buffer modifications not be limited to Category Two waters which would be consistent with NJDEP's waiver authority.

Ms. Carluccio stated that it is a question about whether or not to keep the original language about buffer modifications being limited to Category Two waters. Ms. Swan explained that this is a staff recommendation or correction – staff never intended to limit the waiver that is allowed under the Act. Therefore, staff recommended that redevelopment not to be limited to Category Two waters. Ms. Swan then read the existing language within the original RMP. She clarified that staff was recommending to take out the language "Category Two". Ms. Pasquarelli pointed out that this language is referring to an undisturbed area. According to Ms. Pasquarelli this would extend the disturbance of the buffer.

The authority of the Council and their ability to make decisions regarding buffers was discussed. Ms. Letts gave an example and noted that there needs to be some flexibility. She explained that restoration is very important. Mr. Schrier explained that there are checks and balances within the Plan. He found the language to be consistent. Ms. Swan explained that the staff's concern is that this be consistent with the rest of the Plan. Ms. Carluccio stated her concern that this will allow for smaller buffers within undisturbed riparian areas. Mr. Schrier mentioned that this is more about allowing the Council to review projects and the possibility to reduce the buffer.

Chairman Weingart then conducted a straw vote as to whether the buffer modification should be limited to Category Two waters. The following Council members agreed with the recommendation to delete language referring to Category Two waters: Mr. Schrier, Mr. Whitenack, Ms. Letts, Mr. Cogger, Mr. Vetrano, Mr. Alstede, Mr. Peterson and Chairman Weingart. The following Council members disagreed with the staff recommendation: Ms. Carluccio, Ms. Pasquarelli, Ms. Way, Ms. Calabrese, and Mr. Dillingham.

Chairman Weingart explained the process will be that next week a motion and second to adopt the plan will be introduced followed by a motion and second on the amendments, then public comment, and finally deliberation and voting on amendments and on the final plan.

E. Members List (without vote) of possible RMP revisions to be proposed by Council Members on July 17

Chairman Weingart explained that this session will be to review the amendments and to assure that the Council members all understand the proposed amendments.

Ms. Carluccio presented the first proposed amendment which is to delete Policy 2B3, Objective 2Ba, b, and c and Objective 2B8b "To conditionally provide water availability within a Current Deficit Area with appropriate standards regarding its use." Mr. Schrier noted his frustration with continued and repeated discussions regarding this topic. Ms. Carluccio noted that it is important to review these key issues. She expressed the fundamental issue about allowing development in deficit areas.

Mr. Cogger asked about the procedure and process regarding how issues will be discussed and voted upon and he referred to the process as outlined by Roberts Rules. Chairman Weingart noted that many of the amendments that will be brought forth have been discussed before by the Council. Mr. Borden clarified that since public comment has been received on the Final Draft RMP the Council is free to re-examine issues previously discussed. Mr. Alstede reiterated that at the next meeting there will be final vote on all of these matters.

Ms. Carluccio then presented the second amendment, which has two parts. Ms. Carluccio noted that this amendment does allow for some alternatives. For instance: adding "Water use and Conservation Plans as described in Objective 2B8c shall resolve the current deficit in a subwatershed prior to approval for a new water uses in the subwatershed with high deficits (according to Highlands Council analysis)" to Part 1: Objective 2B8b (1), within Chapter 4, Part 2: Water Resources and Water utilities. Ms. Carluccio explained the ranges of deficits and what they mean within the analyses. Ms. Carluccio asked that amendment 1 be considered first and then amendment 2 be considered as an alternative.

Ms. Letts asked how the water deficit in large areas could be addressed by a small development. She pointed out that it will cross many boundaries. Ms. Carluccio explained that this just allows the conservation plans and plans for addressing the deficits to the watershed to be put to use and work. This would simply address correcting the deficit before creating any additional deficit.

Mr. Alstede asked if this could create a situation where an MUA well that exports water outside of the area could be shut down. Ms. Carluccio discussed how the Plan explains the deficit and the ways to address it. It will vary based on site specific details. Mr. Alstede asked about the Council's authority for areas using water that are outside the Highlands Region. Mr. Borden clarified that the

Council's authority is limited to this jurisdiction. Mr. Alstede stated that the burden would then be falling all on the local residents. He explained the issues within water exportation. Ms. Carluccio stated that there are institutional issues and those have been discussed.

Mr. Cogger asked, who will be the individuals looking for exemptions or waivers for these. He discussed how to get water to be put back into the HUC 14 and reduce the amount taken out. Ms. Letts explained her experience with negotiating with Jersey City about water usage and that it took years to get results. Mr. Schrier asked if the Council would have the ability to make a decision as to whether development will be allowed in deficit areas, with or without this amendment. Ms. Calabrese asked about how mitigation can be proven. Ms. Swan responded and explained that mitigation has to be done in advance in high water deficit areas. Ms. Swan presented the example of Randolph and how the township successfully mitigated water deficits. Ms. Pasquarelli explained that there are already provisions for this in place within the Plan.

Ms. Carluccio noted that the RMP requires a Water Use and Conservation Plan in all conforming municipalities. These are required to implement best use practices and to minimize negative effects and improve mitigation. She noted that the Council believes in the Plan and what it is to do, so that they should let it do it.

Ms. Carluccio continued with the second part of the Alternative to Amendment 1. She explained that the existing constrained areas need to be addressed to keep the situation from getting worse. This part of the amendment would be within Policy 2B3, Objective 2B3a, 2B3b, and sB9b "To conditionally provide water availability (Conditional Water Availability) within a Current Deficit Area and Existing Constrained Area with appropriate standards regarding its use.

Mr. Schrier asked if, absent the language, the Council would be able to require that if an application came forth within the Existing Constrained area it could be considered by the Council. Mr. Cogger asked about how many constrained areas are present in the Preservation Area. Ms. Swan responded that the staff will look into it to provide that information to the Council.

Ms. Carluccio then reviewed an amendment to Chapter 4, Part 1 Natural Resources, Highlands Forest Resources – Policy 1B8, Goal 1C, Objective 1C2d which stated "Support incentives and funding opportunities and provide criteria for demonstrating and maintaining intrinsic forest values and societal benefits through various means, including but not limited to the use of stewardship benefit credits in lieu of cash receipts under the Woodland Management Program of the Farmland Assessment program." She pointed out that this is simply exploring programs that will allow credits in lieu of cash receipts.

Mr. Schrier stated that he would like to hear from the farm community representative regarding the proposed amendment. Mr. Alstede noted that mostly small wood lots are the ones looked at for legitimacy – because they are the most subject for abuse. He stated his concern that the assessors will be more skeptical and will cause a larger public relations issue with the Farmland Assessment. He stated that professional foresters stated that they can give examples of how this can work.

Ms. Carluccio explained that this is only to state the Council's support for the concept and that further research regarding the use of credits would be needed. Mr. Alstede explained that the process is not onerous and that sometimes it involves the removal of invasive species or the thinning of trees as is needed anyway. Ms. Carluccio explained that the proposed amendment simply

allows the possibility to permit credits in lieu of cash. She stated that she believes farmland assessment for wood lots is currently an onerous process and that credits may allow for less pressure to cut down trees. The credits would have to be worked out. This would allow the Council to work at a program that could allow credits.

Chairman Weingart asked why the language "incentives" doesn't cover this possibility. Ms. Carluccio clarified what the credits are. Mr. Cogger asked if the Council has the ability to do this. Ms. Carluccio clarified that the Council would simply be exploring this possibility. Mr. Alstede stated that this doesn't fit with farming. It should be its own separate program. Ms. Carluccio noted that there are programs in place that do use this idea. She explained that there are many properties that have only woodlots.

Ms. Carluccio went on to explain her proposed Amendment #3 which seeks to delete steps 4 and 5 within Policy 1D4 Objective 1D4i in Highlands Open Water and Riparian Areas. Currently, the policy allows for reductions of the Highlands buffer down to 150 feet for disturbed areas. The proposed amendment would require that the Highlands water buffer of 300 ft remain in place.

Regarding the 5th amendment, Ms. Carluccio presented a modification. She stated that the paragraph regarding highlands redevelopment areas addresses the modification of undisturbed buffer areas associated with a redevelopment project. She suggests that this step be deleted as well. She stated that there are few natural buffers left and they need to be kept in place. She pointed out that under step 5, it used to say the buffer may be reduced to a minimum of 150 ft, but now it has been changed to the State minimum. Ms. Swan explained that the 150 feet was supposed to be in step 4, and that is why it was moved. Ms. Carluccio explained that this is allowing developed areas to go down to the 50 ft. buffer. She expressed that this isn't right. She argued that water quality will be affected by this reduction.

Chairman Weingart asked for clarification on how redevelopment can meet the 300 ft buffer. Ms. Carluccio stated that this can be done – there are many parks and towns that have this buffer. Chairman Weingart pointed out that there may be some redevelopment areas that may not be developable with a 300 foot buffer. Ms. Carluccio contended that smaller buffers will not protect the water as well as the 300 foot buffer.

Amendment #4 within Chapter 4 Part 1 Natural Resources to add "For purposes of this section, historical or current non-structural agricultural land uses shall not be considered "development", "improvements," "land disturbances" or "land uses". Mr. Alstede asked if agricultural structures are different than other structures. He stated that the proposed amendment is addressing farming land use, not structure. He also asked for clarification regarding this amendment. Ms. Carluccio noted that agricultural disturbance doesn't permanently destroy the buffer. It can be restored. She stated that the purpose of the amendment would be to not count agriculture area as a previously disturbed area.

Mr. Cogger asked if the addition of the language "non-structural" would be acceptable. Mr. Alstede questioned if the goal of this is to make it a prior non-conforming use. He asked what effect this amendment would have on the policy. Mr. Borden stated that the non-structural agricultural activities will be treated differently than structural activities in regards to the buffer restrictions.

Mr. Alstede stated his concern that most agriculture exists near streams and waterways. Mr. Borden clarified that the issue is when you are doing farm activities along a 300ft buffer, that if that property is to be developed, it is considered disturbed. If for instance, you want to put a strip mall on that property, the agricultural activity would not be considered disturbed – so this is would only be about when an agricultural use is converted to a non-agricultural activity. Mr. Borden clarified that the Right to Farm Act protects agricultural activities. It would only affect the conversion from agricultural activity to a different type of development. Ms. Swan asked if the language about conversion could be added to this amendment to make it clear. Ms. Letts stated that maybe the definition of redevelopment should be enhanced.

The next amendment discussed concerns Chapter 4, Part 2, Water Resources and Water utilities regarding On Site Wastewater Systems (Nitrates). The amendment would involve involved deleting "2mg/L" from Policy 2L2 Objective 2L2d and replacing it with "1.17mg/L." Ms. Carluccio noted that this may be a clarification and would like the staff's response on this amendment.

COUNCIL MEMBER KOVACH JOINED THE MEETING

Mr. Schrier asked if this is regarding non-conforming municipalities within the Planning area. Ms. Carluccio stated that it would depend on the Council's decision regarding nitrates. Ms. Swan clarified that this is not simply a technical clarification or correction. She explained that, although the analysis of the staff determined that the median nitrate background concentration in the Existing Community Zone is 1.17 mg/L, the Council reached a policy decision to apply a 2 mg/L standard consistent with NJDEP standards but using drought recharge and so more conservative than NJDEP.

Ms. Carluccio replied that the statement that the background median nitrate concentrations as the basis for the nitrate standards that were used in the zones is then not true. Ms. Swan explained that within the Existing Community Zone it is listed as using the NJ DEP standards. Ms. Carluccio then stated that she will present replacing "2 mg/L" with "1.17 mg/L" as an amendment for Council consideration. She explained that the background median concentration should be the guide. This should be a non-degradation policy for when septic systems are being utilized.

Amendment 6 is within Chapter 4, Part 2 Water Resources and Water Utilities regarding On Site Wastewater Systems (nitrates) within Policy 2L2 Objective 2L2e, which would include inserting "without treatment" after "…not to exceed 10 mg/L". Ms. Carluccio stated that she asked Dr. Van Abs in the past about when there is a project planned that will not be able to reach the 10mg/L at the point of delivering the water at the tap, that his response was that treatment can be added at the tap. This means that as long as treatment is added at the tap, the development will be allowed to continue. Ms. Carluccio stated that there should be a non-degradation policy in place. She noted that an alternative amendment will be presented if the Council doesn't accept the original amendment.

Amendment 7 is from Chapter 4, Part 2 Water Resources and Water utilities, **On Site Wastewater Systems (Nitrates) Policy 2L2 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, Protection, **and Existing Community Zone** and all environmental constrained

subzones for each HUC 14 subwatershed, taking into account the nitrate target, the HUC 14 subwatershed drought ground water recharge, and the acreage that is privately owned, undeveloped or under developed, **whether or not it is preserved**." Objective 2L2g would be deleted.

According to Ms. Carluccio, the purpose of this amendment is to prohibit the use of preserved lands to determine nitrate dilution. Mr. Alstede stated that the proposed amendment language is not completely clear. Ms. Carluccio agreed to review the language.

Ms. Carluccio stated that you cannot assume that nitrates are not coming from the preserved properties. She explained that, if preserved lands are used in determining nitrate dilution, it will allow higher septic density. Ms. Letts asked if it possible to see what areas of the Existing Community Zone are not on municipal sewer systems. She noted that this is unlikely to be an issue very often.

Ms. Swan clarified that the mapping and septic yield that have been done does not include preserved land – but the new NJDEP rules do allow for the inclusion of these preserved land. So Objective 2L2g was included for consistency with NJDEP. Ms. Letts stated her concern that having these increased limits will affect ability to get receiving areas.

Amendment 8 was from Chapter 4, Part 2 Water Resources and Water Utilities, Refinement and improvement of Groundwater Resource Management Policy 2M1 involving the addition of Objective 2M1a "To monitor well water and surface water for nitrate concentration to evaluate background nitrate changes on a HUC 14 basis and to track new sources of nitrates from Highlands development projects on a sites specific basis." Currently there isn't a provision to study or track how the loading of nitrates from development will affect the nitrate concentrations. Ms. Carluccio explained that there needs to be an approach to monitor how the Plan is affecting water resources and water quality.

Objective 2M1b would also be added stating "To track other new pollutant inputs from on site septic systems and other sources to Highlands waters that result from development projects through a defined water quality sampling program on a site-specific and watershed basis." Ms. Carluccio explained that there are pollutants other than nitrates that are dangerous, so parameters could be set up to monitor these as well. Ms. Letts expressed concerns about the cost of this. Ms. Carluccio noted that if and when the funding is available, such monitoring could then be done to increase the confidence of how well the RMP is working and how it is affecting the water.

Mr. Peterson noted that the State already requires homeowners to test their wells prior to the transfer of residential property. He states that eventually everywhere will be doing this. Ms. Carluccio noted that this is only being done where there is a real estate transfer. She expressed concern that it will not show data at the HUC 14 level. Mr. Peterson stated that the only way to do this is for homeowners to test their water, which is expensive. He explained that what the State is doing should be sufficient. Mr. Whitenack asked if not doing this could open the Council to lawsuits.

Ms. Pasquarelli asked about the language about monitoring in the Act. Mr. Borden stated that under the Act's requirements for a resource assessment requires the Council to assess existing monitoring but there is nothing in the Act about mandating monitoring. Mr. Cogger stated that some level of testing would be important. He mentioned that if someone else makes accusations that the

standards aren't being met, monitoring would be the only real defense. According to Mr. Cogger, monitoring should be done, based upon available funding. Ms. Swan stated that there is language in the RMP about monitoring, but she added that Ms. Carluccio is looking for more specific and extensive language. As currently written, the RMP speaks to monitoring and assessing nitrate levels.

Chairman Weingart presented the 9th Amendment. He stated that the purpose of this amendment is to address the Council's authority regarding the Planning Area and what the Council's role is regarding other agencies who affect the Planning Area. Specifically, the amendment is meant to reiterate or state what the law says. He explained that the municipalities and counties in the Planning Area do not have to adopt the Plan – but other State agencies do have to take actions that affect the Planning Area. The question that will be asked is whether or not an action is consistent with the RMP. It is then the responsibility of that State agency to determine how they will use the information that the Council has provided to them. This amendment is to clarify these issues. Realistically, these issues could affect the Planning Area, even within areas that do not opt in.

Chairman Weingart stated that Amendment 9 would be incorporated into Subpart D Federal, State, and Regional Agency Coordination and would involved deleting the second and third paragraphs and adding: "The Act, in Sections 38 through 82 (See Act provisions in Supporting Information), also amends numerous statutes of sister State agencies to specifically require coordinated action to implement the RMP. In these sections, the Act requires consultation between the Council and State agencies to ensure that the RMP is considered prior to State agency action. For plans and other decisions proposed in the Highlands Region, the Council will deliver consistency determinations based on the RMP to appropriate State agencies which will use the Council's information and recommendations to reach resolution in a manner consistent with their respective enabling legislation or regulatory mandate.

The Highlands Act stipulates that Highlands municipalities and counties are under no obligation to revise local master plans and development ordinances applicable to any parts of the Planning Area to bring them into conformance with the RMP. The Act is also clear that the Council is required to consult with State agencies and, in certain cases, to issue RMP consistency determinations for actions and plans proposed in any part of the Highlands Region.

These requirements for interaction and coordination between the Highlands Council and other State agencies for actions proposed in the Planning as well as the Preservation Area do not negate Sections 14 and 15 of the Act which specify that conformance with the RMP is voluntary for the Planning Area portions of Highlands municipalities and counties."

Chairman Weingart stated that Objective 2K3a would also have to be changed. It would read "Areawide Water Quality Management Plans, including Wastewater Management Plans and project-specific amendments, shall be examined for consistency with requirements of this Plan. The Highlands Council shall prepare and transmit to NJDEP consistency determinations for proposed amendments prior to NJDEP decision in accordance with N.J.A.C. 7:38-11 and N.J.A.C. 7:38-11 and N.J.A.C 7:15."

Mr. Vetrano stated that he liked the amendment, but asked the Council to consider the addition of: "it is not the intent of the Highlands Council for state agencies to use the process of coordination to circumvent the legislative intent of voluntary conformance in the Highlands Planning Area ……." to the end of the amendment. Chairman Weingart explained that he would consider the issue but

that he was not yet totally comfortable with the statement proposed by Mr. Vetrano. Ms. Letts asked that the word "sister" be taken out of the proposed amendment.

Ms. Carluccio reviewed Amendment 10 within Chapter 4 Part 4: Future Land use, Subpart B – Map Adjustment. The addition of "(Map adjustments) are prohibited in the Preservation Area, Core Forest Areas, Agricultural Resource Areas, Prime Groundwater Recharge Areas, High Integrity Riparian Areas, Critical Habitat Areas and Significant Natural Areas. (Map Adjustments) are allowed only during the plan conformance process and Highlands Council initiated plan updates. (Map Adjustments) area limited to 1% of the total acreage within the municipality. (ADD) …and demonstrates that it will utilize Highlands Development Credits to a degree which ensures a level of protection equivalent to (no net loss protection) and reduces the net impact on Highlands natural and agricultural resources (as determined by whether the proposed changes effects the Protection or Conservation Zone respectively) by demonstrating that it will extinguish currently valid exemptions within similarly situation parts of the municipality" to Objective 6G2b.

Ms. Carluccio noted that these areas are important and shouldn't be compromised. The second part of this change expresses that the map adjustments will be allowed only during the plan conformance process and Highlands initiated plan updates. There was clarification that it is not the staff's understanding that the updates will take place only during conformance.

Ms. Carluccio explained that the final change within this objective is important because currently it leaves it open to use credits and still have some development attached to the exemption. Mr. Schrier asked if this would invalidate parts of the Act. It was clarified that this change could be done with a willing landowner.

Mr. Alstede asked about an equity statement for the plan. Mr. Borden stated that there are equity statements within Chapter II. Mr. Alstede stated that this is different than what the staff was asked to do. Chairman Weingart stated that the staff did draft something, but he found it very confusing so it has not been included. He believes that the statements in Chapter II cover this issue. Mr. Alstede explained that a statement is different than goals, policies, and objectives. Mr. Alstede expressed disappointment regarding his request.

Ms. Pasquarelli noted that she had requested a white paper responding to the equity issues raised by some of the objectors. She feels that the questions have been evaded, and that there was an obligation to at least address to these valid concerns within the context of the law. There were specific questions about legalities, that shouldn't have been ignored. She believes that these issues have not been properly addressed and gave her apologies to the Farm Bureau as she did everything she could to get these questions answered. Chairman Weingart noted that he believes all questions and concerns have been addressed in the RMP.

Ms. Pasquarelli asked about where the build out analysis lies within the Plan and asked if it is a part of the plan. Ms. Swan stated that it isn't in the plan – it is a technical report. Ms. Swan noted that the technical reports serve as the basis for the Plan. Mr. Borden clarified that the Plan does have provisions regarding local build out analyses. Ms. Swan added that the data needs to be refined at a local level. The technical reports will be updated and released as the technical basis for the RMP. Build Out has been based on assumptions and will change with updates.

Mr. Alstede expressed his concerns about overlays and lack of ability to view the effects of these limitations. He stated concern about there not being any "white" unconstrained areas. Ms. Swan stated that the limiting factor during Build Out had been determined to be the septic yield. Mr. Alstede expressed that this mapping needs to be viewed by the Council and the public.

With respect to the Council July 17th meeting, Chairman Weingart stated that the plan is to have the meeting without break. Lunch will be provided for the Council and he recommends that the public bring their lunch.

PUBLIC COMMENT:

Tom Vern, Middlesex County, NJ Farm Bureau, and fellow farmer: He stated that farmers and landowners are very concerned about the issues here, including equity. The whole state is concerned. Mr. Vern recognized the work that Mr. Alstede has done to represent the farm community. He expressed his respect for the work that has been done. The extra time has allowed for an improved plan. He stated that the plan will be evolving and that the hopes that the Council will be open to revisions and outstanding issues. There are issues that need to be addressed: an equity statement (similar to the state plan) and a funding source need to be identified. The critical lands should be purchased and paid for – people should not be regulated off of their land. The plan will not succeed without preservation funding. Planning for growth is difficult – areas for TDR have not been properly identified. The TDR Program is not complete. Community education is necessary. There needs to be funding for the TDR Bank – more likely there will be a greater need for landowners to sell credits to the bank to meet resources lands than their will be opportunities for building . The bank must be funded. The program is not ready. A strong agricultural cluster provision is important to prevent further fracturing of the farmland base. It is important to cluster to preserve remaining land for agricultural use. This method will allow a farmer to realize the equity potential of his property without giving up the activity on the farm for the future. There needs to be a strong coordination and communication with the County Agriculture Development Boards. They play an important role within the Right to Farm and agricultural preservation. There will likely be more comments. He stated that the primary areas need to be addressed before adoption. Once the plan is adopted, it is not over. He asked the Council to be open to coming and addressing issues that will be stumbling blocks.

Barry Farquar – 20 acres in Chester Twp – He expressed that there are people who have been financially affected by the Act. People have lost money and their future is uncertain. He noted that he previously received a substantial offer to purchase his property but now the developer is gone. He contended that there isn't a sympathetic face on the Council who is thinking of the people being affected.

Elliot Ruga, NJ Highlands Coalition – He expressed his support for the amendments proposed by Ms. Carluccio, which will result in greater protections. This is the goal of the Act and should be the intention of the RMP. Mr. Ruga stated that he hopes the Council members will review these amendments in reference to the Council's charge.

David Shope, Farm Bureau member – Mr. Shope stated he would like to see the overlays as believes that they will be shocking. Regarding the nitrates, he hasn't heard an explanation as to why the standards for NJ need to be higher than those of the federal government. He then spoke about the Raritan Basin. He quoted statistics for this basin and noted the difference within studies. He spoke about possible projects which would allow for additional water. Mr. Shope believes that water

deficit is a joke. Regarding buffers, he returned to the Stroud report regarding boundaries and the measurements that are being done. Over the years he has noticed that some Council members have presented extreme ideas. He will be handing in copies for the Council or staff to review.

Andy Drysdale, Chester Twp – He read from his written comments. He expressed that his retirement has been stolen from him and his wife. The plan is unnecessary as there is not a water deficit. The need of the plan for endangered species is also unnecessary. The estimated figures for the TDR Program are off the mark. He expressed that environmentalists don't care who they hurt.

Mark Zakutansky, NJ Highlands Coalition – Mr. Zakutansky would like to add an additional amendment, if that is possible. This is a social justice statement, which provides a greater understanding of what the plan is meant to address - the plan is about the economic vitality of the entire state and to provide clean drinking water; it is about the entire state, not just those within the Highlands. There are many places that this statement could be placed. He read the proposed amendment.

Monique Purcell, Department of Agriculture – Ms. Purcell stressed the need to consider flexibility when if comes to buffers. To try to minimize a buffer and increase functional value would be difficult. Buffers depend on a lot of conditions. The nitrate standards amendments that were presented will negatively affect the cluster provision within the plan. The concern now is that clustering will not work which will result in large lot zoning and limited areas for growth.

Bill Keebler, South Branch Watershed Association – Mr. Keebler spoke about the amendment for groundwater monitoring. He stated that his association has a monitoring program and other organizations also have monitoring programs in place. He explained that nitrate testing is simple and relatively cheap (around $100). He stated that he would hesitate on relying on the state private well test results as they aren't always reliable. You can get reliable data without testing all of the wells, with good protocol and representative samples. He will provide additional information to Ms. Carluccio.

James Tripp, Council for Environmental Defense Fund – They support the strongest possible plan. On the other hand, they understand the need to provide equity to landowners. This is why his organization has been working closely with the staff to create the TDR Program. He expressed that more acres will be necessary to make the program work and generate the enough value from developers to make the program work. He asked that there be flexibility so that more areas could be available for the TDR Program. Regarding redevelopment areas and Category One water buffers – if you are going to compromise those buffers, why not do it to benefit the TDR Program, and use it for TDR receiving areas.

Helen Heinrich, NJ Farm Bureau – She asked that the Council members review the summary of the concerns of the NJ Farm Bureau. She noted that the NJ Highlands Coalition doesn't focus on the need for planning within the Plan. The Plan still is weak on policies for economic development and the areas for growth are very limited. Another concern is the provision for fair compensation. Acquisition and TDR are not complete. Cluster development provisions were directly attacked by some of the amendments. Clustering is the only equity mechanism that can be done in the near future. She expressed concerns about the direction regarding the Right to Farm process. She noted that there hasn't been contact with the Right to Farm Program. It is her recommendation to delete the sections referencing Right to Farm, as many of them will be difficult and possibly illegal to carry

out. She noted that there is still a questionable definition about what is appropriate or compatible agriculture. Adoption should not go forward until the mapping can be viewed. There is a weakness in the answers regarding economic impact. She expressed concerns that the mapping still can result in a black map. Regarding the amendments, she stated she is waiting to see how the amendments would impact the municipalities and counties.

Wilma Frey, NJ Conservation Foundation – The foundation supports the amendment to clarify the consistency reviews with other state agencies. However, they do not support Mr. Vetrano's additions. She stated concerns about the recommendation about a historic advisory body – this is in contrast to what the historic professionals have been requesting. The planning board cannot handle this. Regarding the buffer amendment, she was shocked. She doesn't understand wanting to reduce the buffers within undisturbed areas within Category One. This should not be left to NJDEP to employ their minimum standards – the RMP should address this. The redevelopment process and those areas aren't really a part of the plan. The flexibility within the buffers and the flexibility within the redevelopment process could be a real problem. She stated that she hopes the Council will seriously consider Ms. Carluccio's amendments, as they are fundamental to the Plan. The Plan cannot be based on allowing development within deficit areas. She stated particular support regarding the amendment concerning agricultural land use which should not be considered disturbed land (and therefore will not have a buffer reduction with that). She noted that they may put their comments in writing for next week.

Christine Hepburn, Madison and Hardwick – She stated her objection that some of the Council members are being called extremists. She is sorry to not see an amendment to get rid of clustering on farmlands all together. The support for water tax is a good idea, but clustering on farms is not the way to help farmers. She appreciated the amendments to the map adjustments. In response to Ms. Letts, she explained how she does do woodland management on her property and expressed her support for the idea of credits.

David Peifer, ANJEC – He expressed support for the amendments presented today. He spoke about his support for Amendment 2 regarding credits for conservation work. This work is recognized by professional foresters and by numerous federal programs for good woodland programs. The amendments regarding monitoring, is absolutely essential. Working with USGS, boards of health, etc, to get a more accurate understanding of nitrate levels is important to monitor the success or failure of the Plan. It isn't a financial burden and should be included. Regarding buffers, he stated concerns about the buffer variance procedure. The redevelopment selection process is still incomplete. He stated that undisturbed buffers should be protected and preserved. He stated that environmental quality exists where it is and it cannot be transferred. He asked the council to be very careful about that. Removing steps for 4 and 5 as recommended would be a good idea. The concern about continuing development in deficit areas could be addressed by the amendment proposed. It will be tough, but it is necessary. Mr. Peifer brought up the sewer bans of the past. Results need to be seen before the deficit is increased. There will probably be written comments submitted before the next meeting.

Jeff Tittel, NJ Sierra Club – Mr. Tittel thanked the staff and Council for their work. The main concern deals with nitrates and how they are used within the Highlands. He brought up Countryside vs. Ringwood and that Ringwood won the case because the conservation area was not served by sewers. Nitrate models should at least be based on an anti-degradation level and should also be applied based on subwatershed. This is why the higher standard is the best way to not

degrade the water. Within the clustering provision, people could be at risk regarding the nitrate levels, because of the high levels. With the increase development, the nonpoint pollution loads are being actually squared, due to reduced absorption. There are continued concerns over the water quality. Redevelopment should be made stricter. He used an example in West Milford. Regarding the capacity issue – the need of water outside of the highlands needs to be looked at. Increasing the deficit is against what the point of the Act. He noted that out of 275,000 acres that have been identified by the NJDEP, 19,000 acres for no build is too little. There should be at least 5 times the number of areas set for preservation than those set for planning and development. Regarding TDR, he mentioned that the Council should be designating areas that are outside the Highlands. Mr. Tittle stated that mistakes within the Plan could take a long time to fix and could affect water that can never be regained.

END OF PUBLIC COMMENT

Mr. Keren and Ms. Swan then presented the website tool with maps and overlays as Mr. Alstede had requested. Different layers of RMP data were applied to the map to show the effects. Ms. Swan expressed that many of these layers are based on regulations set forth the Highlands Council and other State agencies. She also expressed that municipalities are being presented with this data so that they can make a fully informed decision on conformance. The best available and most recently available data was utilized in preparing the map layers.

Ms. Pasquarelli asked about assembly bill A500. Chairman Weingart explained that is scheduled to be signed. Ms. Pasquarelli noted that there is mention of the Highlands within this bill. Mr. Borden and Ms. Swan noted that a memo regarding this amendment should have been sent to the Council members. However some members could not recall receiving it. Ms. Swan said she would check and that it will be sent to them along with a memo regarding the Permit Extension Act.

The meeting was adjourned.

Vote on the Approval of these Minutes	**Motion**	**Second**	**Yes**	**No**	**Abstain**	**Absent**
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

Social Justice Statement for Inclusion in the Highlands Regional Master Plan – DRAFT

As a matter of social justice, The Regional Master Plan works to reduce differences in access to opportunities, resources, rights, voluntary risks and the sharing of benefits through changing the form of engagement in water governance to include all stakeholders. Central to the need to adequately protect the resources of the Highlands is recognition of the vulnerable water users, most often located in urban areas of New Jersey. Failure to include these stakeholders would perpetuate an historic economic, psychological and social problem for the health, welfare and cultural life of our cities. Impacts on the livelihoods of all stakeholders, both inside and outside of the Highlands Region, will be recognized and represented throughout the Regional Master Plan.

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NJ FARM BUREAU ISSUES REMAINING WITH THE DRAFT HIGHLANDS RMP July 9, 2008

SUMMARY: Much progress has been made, and helpful language included in the RMP but in four major areas, the Legislative intent has not been achieved. Because of this, the Legislative mandate to provide a "positive agricultural business climate" will be difficult if not impossible to achieve.

1. **The RMP must be a balanced and comprehensive master plan for the Region, not just new stringent environmental regulations.**

2. **The Act promised Highlands landowners "fair compensation" for the loss of land values for the sake of State water supply. At this date no method for funding has been developed and made ready to use (acquisition, TDR, cluster development, exceptions).**

3. **The Agricultural Sustainability Program must promote and support the long-term sustainability of all Highlands farm businesses in accordance with the Highlands Act, not merely sustainability of the soil resources.**

4. **The Highlands Council should not adopt the RMP until it can answer to the Legislature about the economic and regulatory impacts of the Plan on the Region.**

The following is a more detailed description of these four concerns, along with suggestions for amendments or new policies.

1. **The Highlands enabling statute was to be a Water Resource Protection and Planning Act, not just new stringent environmental regulations. The Region contains over 800,000 people, long-established industry and businesses including active, thriving farm operations. This Regional Master Plan (RMP)** skimps on policies to support economic development even those that would support the agri-and eco-tourism it favors. The areas where any growth can occur are whittled down by the Highlands Council at each meeting, often in opposition to the recommendations of their professional staff.

The Act mandates that the Highlands Council do Smart Growth planning, balancing the needs of the residents of the Region and the State for housing, adequate and environmentally sensitive transportation, The Act visualizes a balance between protection of the water resource and continued economic prosperity for the Region.

The Legislature was deliberate in describing 2 distinct areas in the Region, a Preservation Area where, in effect, the Highlands Council and the DEP would decide what that balance should be and a Planning Area where local citizens would decide through normal home rule processes. There, because the resources were a little less critical, there would be more options for future use of the land. If the Highlands Council forces, for example, its highly restrictive nitrate standards on all 88 towns and 7 counties, local people will have no say in how their community will be managed in the future. PROPERTY IN THE PLANNING AREA, ACCORDING TO THIS RMP, DOES NOT QUALIFY FOR TDR CREDITS NOR DOES IT RECEIVE PRIORITY FOR ACQUISITION. HERE LAND VALUE WILL BE GREATLY REDUCED WITH NO RECOURSE FOR LANDOWNERS TO RECOUP A MEASURE OF THEIR PRE-HIGHLANDS EQUITY. WHERE'S THE EQUITY IN THIS?

2. **The Act promised HL landowners "fair compensation" for the loss of land values for the sake of State water supply. At this date no method for funding has been developed made ready to use (acquisition, TDR, cluster development, exceptions).** There is no Equity Policy anywhere in the "Landowner Fairness" sections of the RMP, not even a restatement of the intentions of the HL Act.

    - TDR will not start functioning for months if not years though the HL TDR Bank is enabled to start up. The Act mandated that the RMP map at least 4% of the land in the Region as potential Receiving Zones, including land in the Preservation Area. The latest map shows less acreage than that and limits it to land only in the Existing Community Zone in the Planning Area.

        - This limit added to the Legislative failure to require that growth areas be set up to balance the land values of the Sending Zone suggests that there will be a very limited market for credits at best. No other TDR program in the U.S. was set up without a designated growth area to absorb the land values lost.

        - This RMP limits eligibility for HL TDR to those whose PARCELS are larger than 5 acres, while 65% of the HL parcels are under that in size. Will only large landowners be able to use TDR as an equity protection tool?

- Clustering (conservation development, lot-size averaging etc) is the only equity protection mechanism at all available to landowners in the near future – once conforming municipalities develop the implementing ordinances.

  This RMP sets very low density standards for any clustered develop and suggests that all the 50 plus layers of environmental sensitivity will be applied before approval can be granted. This expensive, time-consuming and risky process will discourage all but the most needy or determined farmland owner from trying to use this equity protection tool.

- All the land set aside and permanently preserved, whether for open space or agriculture, must be governed by equally stringent deed and land management requirements. This RMP only requires that the farm landowner obtain a special Farm Conservation Plan developed by the NRCS with added Highlands requirements and

the need to bear the cost of implementation. Open space needs to be managed, if only to prevent spread of nuisance wildlife and invasive plant species.

- The RMP Cluster Program language presented on June 12 seems to imply that using the MLUL Planned Residential Development rules is the most viable option. In fact, this has discouraged NJ municipalities in the past from creating clustering ordinances because of the requirement that set aside farmland must be owned by a homeowners' association or the municipality. THE LANGUAGE MUST GIVE EQUAL WEIGHT TO OTHER SECTIONS OF THE MLUL AND MORE FLEXIBLE WAYS TO DEVELOP CONCENTRATED DEVELOPMENT.

- Exceptions, according to the Highlands Act are to be exempt from the RMP, the DEP rules and any municipal master plan or development ordinances. This RMP contains more and more language that reduces the ability of HL landowners to use the exceptions by requiring conformance to various Highlands regulations. Added mapping zones put heavier restrictions on more farmland.

3. **The Agricultural Sustainability Program must support the long-term sustainability of the farm business in accordance with the HL Act, not merely sustainability of the soil resources.** Healthy land values and/or compensation for those that the RMP reduced are basic to sustainability because land is the principal instrument of production and the primary financial asset of the farm

   - Mapped layers of environmental data will hamper agricultural viability directly and severely reduce the areas where farmers can freely adapt to changes in climate, the market or customer preferences. Some of the data layers that cause concern:

     - Water Availability: New Objective 2B4d and others violate the HL Act's intent to allow water allocation for farms continue to be regulated by the DEP. This new objective allows priority only if the agricultural use is compatible with Highlands resource protection, with no clarity as to who or what body determines "compatibility". THIS OBJECTIVE MUST BE DELETED AT THIS TIME AND CONSIDERED WHEN THE HIGHLANDS COUNCIL AND THE SADC WORK OUT SOME PROCESS TO DEFINE "APPROPRIATE" OR "COMPATIBLE" AGRICULTURE.

     - Critical Habitat: 63% of the Conservation Zone has the potential to be mapped as Critical Habitat. Farming options will be curtailed if creating habitat receives higher priority than agricultural sustainability.

     - Designation of Prime Groundwater Recharge Areas: necessary changes in the agricultural operation may be defined as "disturbance" and restricted even if the land was actively farmed before .This may conflict with Right to Farm.

     - Restoration of Streams and Riparian Areas: buffers developed with USDA technical assistance and funding may not meet Highlands requirements, thereby removing a primary financial incentive for farms to help improve water quality.

- Carbonate Rock Program: merely mapping the limestone soils may not be adequate identification of areas that should be regulated. These are among the most productive in the State.

- Scenic Resource Identification and Protection: with no consensus about what is "scenic" in the Highlands, farmers are in great danger of their land and buildings being designated, without notice, permission, or compensation for the loss of farm use. INTERESTED THIRD PARTIES" MUST NOT BE ABLE TO MAKE APPLICATION FOR SCENIC RESOURCE PROTECTION WITHOUT APPROVAL OF THE GOVERNING BODY, THE LANDOWNER, AND, IF IN ACTIVE FARMING, THE CADB.

- Lake Management Program: since this map layer includes all land in the watershed that drains to the lake, many acres of farmland will be potentially restricted from normal farming practices.

- Development of housing for farm family members or agricultural workers, clearly necessary for agricultural sustainability into the future and permitted on farmland preservation deeds of easement, should be included in the definition of Agricultural Development and regulated according to the NJDA rules.

If all of these layers, even those not directly connected with water supply or quality, are enforced with the same weight, human activity including farming will become less and less attractive to landowners, another way the farm value of land will decrease further. THE RMP MUST FOCUS ON REGULATING DIRECT THREATS TO WATER SUPPLY AND QUALITY AND DOWNGRADE ALL OTHER "HIGHLANDS RESOURCES" TO BALANCE THEM ALONG WITH OTHER COMMUNITY PLANNING GOALS.

The new Environmentally Constrained Conservation Zone now maps 63% of the former zone where agriculture was to be a preferred land use. How will this affect potential farm management both now and into the future?

- According to this RMP there is no level playing field between farming in the Preservation Area and Protection Zone and the rest of the Region or the State. There may be more similarity only if a Preservation Area farm is included in the Agricultural Resource Area for which there is no way to petition to have a property included. Yet those farmers also have a Right to Farm equal to all other NJ farmers.

  New Objective 3E4b in this RMP suggests that the Highlands Council wants to commandeer the RTF process as a basis for the required municipal planning for agricultural retention and farmland preservation. This will put an entirely new and heavy burden upon the CADBs and the SADC that heretofore have mostly depended upon the development of Site-Specific Agricultural Management Practices as issues come up. Given the dynamic nature of farming, there is practically no way for a town to plan in advance what's "appropriate" or "compatible" agriculture if the goal is sustaining the agricultural industry over time.

  To be entitled to a Right to Farm, a commercial farmer must use practices conforming to Agricultural Management Practices (AMP) adopted by the SADC or Site-Specific AMPs approved by the CADB, not just those that cause "no direct

impact on public health and safety". THIS OBJECTIVE SHOULD BE DELETED BECAUSE:

- There are no adopted Agricultural Management Practices that deal specifically with potential public health and safety impacts of agriculture. These issues are typically covered in a Site Specific Agricultural Management Practice or farm conservation plan development.
- The objective suggests that the municipality and county would develop regulations without input from any parties or bodies knowledgeable about NJ and Highlands agriculture.
- It would be necessary for CADBs to review the master plan, the Agricultural Retention and Farmland Preservation plan, and ordinances of every conforming Highlands town nd county to make sure they do not hinder a farmer's Right to Farm, thus preventing Right to Farm conflicts needing resolution.

- A definition of "sustainable agriculture" must be added to the Glossary using the USDA definition (1990 Farm Bill). It is far more than "organic".

  "An integrated system of plant and animal production practices having site-specific application that will over the long-term – (a) satisfy human food and fiber needs; (b) enhance environmental quality and the natural resource base upon whith the agricultural economy depends; (c) make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls; (d) sustain the economic viability of farm operations; and (e) enhance the quality of life for farmers and society as a whole".

4. **The Highlands Council should not adopt the RMP until it can answer to the Legislature about the impacts of the RMP on the Region:**

   - **It lacks even base data about commerce in the Region and a compilation of the potential costs of conformance to landowners, municipalities, and counties.**

     The only costs for which there are grants are to help municipalities complete the planning involved in the Plan Conformance process. There is no financial assistance for farmers or businesses that must hire expensive consultants and complete complex studies and plans to conform.

     The tone of the Plan is "protection", with little attention paid to economic viability programs, development of housing and transportation systems, redevelopment of brownfield and formerly developed sites – all intended by the Highlands Act.

   - **The Highlands Council has not seen detailed maps showing the regulatory impacts of applying all the policies, objectives, and standards they propose to adopt.**

     The super powerful GIS system enables the Highlands Council to map more environmental resources and more gradations of these resources as the basis for levels of regulation. But the result is beyond the comprehension of ordinary humans

and inaccessible to affected landowners except through either the Highlands Council, expensive computer systems or hired consultants.

It is supposed to be updated almost daily, so a landowner will never be sure they have all the information about regulations for their property before they plan some action. There is no one set of maps that will change according to some orderly and predictable time schedule. THE Highlands Council MUST SET A PREDICTABLE SCHEDULE AT WHICH POINTS THE MAPS MAY BE UPDATED TO GIVE ALL LANDOWNERS AND COMMUNITIES NOTICE THAT REGULATIONS DETERMINED BY MAPPING MAY BE CHANGING.

Preliminary use of even a few data layers shows towns and properties cut up into small and conflicting pieces, thus making it almost impossible to use conventional land use tools on the municipal level and normal farming practices at the property level. THIS SITUATION COULD BE REDUCED BY ONLY USING FACTORS THAT DIRECTLY AFFECT WATER SUPPLY AND QUALITY AS PRIMARY MAPPING LAYERS.

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July 10, 2008

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Chester, NJ 07930

As of today it has been three years and eleven months since the Highlands Act was signed into law by the previous ridiculous Governor of New Jersey.

It only took thee years and nine months to win Word War II. Much was accomplished during that earlier time. Huge ships, aircraft carriers, aircraft and submarines were built and used. I was six years old when the war began and nine years old when it ended. I remember flattening tin cans for the war effort. I saw what can be done when every one pitches in for a necessary cause.

I was sixty eight years old when Lois and I had our retirement stolen from us and am now 72. It has taken nearly four years to create an unnecessary plan that attempts to justify the crimes of the past. The plan is unnecessary because water falls on the entire state and could be collected and filtered. It was reported on NJN News that a company called United Water Company is in the process of building a large water filtration plant.

The endangered species excuse is just that, an excuse being used to promote the environmental extremist agenda. Just stop and think about it. With all of the land that has already been preserved and all of the zoning that was already in place, do you really honestly believe that there are species that are endangered? The only ones endangered are the land owners who have depended on the equity in their land.

The $16,000 per acre figure estimated for the TDR credits or the $70 some thousand estimate for a three acre lot in Chester Township are so far off the mark that it is sickening. Prior to the signing of this egregious act, a three acre lot adjoining our land at the end of the road which we would have extended, sold for approximately $560,000. We would have had four lots.

Finally at the last meeting there was an outrageous statement by one of your members who was on the telephone, about not being swayed by what others thought. Environmental extremists do not care who they hurt while promoting their dubious agenda. Just think of the damage they have done, no Tocks Island Dam, no drilling for oil, no nuclear power plants and theft of landowner equity.

Sincerely,

Andrew Drysdale

Andy Drysdale

cc: Others

WATER SUPPLY AVAILABILITY IN THE RARITAN RIVER BASIN

A Technical Report for the Raritan Basin Watershed Management Project

New Jersey Water Supply Authority
September 2000

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- South Branch Watershed Association
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- Upper Raritan Watershed Association

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WATER SUPPLY AVAILABILITY IN THE RARITAN RIVER BASIN

A Technical Report for the

Raritan Basin Watershed Management Project

Executive Summary

The Raritan River Basin includes a number of major watersheds, comprising over 1,100 square miles. The New Jersey Department of Environmental Protection (NJDEP) has aggregated these watersheds into three Watershed Management Areas (WMAs), as shown in Figure 4 – Municipalities and Road Network within the Raritan Basin, of the technical report "Setting of the Raritan River Basin." These areas are the Upper Raritan WMA (WMA 8), the Lower Raritan WMA (WMA 9) and the Millstone WMA (WMA 10).

"Water supply availability" describes the quantities of developed and potential water supplies within a watershed, the current and protected demands upon those supplies, and the extent to which supplies are sufficient to meet demands, currently and in the future. The level of sustainable supply from surface waters is called the "safe yield" while the equivalent term for ground water supplies is "dependable yield." This technical report provides a detailed summary of water supply resources and demands, both current and projected, and the recommendations of recent plans for addressing potential deficits. This report draws heavily from water supply studies and plans of the New Jersey Department of Environmental Protection (NJDEP) that were developed over the last twenty years.

BASIN SUMMARY

The Raritan River Basin currently has a water supply availability of 360 million gallons per day (MGD), 225 MGD of which is surface water and 135 MGD from aquifers. Surface water safe yields are primarily the result of three facilities operated by the NJ Water Supply Authority – Spruce Run Reservoir, Round Valley Reservoir and the Delaware & Raritan Canal. These facilities have been in place for decades. Ground water dependable yields are the results of 1,100 square miles of aquifers – some poor and some prolific. Ground water availability has been reduced over time by pollution events in several urban and industrial areas.

Demand projections indicate that the 1990 demand of approximately 255 MGD will increase to approximately 350 MGD by the year 2040. Comparing current water supply availability of 360 MGD to a projected 2040 demand of 350 MGD (including demands for water that is transported out-of-basin), it is clear that the Basin will need to address potential water supply needs in the coming decades if projections do not change significantly. The need for a new water supply could be hastened or delayed by various factors, most of which are under society's control.

Two water supply projects, the Kingston Quarry Reservoir and the Confluence Pumping Station, have been identified as cost-effective projects that can provide 65 MGD and 53 MGD, respectively,

with relatively limited environmental impacts. The Statewide Water Supply Plan anticipates that one of these projects will be built after 2030 to supply future needs, assuming that projections continue to hold steady and water conservation is effective in mitigating demands.

While the Basin overall has sufficient water supplies for public use, there are issues regarding possible limitations to and impairment of local ground water supplies, protection of aquatic ecosystems, meeting future demands within the Basin, and addressing out-of-basin needs.

WATERSHED MANAGEMENT AREA SUMMARIES

Most of the existing information on water availability is from reports published by the NJDEP. These reports were developed prior to establishment of the Watershed Management Areas, and therefore do not provide information appropriate to these geographic areas. Instead, information is available for the South River watershed (part of the Lower Raritan Watershed Management Area) and for the rest of the Raritan Basin (including the Upper Raritan, Millstone and remaining portions of the Lower Raritan Watershed Management Areas). NJDEP anticipates developing an update of its Water Balance Model for the NJ Statewide Water Supply Plan using watershed and Watershed Management Area boundaries. A future version of this report will incorporate the results of this update.

Purpose of the Characterization and Assessment for Water Availability

The Raritan River Basin supports a wide variety of New Jersey ecosystems within the Highlands, Piedmont and Coastal Plain geologic provinces. Many of these ecosystems rely heavily on the close proximity of surface waters, wetlands and high ground water tables. The Raritan River Basin is also a major source of potable and industrial water supplies in central New Jersey. Finally, the surface waters of the Basin are used for recreational and aesthetic purposes. The vitality and health of all these uses depends on the natural processes of precipitation, runoff and recharge. Therefore, for watershed management purposes it is critical to understand both the general and detailed water budget and hydrology of the Basin. The technical report on the Water Budget of the Raritan River Basin provides a detailed summary of current knowledge, and serves as a foundation for this technical report.

Using a water budget, it is possible to understand the extent to which water supplies for human purposes can be drawn from the environment without significant damage, through reliance on natural storage (e.g., aquifers) or artificial storage (e.g., reservoirs). The characterization portion of this technical report provides information on the current status of the water supply resources in the Raritan River Basin. The assessment portion compares the current resource status to current and projected demands to determine whether there are conflicts or gaps between water supply availability and water demand. Both portions of this report are prepared for use in the management planning process for the Raritan River Basin.

Laws, Plans and Regulations Affecting Water Availability

Over the last two centuries the English common law system that originally applied to New Jersey waters has been incrementally modified to meet the increasing demand for water and reflect the changing value society has placed on water. In New Jersey the most recent changes have been to incorporate the concept of the public trust doctrine. Under this doctrine, the waters of New Jersey are viewed as the property of the State, which acts as the trustee of the people. This public

trust doctrine, linked with the riparian rights of common law, create a situation where the State allocates waters for use, ensuring that downstream water users are not harmed by upstream uses, and that the public trust in New Jersey waters is maintained. Sustainability of water availability is a fundamental concept of New Jersey water law. The concept applies to both ground and surface waters.

Programs Pursuant to the NJ Water Supply Management Act

In 1981, the Water Supply Management Act (WSMA, N.J.S.A. 58:1A-1 et seq.) was passed in an attempt to adopt a more complete administrative water law. The act states, "the water resources of the State and any water brought into the State must be planned for and managed as a common resource from which the requirements of various regions and localities in the state shall be met." This language meant that all water diverters would be subject to regulatory oversight and would be considered in any water resource management strategy. In addition, the law established a more regular system of water supply planning for New Jersey.

Water Supply Planning

The WSMA requires that the NJDEP prepare, adopt and periodically update a New Jersey Statewide Water Supply Plan (NJSWSP). The NJSWSP must identify existing water supply sources and current uses, project demands, recommend improvements to water supply facilities, and recommend "actions to provide for the maintenance and protection of watershed areas." In addition, the Water Supply Bond Act of 1981 (P.L. 1981, Chapter 261) provides guidance for the NJSWSP, including mandates for the identification of specific projects that may receive bond funding. From this process arose a need for regional water supply investigations and feasibility studies that both arose from and contributed to the NJSWSP. Planning under the WSMA must address both regional and statewide water supply issues. The most recent NJSWSP was adopted by NJDEP in 1996.

Water Allocation Program

The WSMA gave to the NJ Department of Environmental Protection the power to manage the water supply through a uniform water diversion permit system applying to both new and pre-existing water withdrawals if their withdrawals exceeded 100,000 gallons per day (gpd). This provision allowed for a comprehensive evaluation of the actual demand on the State's water supply sources of ground and surface water. The WSMA requires each permit to contain six minimum provisions, including:

- Fix the maximum allowable diversion expressed in terms of daily, monthly or annual diversions, and require metering and reporting of use;
- Identify and limit the use to which the water may be put;
- Require that all water diverted for non-consumptive water use be returned to a reasonably proximate body of water identified by the NJDEP.

The water allocation permit program is administered under N.J.A.C. 7:19-1 et seq., within the NJDEP's Water Supply Element. The current rules require all water withdrawals in excess of 3.1 million gallons per month to obtain a water allocation permit. The threshold is based on the 100,000 gallon per day (gpd) threshold that has been historically used with some exceptions for short-term uses.

However, by the time the NJDEP had been delegated the water allocation permit program, there were a number of aquifers that were being overused. Aquifer withdrawals were exceeding recharge and ground water levels were declining dramatically. Studies indicated that unless withdrawals were reduced the aquifers would continue to decline and threaten the long-term reliability of the supply. The limitation in the 1981 law prevented the NJDEP from ordering a reduction in the withdrawals absent an emergency order of the Governor; an action usually reserved for drought or other water supply emergencies. A 1993 WSMA amendment now allows the NJDEP to establish areas of water supply concern wherever it can be demonstrated that the safe and dependable yield of a water source is being exceeded or threatened by overuse. In these areas the NJDEP can reduce existing withdrawal privileges to the safe and dependable yield of that source even if this action results in a reduction in actual withdrawals. However, before taking such action, the NJDEP is required to identify alternate water supply sources and work with affected permittees to develop these supplies.

Minimum Passing Flow Issues

The WSMA requires the NJDEP to ensure that the water quality of water sources is maintained and that the water standards for the use of the water are met. NJDEP addressed this need in part by mandating that water withdrawals be limited to levels that did not excessively drain surface or ground waters. In surface waters, the primary mechanism is through mandates for allowing a certain water flow to pass by critical points in the stream system. For intakes not associated with reservoirs, a "passing" flow is established below which withdrawals cannot occur. For reservoirs, a "release" flow is established to ensure that downstream flows are maintained at a certain level. In both cases, the purpose of the flow is to provide usable water for downstream interests and to protect aquatic life. The passing flow or release flow levels are major factors in determining how much water is available for use in a watershed. The higher the passing or release flows, the less water is available for the user during dry periods. State law allows for reduction of the required passing flows during drought emergencies, so as to conserve water in reservoirs for public use. The many combinations of passing flows, reservoir releases, non-drought procedures and drought procedures make it difficult to predict and measure the actual safe yields of surface water supply systems. For planning purposes in NJDEP and here, the passing and release flows usually are assumed to be constant, providing some buffer in the analyses.

1907 Excess Diversion Law

The Excess Diversion Law provides an exception to the passing flow requirements. Under certain conditions and with payment of an "excess diversion fee" to the NJDEP, water supply purveyors – but no other holders of water supply permits – may reduce passing flows below the levels mandated by their water allocation permits. Some water supply systems are further limited by court orders that mandate continuation of certain passing flows regardless of the Excess Diversion Law, but there are examples in watersheds outside the Raritan Basin of stream flows being reduced essentially to zero during dry periods.

Water Supply Bond Act of 1981 & Its Subprograms

The Water Supply Bond Act of 1981 (P.L. 1981, Chapter 261) authorized the creation of a $350 million bond issue with a revolving loan fund for State or local projects to rehabilitate, repair or consolidate antiquated, damaged or inadequately operating water supply facilities and to plan, design, acquire and construct various State water supply facilities. The New Jersey Statewide Water Supply Plan (NJSWSP) is the planning mechanism by which the state defines its water needs. Inclusion in the NJSWSP is a prerequisite for the expenditure of funds under the Water Supply Bond Act of 1981 for projects and studies. The Act was modified in 1983 to allow for State expenditures on ground water and other studies that need not be repaid as loans unless they result

in a capital project that is funded by a Water Bond Fund loan. A great deal of new knowledge about aquifer systems has been gained through the use of these funds.

Characterization of Water Availability in the Raritan Basin

Methodology and Information Sources

The water resources of the Raritan River Basin have been studied extensively since 1950. Primary resources used for this study were developed by or for the NJDEP and date from the 1980's and 1990's, including:

- New Jersey Statewide Water Supply Plan and reference documents
- Eastern Raritan Basin Water Feasibility Study
- NJDEP Water Balance Model (Raritan Basin portion)
- South River Water Supply Feasibility Study

Most of the information in this report is drawn from these documents and from the technical report "Setting of the Raritan River Basin". Rather than using detailed references and footnotes, the primary references are generally noted in and apply throughout each section.

Hydrology and Topography of the Raritan Basin

The ratio of ground water versus surface water withdrawals is highly variable between planning areas because of differences in geology, topography, population density, land use and proximity to major water bodies. Consequently, southern New Jersey is more dependent on ground water supplies and northern New Jersey is more dependent on surface water. The inherent geological characteristics determine the relative underground storage of water, while natural topography and land use influence the viability of water storage in above-ground reservoirs.

Variations in rock type and geologic history of different regions of the State have created three different physiographic provinces in the Raritan Basin with unique surface topographies: the Coastal Plain, Piedmont and Highlands provinces. Each province consists of different types of consolidated (i.e., rocks) and unconsolidated (i.e., sand, gravel and silt) deposits with characteristic properties (see Figure 6 of the technical report "Setting of the Raritan River Basin"). In the northwest portion of the Basin, glacial deposits cover parts of the Piedmont and Highlands. Each of the physiographic provinces and the glacial deposits are associated with characteristic aquifer units and ground water flow types. The major aquifer units within these physiographic provinces in the Raritan River Basin are discussed in the technical report "Setting of the Raritan River Basin."

The Basin is higher in elevation to the north, northwest and (in places) to the southwest (see Figure 5 of the technical report "Setting of the Raritan River Basin"), reflecting the hard rock geology of the Highlands and the basalt hills of the Watchung Mountains and Sourland Mountains. Surface water movement is generally from west to east in the central part of the Basin, from north to south in the northern portion, and from south to north in the southern portion of the Basin (see Figure 10 of the technical report "Setting of the Raritan River Basin"). Stream flow is monitored at a number of stations within the Basin through a cooperative network operated by the U.S. Geological Survey (USGS) for the NJDEP (see Figure 1). There are 100 municipalities and 7 counties partially or wholly within the Basin (see Figure 4 of the technical report "Setting of the Raritan River Basin").

Geography of Water Sources and Water Users

Water Sources

The Raritan Basin has a number of important water supply sources. Most of the Basin has ground water supplies that range from limited to prolific, depending on the geology of the area (see Figure 7 of the technical report "Setting of the Raritan River Basin"). Topographic relief in the northwestern part of the Basin also allows for important surface water supplies (see Figure 5 of the technical report "Setting of the Raritan River Basin"). Finally, the Delaware & Raritan Canal provides for the transfer of water from the Delaware River to the Raritan Basin.

- **Aquifer Systems** – The Coastal Plain covers the southeastern Raritan Basin, in eastern Middlesex County, western Monmouth County, and northeastern Mercer County. In cross section, it is a wedge shaped sequence of unconsolidated sediments composed of sand, gravel, silt and clay that thickens to the southeast. The sequence is composed of four major aquifer systems separated by clay or silt layers that act as confining or semi-confining barriers to separate them. The outcrop areas of major coastal plain aquifers are, from oldest to youngest: the Potomac-Raritan-Magothy (also referred to as the Lower, Middle and Upper aquifers), Englishtown, Wenonah/Mount Laurel, and Kirkwood-Cohansey. All are present in the Raritan Basin. Since these are unconsolidated sediments, water migrates through natural channels and pore spaces between the aquifer sediments, and the sandy nature of these formations makes them prolific water supplies for public wells. Contrary to earlier presumptions, many of these aquifers (other than the Cohansey) do not receive the majority of water through their recharge areas under current pumping conditions, except near where they "outcrop" at the land surface. Instead, they receive much or most of their water from overlying and underlying aquifers.

  The Piedmont covers a large portion of the Raritan Basin in Middlesex, Union, Somerset, Mercer and Hunterdon Counties. Sedimentary units such as the Stockton and Lockatong Formations and the Brunswick Group are the primary aquifers. Other formations in the Piedmont that have limited water bearing potential include the Sourlands Mountains at the southwest of the Basin and the Watchung Mountains at the northeast of the Basin. Water movement in the consolidated rocks is primarily through channels called joints, bedding planes and fractures that were created by the original deposition and movement of the rock formations. This type of flow allows relatively limited movement of water through the aquifer system, though some wells in the Brunswick Group can produce large volumes of water. Formations of the Piedmont are hydraulically connected with local streams, where semi-confining glacial deposits do not cover them.

  The Highlands Province covers most of the northwest Raritan Basin. Some of the Highlands rock formations are among the oldest in New Jersey. All but the dolomitic limestone formations in the Green Pond Outlier are poor aquifers. The limestone aquifers can be very prolific, with water movement through solution channels in the rock. These aquifers are also very vulnerable to pollution from the land surface. The Spruce Run and Peapack-Gladstone valleys are part of the Highlands Province and are underlain by these limestones. Similar to the Piedmont, water movement outside of the limestone areas is primarily through joints, fractures and in particular through bedding planes in the formations on a very local scale. The Precambrian aquifers do not generally produce large yields, except near streams or where wells intercept major fault zones and are often hydraulically connected with surface waters.

  Glacial deposits consist of unconsolidated stratified (layered) and unstratified (mixed) deposits of gravel, sand, silt and clay. The thickest glacial deposits generally occur in New Jersey north of the Wisconsonan terminal moraine line that extends from Perth Amboy through Morristown

to Belvidere. Only a small portion of the northern Raritan Basin has glacial deposits. North of this line, upland areas are generally covered by a thin layer of discontinuous glacial till (unstratified, mixed sediments), usually less than 50 feet thick. The valleys are filled with stratified drift and lake bed sediments that comprise aquifers and confining units, sometimes up to 300 feet thick. Glacial aquifers supply important quantities of water in Northern New Jersey. These buried valley (or valley-fill) aquifers are frequently the main local water supply sources. Many wells that draw from the underlying aquifer are extensively recharged by streams flowing on top of the glacial deposits. The Lamington aquifer system is an example of glacial sediments lying over bedrock aquifers, both of which are used for public water supply purposes.

- **South River Aquifer Recharge Systems** – Two major aquifer recharge systems exist in the South River watershed. Middlesex Water Company operates one on behalf of the City of Perth Amboy. This system takes water from Deep Run and recharges it to the upper aquifer through a recharge basin. The Duhernal Water System (originally formed by Dupont, Hercules and National Lead; hence the name Duhernal) also uses surface water from Duhernal Lake, on the South River in Old Bridge and Spotswood, to recharge the upper aquifer.

- **Spruce Run/Round Valley Reservoirs** – These reservoirs were built by the State of New Jersey and are now operated by the NJ Water Supply Authority (see Figure 2). Spruce Run has a capacity of 11 billion gallons and is fed by natural stream flow. The two largest tributaries are Spruce Run and Mulhockaway Creek. Spruce Run Reservoir releases water as needed to the Spruce Run and thence to the South Branch of the Raritan River. Round Valley has a capacity of 55 billion gallons and is almost entirely reliant on water pumped from the South Branch at the Hamden Pumping Station. Water can be released as needed to either the Hamden Pumping Station or to the South Branch of Rockaway Creek (a tributary of the Lamington River) by gravity lines. The water released from either reservoir travels downstream to maintain flow at the intake of Elizabethtown Water Company (located at the confluence of the Raritan and Millstone Rivers) and at the intakes of other users.

- **Delaware & Raritan Canal** – The Canal was originally built in the early 1800's as a transportation route for barges. After transportation use of the Canal ended, the State of New Jersey purchased the facility. Extensive rehabilitation of the Canal by the NJ Water Supply Authority in the 1980's allowed the Canal to become a major water supply for the Raritan Basin. Up to 100 MGD may be transferred from the Delaware River to the Raritan Basin during normal periods, with reductions to a minimum of 65 MGD during Delaware Basin droughts. The Canal is primarily used by Middlesex Water Company, the City of New Brunswick, the Township of North Brunswick, and as a source of flow in the Raritan River above the Elizabethtown Water Company intake.

- **Lawrence Chain of Lakes** – The City of New Brunswick built this water supply system in the 1800's as a potable supply source. It consists of a series of lakes along the Lawrence Brook in Middlesex County (Davidson's Mill Pond, Farrington Lake, Weston's Mill Pond). The City is the sole user of this water supply.

Water Users

Through the NJ Statewide Water Supply Plan process, NJDEP developed an extensive water use database, using a combination of 1986-88 withdrawal data from major users, 1990 census data on domestic well use, and information on the service areas for potable water supplies and wastewater treatment. The New Jersey Water Supply Authority, a state-owned water supply utility, operates key water supply facilities in the Raritan Basin. The Authority's primary facilities are the Round Valley Reservoir, the Spruce Run Reservoir and the Delaware & Raritan Canal, with a total yield of

225 MGD. It does not actually supply retail water to individual customers in the Raritan River Basin. Rather, the Authority provides untreated (raw) water in bulk to other water purveyors who withdraw, treat and sell the finished water wholesale or retail. These water purveyors also sell the treated waters to other public water supply systems that actually deliver water directly to customers. Various ground water systems do not rely on NJWSA for bulk water. In addition, the City of New Brunswick has an independent supply (from the Lawrence Brook chain of lakes) along with its intake from the Canal.

- Major Public Water Supply Systems – The largest public water supply systems in the Basin use NJWSA water; they are Elizabethtown Water Company and Middlesex Water Company. Other systems using NJWSA water or having their own water supplies are listed below, with the nature of the supply being GW for ground water or SW for surface water:

  Borough of Sayreville Water Department (SW)
  City of Perth Amboy (operated by Middlesex Water Company) (GW)
  City of New Brunswick (SW)
  Morris County Municipal Utilities Authority (GW)
  Township of East Windsor Municipal Utilities Authority (GW)
  Township of Old Bridge Municipal Utilities Authority (GW)
  Township of North Brunswick (GW)
  Township of South Brunswick (GW)
  United Water-Matchaponix (SW)

- Major Industrial Users – Many of the major industries in the Basin are located on or near the tidal Raritan River. Some industries along the estuary use brackish water for facility cooling purposes. Other industries have their own potable or process water supplies, but most use water from one of the public water supply systems. Three of the largest, direct industrial users of fresh water supplies as of 1996 were:

  Dallanbach Sand Company (GW)
  Duhernal Water System (GW)
  Zeneca (GW)

- Agricultural and Golf Course – The NJ Statewide Water Supply Plan included estimates for water use by agriculture and golf courses. In both cases, the primary water use is for irrigation of plants (e.g., crops or lawns). Nearly all of these users are self-supplied (often from ground water or on-site ponds), as the cost of using potable water for irrigation at such a scale would be prohibitive. However, there are some examples where treated wastewater effluent is used for golf course irrigation. The 1995 estimated water use for agricultural and golf course irrigation in the Raritan River Basin was approximately 12 MGD. Agricultural areas are depicted on Figure 19 of the technical report "Setting of the Raritan River Basin." The same report discusses agricultural acreage in the Basin. Golf course locations are identifiable on aerial photography, but have not been mapped in detail at this time.

- Domestic and Other Small Users – The NJ Statewide Water Supply Plan includes estimates for domestic water use from wells for individual homes, based on 1990 Census information. In general, domestic wells supplied approximately 18 percent of the Basin's residential, potable water needs, with the vast majority of those wells being in the rural and lower-density suburban areas. Figure 3 shows the number of domestic wells by census tract, based on the 1990 Census. The Plan assumed that domestic wells will be sealed and the homes connected to public water supplies as development densities (and pollution threats) increase, and construction costs per home decrease. However, the number of domestic wells was assumed to increase in less-developed areas. The anticipated result was a fairly stable level of domestic well use for the Basin, but a shift of well concentrations from more-developed to less-

developed areas. Other small water supply systems also exist in the Basin (e.g., for small businesses, schools, neighborhoods) but these do not play an extensive role in water supply.

Water Budgets and Available Water Yields

Water Budgets

The water budget of the Basin is discussed in depth in a separate, technical report titled "Water Budget in the Raritan River Basin". This technical report focuses on water budget issues directly related to public water supplies. In NJDEP's 1982 Water Supply Master Plan the NJDEP identified two areas where overuse was threatening the long-term reliability of ground water supplies. These areas are referred to as Water Supply Critical Areas (WSCA). In both areas, water levels in the major aquifers were declining and salt water intrusion was evident. One area, WSCA #1 is partially within the Raritan River Basin. It covers Monmouth County and portions of Middlesex and Ocean Counties and includes four depleted aquifers (the Englishtown, Mt. Laurel/Wenonah, Old Bridge and Farrington). In both water supply critical areas, water allocation permittees were required to reduce the use of ground water from the depleted aquifers and develop a replacement supply. In WSCA #1, the reductions in withdrawals went into effect in 1990. Since then, USGS has documented substantial increases in the water levels in each of the depleted aquifers. The Englishtown and Mt. Laurel-Wenonah Aquifers have shown very significant recoveries (over 100 feet of potentiometric head -- a measure of water pressure in a confined aquifer) by 1993. USGS ground water models predict the rise in water levels will continue for approximately ten years before they stabilize. A reanalysis of WSCA #1 is in progress.

Minimum Passing Flows

In the Raritan River Basin, ten minimum passing flows have been established. The entity responsible for ensuring compliance with the minimum passing flows is also identified.

LOCATION	PASSING FLOW	RESPONSIBLE ENTITY
Carnegie Lake	5.5 MGD	Princeton University
Stony Brook (tributary to Carnegie Lake)	0.65 MGD	Hopewell Valley Golf Club
Millstone River at Blackwell's Mill	32.2 MGD	NJ Water Supply Authority
South Branch Raritan River at Stanton	40 MGD*	NJ Water Supply Authority
Lamington River	9 MGD	Belle Mead Development
Raritan River at Manville	70 MGD*	NJ Water Supply Authority
Raritan River at Bound Brook	90 MGD*	NJ Water Supply Authority
Lawrence Brook below Weston's Mill Pond	5.6 MGD	City of New Brunswick
Deep Run (tributary to South River)	1.4 MGD	Middlesex Water Company
Matchaponix Brook	4.7 MGD	United Water-Matchaponix

* flow augmentation is necessary

In some cases, the entity must actually provide flow augmentation to ensure the minimum passing flows meet the indicated levels (indicated by an asterisk). In most cases, the entity must simply stop withdrawals once stream flows drop below the minimum passing flow. The minimum passing flows are important factors in determining how much water will be available for potable and industrial use during drought and non-drought periods. During non-drought periods, minimum passing flows will affect the rate of new reservoir storage, because the passing flows must be met while the reservoir is retaining stream flow for refilling. During drought periods, the minimum passing flow will often be greater than the natural stream flow (even though the passing flows are usually reduced during drought emergencies), and so releases must be made from reservoirs to maintain stream flow at the required levels. For "run of the river" intakes that lack other storage, the

impact of droughts may be cessation of withdrawals (e.g., for self-supplied industries), or restrictions on withdrawals.

Safe Yields and Dependable Yields

The safe yields of surface water supply systems in the Raritan River Basin have been extensively studied and modeled. The New Jersey Institute of Technology prepared the primary model used in the Eastern Raritan Feasibility Study for NJDEP, covering the non-tidal Raritan River and its tributaries (i.e., excluding Lawrence Brook and South River). The NJ Water Supply Authority relies on a model prepared by the U.S. Geological Survey. The Lawrence Brook system has a nominal safe yield of 10 MGD based on earlier studies but has lost some of that safe yield due to sedimentation of the lakes. The South River is used primarily to recharge ground water systems in the Old Bridge area. Safe yields for the major surface water supplies are:

WATER SUPPLY	STORAGE	SAFE YIELD	RESPONSIBLE ENTITY
Round Valley/Spruce Run Reservoirs	66 billion gallons	160 MGD	NJ Water Supply Authority
Delaware & Raritan Canal	Not applicable	65 MGD	NJ Water Supply Authority
Lawrence Brook Chain of Lakes	Not available	8 MGD	City of New Brunswick

The dependable yields of aquifers in the Basin are more difficult to determine. Major aquifers tend not to be drought-sensitive, and so the primary issue becomes an aquifer's long-term ability to provide sufficient water for stream flow, human use and aquifer storage levels. The NJ Statewide Water Supply Plan estimated that 20 percent of the total ground water recharge in non-coastal aquifers could be used and not returned to the aquifer without significant harm to stream flows. Coastal aquifers can be sensitive to saltwater intrusion, and so the assumption was made that only 10 percent of total recharge is available from those areas. The NJDEP-NJ Geological Survey estimated ground water recharge in the early 1990's using baseflow analysis of streams within each watershed. The assumption made is that ground water recharge will equal stream baseflow over long periods, if ground water is not diverted through water supply withdrawals. Based on the NJGS analysis, the following quantities were used for annual average yields from Basin aquifers.

AQUIFER	DEPENDABLE YIELD
Raritan River Basin (except below)	110.5 MGD
South River/Lawrence Brook Watersheds	24.7 MGD
TOTAL	135.2 MGD

Because the South River area is included within the Water Supply Critical Area #1 and is subject to extensive restrictions on ground water withdrawals, NJDEP assumed that little if any additional ground water is available from that region. It should be recognized that the estimates for dependable yields of ground water are general estimates for large areas, and are not appropriate for use in small watersheds, site-specific or municipal planning, etc. For such localized applications, estimates should be tailored to the actual area. In addition, assessments must consider yield losses from ground water pollution in certain areas. Rural, urban and industrial areas have all been affected. A number of public water supply wells have been taken "off line" due to contamination; industrial solvents and petroleum hydrocarbons are the most frequent causes. However, the impacts are difficult to generalize. Some contaminated wells have been replaced by new wells in nearby parts of the same aquifer. Others could be restored to use by adding water

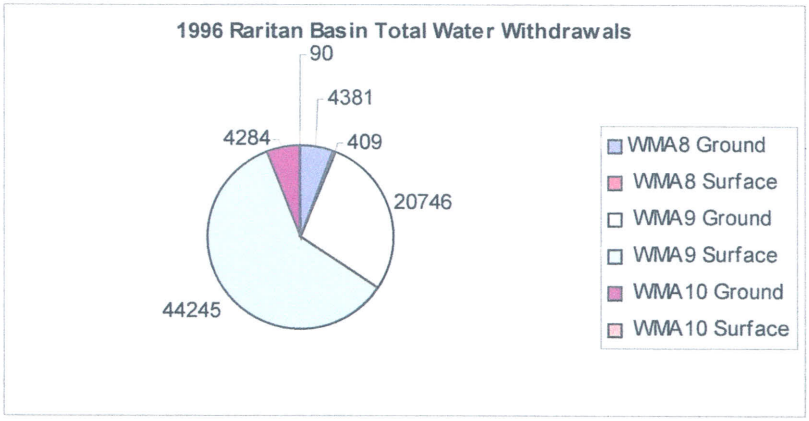
treatment systems, but are currently not used. In the latter case, surface water supplies have been used to replace the "off line" or abandoned wells.

Allocations of and Demands on Water Availability

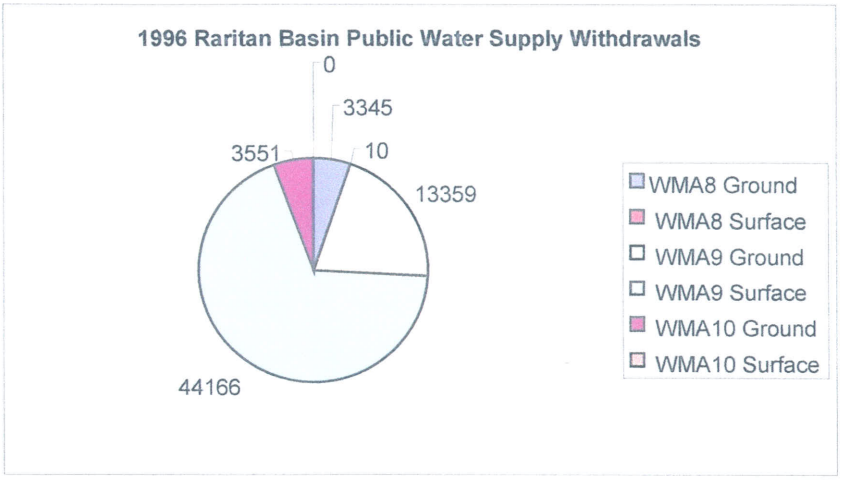
The Statewide Water Supply Plan was based in part on a series of consultant reports that estimated water availability (as discussed above), 1990 demands and demand projections to 2040. For the Raritan Basin (as with all areas of the State), the permitted allocations of water (controlling the maximum withdrawal rates) considerably exceeded the actual withdrawals. Also, some water uses are temporary withdrawals with subsequent discharge to the same location, such as for sand mining. The major users of ground and surface water in the Basin were described above, as were some of the lesser uses. The total withdrawals of water in the Basin for 1990 exceeded 207 MGD, with approximately 104 MGD of that from ground water (including domestic wells, public water supplies, industrial use, and agricultural irrigation use). As has been mentioned, the expectation was that ground water use in the South River watershed would decrease; the reductions would be replaced by surface water supplies imported from the rest of the Raritan Basin.

Withdrawals Through Water Allocation Permits

NJDEP has continued to track water demand in the State for withdrawals permitted under the Water Supply Management Act. The Water Use Database has been completed for the year 1996 (Hoffmann, 2000). The withdrawal data are summarized on Table 1. The total 1996 withdrawals from the Basin for all water allocation permittees was 74,155 million gallons per year or an average of 203 MGD. Withdrawals in the Lower Raritan Watershed Management Area (WMA 9) constituted over 87 percent of the total. Ground water was slightly less than 40 percent of total permitted withdrawals for the Basin.



Public water supply systems account for more than 86 percent of total, permitted withdrawals in the Basin, with ground water constituting less than 32 percent of that quantity. The New Jersey Statewide Water Supply Plan estimated that approximately 36 percent of all New Jerseyans rely on public ground water supplies, and so public water supply systems of the Raritan Basin are slightly more dependent on surface water than the statewide average. The Lower Raritan Watershed Management Area (WMA 9) is even more dominant regarding public water supply withdrawals, with more than 89 percent of the Basin total.



Depletive Water Use, Water Imports and Exports

A depletive use is one that removes water from its original source and does not return it, usually due to inter-watershed transfers or ocean discharge of treated sewage effluent. A consumptive use, on the other hand, removes water from a source and does not replace it due to evaporation, transpiration or incorporation into products. Irrigation, food processing and power plant cooling are common consumptive uses. NJDEP performed an analysis of depletive water uses with data from the late 1980's (Zripko and Hasan, 1994) and used the results in the New Jersey Statewide Water Supply Plan. The primary use of the analysis was in the development of a Water Balance Model for the plan. The data were organized by Regional Water Resource Planning Areas (RWRPAs) as used in the water supply plan. The South River watershed is RWRPA 11 and the remainder of the Raritan Basin is RWRPA 10. The depletive uses were broken into three categories – surface water depletive use, ground water depletive use and "Interbasin Transfers." The results from that report are shown in the tables below. The first table reflects the removal of local waters from that area, and do not reflect the importation of water. The second table addresses the movement of water to and from other areas.

As can be seen from the table below, the Raritan RWRPA as of the late 1980's had a significant depletive use of surface water, while the South River RWRPA had almost none. Conversely, the smaller South River area shows a greater depletive use of ground water than the much larger Raritan area. This situation reflects the status of water supply development in the two areas as of that time, when the South River aquifers were being overextended.

RWRPA	DEPLETIVE USE OF GROUND AND SURFACE WATERS (MGD) IN 1988
10 – Raritan (except below)	87.52 Surface Water 23.49 Ground Water 111.01 TOTAL
11 – South River	0.84 Surface Water 40.25 Ground Water 41.09 TOTAL

Much of the water entering the South River watershed was derived from surface water supply sources in Raritan (RWRPA 10), as shown in the table below. As discussed in the Statewide Water Supply Plan, that transfer was expected to increase as Raritan Basin surface water supplies replaced the overextended ground water supplies of the South River watershed. The result would be an increase of net out-transfers from RWRPA 10 and both an increase of net in-transfers to RWRPA 11 and a reduction of ground water depletive use.

RWRPA	INTERBASIN TRANSFERS (MGD) IN 1988	NET TRANSFERS (MGD)
10 – Raritan (except below)	-90.3 (Transfer out by service connections) +48.2 (Transfer in by Delaware & Raritan Canal) -8.9 (Transfer out from Farrington Lake) -4.0 (Transfer out from Spruce Run/Round Valley Reservoirs	-55.0
11 – South River	+6.8 (Transfer in by service connections) +8.9 (Transfer in from Farrington Lake) +18.5 (Transfer in from Delaware & Raritan Canal) +4.0 (Transfer in from Spruce Run/Round Valley Reservoirs)	+38.3

NJDEP anticipates updating the Water Balance Model in Fiscal Year 2001 or 2002, including updates of the depletive use and interbasin transfer estimates. A future version of this technical report will incorporate those results.

Surface Water Quantity and Quality Interactions

Three major justifications for the establishment of minimum passing flows are the provision of flows to support aquatic life, the assurance of flows to downstream water users under the riparian doctrine, and the provision of adequate flow to dilute pollution. The last reason is no longer acceptable under water pollution control laws, but apparently was a major factor in the establishment of minimum passing flows for the Raritan River at Manville and Bound Brook. At the time that the Spruce Run/Round Valley Reservoir system was established, water pollution control laws were weak. The Manville/Bound Brook area hosted a wide array of industrial facilities that discharged effluent into the Raritan River.

Over the last several decades, major improvements in wastewater treatment and the closure of many major industrial facilities such as Johns-Manville Corporation and American Cyanamid in the Manville/Bound Brook area have improved water quality. However, many of the affected areas are downstream of the major water supply intakes and therefore do not directly affect the supply of water for potable uses. Upstream of the intakes, the technical report "Evaluation of Water Quality Status in the Raritan River Basin, Water Years 1991-97" indicates that water quality is improving in some locations and for some pollutants, but also is declining for some locations and pollutants. At this time, water purveyors in the Basin have water supply treatment systems capable of handling pollutant loadings that customarily are found in Raritan Basin surface waters. Increased pollutant loadings could increase the cost of treatment, create a need to build new water treatment facilities, or cause the temporary or permanent abandonment of specific intakes (all of which have occurred in the Passaic River Basin).

Projection of Water Demands

Projections from Eastern Raritan Feasibility Study

The Eastern Raritan Feasibility Study relied on population estimates from 1985 and 1989, with population projections to the year 2030 developed by the NJ Department of Labor, Office of Demographic and Economic Analysis. The consultants extrapolated the 2030 results to the year 2040 for a fifty-year planning period. Because the projections were developed on a county basis, the projected growth for five of the seven counties had to be allocated to municipalities within and outside of the Raritan River Basin. The consultants used the 1989 Preliminary State Development and Redevelopment Plan (Corridor and Nodes scenario) to allocate projected population. Water demands are projected through the use of estimated water use rates in "gallons per capita per day" of "gpcd." The initial (1990) water use rates combine residential, commercial, industrial and institutional use of public water supply systems. Projections are based on assumptions regarding future changes in the use rate. The consultants for the Eastern Raritan Feasibility Study assumed that 1990 average use rates of 140 gpcd would increase by 0.5 gpcd per year until they reached 150 gpcd (in 2010), and then level off. The use rates are then multiplied by the projected population. The results are shown below. Most of the potable water in the Basin is supplied by public water supply systems, according to the study (e.g., all but 15 MGD in 1990, and all but 6-9 MGD in 2040).

WATER DEMAND PROJECTIONS, 1990-2040 (in MGD)				
Year	Eastern Raritan Study*	NJ Statewide WS Plan, Task 3 Report*	NJ Statewide WS Plan, Final Report	NJDEP FY2001 Update (to be added)
1990	238	255	202	
2000	257 – 277	260 – 278		
2010	276 – 314	266 – 297	240	
2020	284 – 331	276 – 311		
2030	293 – 349	286 – 324		
2040	301 – 364	295 – 338	281	

*includes areas out-of-basin that are served by purveyors using Raritan Basin supplies.

Projections from NJ Statewide Water Supply Plan

The NJ Statewide Water Supply Plan relied on 1990 census information plus projections to the year 2010 developed for the NJ State Planning Commission by the Rutgers Center for Urban Planning Research (CUPR). The 1990 census estimates were considerably lower than had been expected by earlier population forecasts. The CUPR projections for 2010 were significantly lower than the projections for 2010 used for the Eastern Raritan Feasibility Study, both statewide and for the Basin. Figures 23, 24, 26 and 33 of the technical report "Setting of the Raritan River Basin" show past and projected population for the Raritan Basin. The consultants then extrapolated the CUPR projections through the year 2040, providing a planning horizon equal to that of the Eastern Raritan Feasibility Study. Water demand projections were then derived in a similar manner. The results are shown above along with those of the Eastern Raritan report. The NJ Statewide Water Supply Plan used a different basis for computing demands that included the effects of interbasin transfers, thereby showing lower demands but also lower available water for each time period. The projected surpluses and deficits through 2040 were essentially the same as for the Eastern Raritan Water Supply Feasibility Study.

Updated Projections

As part of the development process for the second NJ Development and Redevelopment Plan, the NJ State Planning Commission has developed a new set of population projections. The NJDEP-Division of Watershed Management anticipates an update to the NJDEP's Water Balance Model (which includes the population projection module developed by the consultants to the NJ Statewide Water Supply Plan) to develop new water demand projections. A future version of this report will provide the results.

Comparison of Projections

As can be seen, there are some significant differences among the projections. Each was developed using a different base population, which results in a different trend line. As trends are a critical factor (though not the only one) in population projections, differences result. However, updated population projections based on the 1990 Census provided water demand projections that were significantly lower than previously accepted. Assuming that these projections continue to be on track, water demands will rise less steeply, lengthening the time before new water supply facilities must be constructed.

Uncertainties in Demand Projections

Estimated future populations and their consequent water supply needs are just that -- estimates. The development of projections is not an exact science, especially in a complex state like New Jersey. There are many factors that influence future populations and water demand, including: demographic, economic, sociopolitical, climatic and technological.

- **Demographics** – Of the demographic factors, population has the most influence on water demand. The influx of people into an area not only increases the residential component of water demand, but also increases the industrial and commercial components as a result of the increased labor force and the need to provide goods and services to the increased population. Using the CUPR projections as the base for the population projections allowed NJDEP to address other demographic factors including: housing density, type of housing, household size, and irrigated land (lawn) area. As noted above, further information on population projections is available in the technical report "Setting of the Raritan River Basin."

  It must be realized that projections are generally less reliable as the planning period increases. As mentioned before, population trends may change at any time during the 50-year planning period. As such, a periodic update must be undertaken in each area of the state. This update will allow more accurate conclusions to be drawn at each point in time. A careful accounting of present and future population is crucial to the precise development of water demands.

- **Economics** – This factor is an important element in how much a region grows and where this growth occurs and is built into the CUPR projections. A strong economy, which New Jersey enjoys over the long-term, is usually accompanied by more than average growth. However, much of New Jersey's growth is anticipated to be in the suburbs where, as previously discussed, this type of development can have harmful effects on the State's water supplies unless this growth is well planned from a regional water supply perspective and safeguards are implemented. This trend poses a potential conflict; while many would aspire to take residence in New Jersey's suburbs, poorly planned, designed and constructed development that impairs water supplies can give the impression of an undesirable quality of life, thus reducing the desirability of the suburbs.

Another key economic factor is the ongoing shift from water-intensive manufacturing to water-conserving manufacturing, and from manufacturing to office and research businesses in New Jersey. This trend is noted in the technical report "Setting of the Raritan River Basin" which shows a significant decline in manufacturing employment and a significant increase in service sector employment.

- **Sociopolitical** – Perhaps the greatest sociopolitical influence of future growth and consequent water demand would be the implementation of the State Development and Redevelopment Plan (SDRP). No other planning efforts seek to deliberately change land use patterns over such large areas. Implementation of the SDRP could alter the demand projections for various areas due to the change in predicted growth areas. This growth may cause an increase in water demand for existing water companies and also spur the development of small water companies in less urban areas.

- **Climatic** – Global warming theoretically could, in the decades or centuries to come, affect both water availability and demand. Warming might raise sea level and cause saltwater intrusion into the state's estuaries and aquifers. Extended warmer temperatures would substantially increase demand. Scientific consensus is building that global warming is occurring, but the small-scale impacts are still being debated. Therefore, it is too early to formally act on this issue until debate over the New Jersey impacts evolves closer to consensus. New Jersey has experienced both wet and dry periods in the last 40 years. The 1960's are famous for the extended drought of that period. The 1970's are generally considered a wet decade. There have been sharp, short droughts in the 1980's and 1990's, but the 1990's have also included near-record wet periods such as the first six months of 1998. Predictions are difficult. For this reason, water supply models use long-term stream flow records to assess the risks of drought.

- **Technological** – Advances in technology could also potentially affect supply and demand. Desalination continues to become less expensive and is used in Cape May County. Much progress is being made in the treatment of contaminants, possibly increasing water supply. Computer technology allows for a better understanding of aquifers and surface water supplies that, in turn, allows for the development of water optimization systems that can extend regional supplies. On the demand side, improved technology has significantly reduced water demand for power generation, manufacturing, irrigation and other uses such as residential plumbing devices. Low flow shower heads, toilets and more efficient appliances have all contributed to a stabilization or decline in per customer consumption where they have been fully implemented.

Summary of the Characterization

The water budget, water uses and water demands of the Raritan River Basin are fairly well described in past studies. However, there are inevitable uncertainties in each area. To the extent that watersheds within the Basin have water resources well beyond current demands, the uncertainty can be factored into planning efforts. Where high stresses exist, consideration can be given to more detailed research and analysis leading to a more precise characterization.

The overall annual average precipitation in the Basin is 2500 million gallons per day (MGD), or 2.19 MGD per square mile. Because of the different geology underlying parts of the Basin, the average figures must be used with caution. Varying percentages of precipitation exit the Basin through evapotranspiration, human uses and stream flow, based on differences in land cover, geology, soils and human uses of water.

The safe yields of surface water supply systems have been studied extensively. Estimated surface water safe yields for the Basin are currently 225 MGD. Dependable yields for aquifers of the Basin are more difficult to assess, though various studies have been published with estimates. Estimated

ground water dependable yields for the Basin are 135 MGD according to the NJ Statewide Water Supply Plan, but 79 MGD according to the Eastern Raritan Water Supply Feasibility Study. Total available water supply for the Basin is approximately 360 MGD, based on the statewide plan. Damage to both safe yields (surface water) and dependable yields (ground water) can be caused by water quality degradation, intensive localized use, recharge loss, inter-watershed transfers, etc. They can be increased by recharge augmentation, conjunctive use and water quality improvements.

1990 demand for potable water supply uses is fairly well known, and was estimated at approximately 140 gallons per day on average, statewide. Rates vary across the state based on the amount that industry and commercial businesses use in each area. The rates for residential and agricultural uses are generally much higher in summer than winter, due to irrigation of lawns and crops.

Projected water supply demands through the year 2040 differ somewhat based on the date they were prepared, but in general suggest a continuing growth of population, especially in the southern and western portions of the Basin. The 1990 demand was approximately 225 MGD, with projected increases to approximately 350 MGD by 2040, according to the Statewide Water Supply Plan.

Assessment of Water Availability

Methodology and Information Sources

Water availability has been studied extensively by the NJDEP over the last 20 years, culminating in the designation of a Water Supply Critical Area affecting the South River watershed area, construction of a pipeline to move surface water supplies to that area, and adoption by NJDEP of a NJ Statewide Water Supply Plan with recommendations for future water supply projects in the Raritan Basin. This assessment relies heavily on the reports and planning documents developed by NJDEP.

Adequacy of Current Supplies for Current Demands

Summary and Comparison of Existing Assessments

All the recent feasibility studies and plans developed by or for NJDEP agree that existing water supply sources are sufficient for current demands, when looked at regionally. The major, local exception is in the South River watershed, where over-pumping of the confined aquifers led NJDEP to declare this area as Water Supply Critical Area #1 and require a 50% reduction in ground water withdrawals from those aquifers. There are also areas in the western portion of the Basin where poor aquifers constrain the density of domestic wells that can be supported without loss of supplies during drought periods.

Uncertainties in Adequacy Assessment

The extent to which current regional supplies exceed demands in the 1990's indicates that any uncertainties have a limited impact on the conclusion. Regional supplies are more than adequate for regional demand as of the year 2000.

Conclusion

Aside from localized constraints on ground water, the current water supplies of the Raritan Basin are sufficient to handle current demands. In the most significant area of ground water shortages (the South River watershed area), surface waters from the NJ Water Supply Authority system have been provided as a replacement supply by Middlesex Water Company.

Adequacy of Current Supplies for Future Demands

Summary and Comparison of Existing Assessments

The original Eastern Raritan Feasibility Study concluded that a new water supply project would need to be constructed for the Basin as early as 2010. NJDEP in its "Implementation Plan for the Eastern Raritan Basin Water Supply Feasibility Study" made use of population and demand projections developed for the NJ Statewide Water Supply Plan, and concluded that a new project likely would be needed, but probably not until sometime near the end of the 2040 planning period. NJDEP adopted a planning schedule where specific actions would be triggered by Basin water use, rather than by set dates. The NJ Statewide Water Supply Plan adopted the recommendations of the "Implementation Plan." The consensus judgement is that additional water supply needs in the Raritan River Basin will eventually trigger the need for a new water supply facility, and that effective and aggressive water conservation efforts (primarily focused on structural improvements) would help delay the day of need for these projects.

Uncertainties in Adequacy Assessment

The NJDEP "Implementation Plan" contained an Appendix E that suggested a variety of factors that could alter water supply availability and demand. Perhaps the most critical factors involve the uncertainties of population projections, the extent to which baseflow reductions or additional transfers to out-of-basin locations occur, and the impacts of any reanalysis of safe yields and dependable yields. An additional factor is the continuing loss of public water supply wells to pollution, such as has been experienced by Elizabethtown Water Company. Finally, development of the ground water supplies of the upper South Branch of the Raritan River and Millstone River could affect the safe yield of surface water supplies in the Basin. Although the NJDEP has used a threshold for ground water availability of 20% of the total recharge, this figure is a general guide for planning purposes and cannot be relied upon for watershed-specific management decisions.

Conclusion

The Raritan River Basin has sufficient public water supplies, especially of surface water, to weather a return of the 1964-66 precipitation period (the "drought of record") at this time. Continued development of the Basin is likely to require construction of an additional water supply in the first half of the 21st Century. Development, in turn, may have impacts on ground water availability (through recharge reduction), baseflow of streams, safe yields and water quality.

Changes to Future Adequacy – New Supplies and Changing Demands

Summary of Existing Plans

The recent feasibility studies and water supply plans have agreed on two major points. First, the confined aquifers of the South River watershed area were overused in the early 1980's and needed to be protected. The result was NJDEP's declaration of a Water Supply Critical Area for eastern Middlesex County, much of Monmouth County and part of northern Ocean County. The

Critical Area designation led to construction of a Middlesex Water Company pipeline to the area and a cutback of 50% (17 MGD) in ground water withdrawals. Second, a new supply in the Raritan Basin will be needed at some time in the next 30 to 50 years. In the meantime, the Basin was estimated (in 1992) to have 74 MGD available in surface and ground water to meet future demands.

The NJDEP's "Implementation Plan" recommended two potential projects as having the greatest water supply benefits, the least environmental impacts and the greatest cost-effectiveness (see Figure 2). The NJ Statewide Water Supply Plan adopted the recommendation as formal NJDEP policy. One project is the Kingston Quarry Reservoir, where a current hard-rock quarry along the Delaware & Raritan Canal would be transformed into an off-stream storage reservoir, available for pumping during drought periods. The quarry is privately owned at this time, and transfer of ownership at the right time will be critical. The other project is a pump station and pipeline from the confluence of the North and South Branches of the Raritan River, back upstream to the Round Valley Reservoir. The Confluence Pumping Station site and pipeline right-of-way is already state-owned. Because the Kingston site is a quarry and the Confluence project would not involve creation of a reservoir, the consultants to NJDEP found that direct environmental impacts from these two projects would be very limited.

The primary policies and programs affecting water conservation are two. First, NJDEP has adopted regulations requiring that water purveyors develop water conservation plans. One aspect of these plans is a focus on water losses through leaks in transmission pipelines, etc. The intent is to improve the efficiency of water delivery so that less water needs to be withdrawn from the source. Second, the State of New Jersey has adopted water conservation standards equivalent to federal standards and those of the Delaware River Basin Commission. New construction and replacement fixtures must use water-conserving fixtures (e.g., toilets, sink faucets, shower heads) that conserve a considerable amount of water.

Potential Effects on Available Supplies

The Kingston Quarry Reservoir is estimated to provide an additional 65 MGD for a cost in 1992 dollars of $57 million, or $0.87 million per MGD. The Confluence Pumping Station is estimated to provide an additional 53 MGD for a cost of $71 million, or $1.34 million per MGD. Both costs compare favorably to the costs of a potential new reservoir that was also studied; Six-Mile Run Reservoir was estimated to provide 24 MGD for $65 million, or $2.71 million per MGD. In both cases, the results of the preferred options would be significant increases in available surface water supplies, equivalent to at least 23 percent of existing surface water safe yield and 15 percent of total available water supply (ground and surface water).

Potential Effects on Projected Demands

The lower estimates from NJDEP's planning efforts take water conservation into account. Even with the savings projected, the expectation is that a new water supply facility will be needed within the first half of the 21st Century.

Summary of the Assessment

Although there is a need to periodically update demand projections, water use estimates and water availability estimates, the assessments above make clear that some parts of the Raritan Basin (especially the confined aquifers of the South River watershed area) face significant constraints on ground water development. Other areas have some room for additional ground water use, but perhaps limited to approximately 25 MGD. Even that water will be available only if withdrawals are located strategically so that no significant, localized impacts occur. No single area can expect to

provide more than a small fraction of that 25 MGD. Surface water supplies seem sufficient for the next two to three decades. Water conservation can extend these supplies, while poorly managed water supply and land development can shorten the time before a new supply is needed. At least two potential surface water supply projects are available at reasonable cost.

Data, Information and Assessment Needs for Water Availability

As mentioned in this report, the primary needs for assessing water availability are:

1. Periodic updates of depletive and consumptive water uses;
2. Periodic updates of surface water or ground water withdrawals;
3. Periodic assessments of total water availability and demand, both current and into the future;
4. An improved understanding of ground water dependable yields at a watershed scale, replacing the current analyses at a near-Basin scale.

Conclusions

The Raritan River Basin currently has a water supply availability of 360 MGD, 225 MGD of which is surface water supplies. Considerable uncertainty exists regarding the true dependable yields of aquifers in the Basin, but estimates for planning purposes indicate up to 135 MGD from aquifers throughout the region. Surface water safe yields are the result of individual facilities, while ground water dependable yields are the results of 1,100 square miles of aquifers – some poor and some prolific. Protection and proper development and use of these supplies will safeguard the supply of available water, but mismanagement can reduce the available supply below the 360 MGD currently thought to exist. Localized constraints on ground water development do and will exist.

Demand projections indicate that the 1990 demand of approximately 255 MGD will increase to approximately 350 MGD by the year 2040. However, such long-range estimates should only be used for planning purposes – they are not reliable for definitive answers. Therefore, periodic updates are required to ensure the availability of sufficient supplies over time.

Comparing current water supply availability of 360 MGD to a projected 2040 demand of 350 MGD, it is clear that the Basin will need to address potential water supply needs in the coming decades if projections do not change significantly. The need for a new water supply could be hastened by increased population growth, supply losses due to contamination, changes in the water budget that emphasize increase runoff and decreased infiltration, heavier reliance on surface water supplies than ground water supplies, a need for supplies to other watersheds, etc. The need could be delayed by protection of water supplies, improved conservation, slower-than-projected population growth, reduced needs for non-residential supplies, reduced per capita demands, etc.

Two water supply projects, the Kingston Quarry Reservoir and the Confluence Pumping Station, have been identified as cost-effective projects that can provide 65 MGD and 53 MGD, respectively, with relatively limited environmental impacts. The Statewide Water Supply Plan anticipates that one of these projects will be built after 2030 to supply future needs, assuming that projections continue to hold steady and water conservation is effective in mitigating demands.

Glossary of Terms for Water Availability

"Aquifer" means any water-saturated zone in sedimentary or rock stratum that is significantly permeable so that it may yield sufficient quantities of water from wells or springs in order to serve as a practical source of water supply.

"Allocation permit" means the document issued by the NJDEP to a person, granting that person the privilege, so long as the person complies with the conditions of the permit, to divert water for any purpose other than agricultural or horticultural use.

"Confined aquifer" is an aquifer that is overlain by a relatively impermeable or significantly less permeable material so that its water is under pressure. If a well were installed, the water would rise above the top of the aquifer.

"Confining Unit" means a body of relatively impermeable material that is above or below one or more aquifers, restricting the flow of water to or from the aquifer(s)

"*Consumptive water use*" means the use of water in such as way that a portion of the water used is lost to evaporation, transpiration, incorporation in product, etc., and not discharged to any location.

"Critical water supply area" or "critical area" means a water supply area in which it is officially determined by the New Jersey Department of Environmental Protection, after public notice and a public meeting, that adverse conditions exist, related to the ground or surface water, which require special measures in order to achieve the objectives of the Water Supply Management Act.

"Dependable yield of combined surface/ground water sources" means the yield of water by a water system that is available continuously throughout a repetition of the most severe drought of record, without causing undesirable effects.

"Depletive water use" means the withdrawal of water from a water supply resource (ground or surface water) where the water, once used, is not discharged to the same water supply resource in such a manner as to be useable within the same watershed.

"Drought" means a condition of dryness due to lower than normal precipitation, resulting in reduced stream flows, reduced soil moisture and/or lowering of the potentiometric surface in wells.

"Facility" means a medium through which the base source is transmitted to the user. It is either man-made or manipulated in an attempt to maximize the water that may be derived from a base source. A facility for ground water is a well or well field and for surface waters is a reservoir or intake facility.

"Fresh water" means all nontidal and tidal waters generally having a salinity due to natural sources of less than or equal to 3.5 parts per thousand at near high tide.

"Interbasin transfer" means the movement of water (as raw, treated or used water) from one watershed to another.

"Multiple sources" means one or more production wells, surface water intakes, or interconnection or a combination of wells, surface water intakes or interconnections utilized to meet the demands of a public community water system.

"Normal demand" means the annual average demand during the three preceding non-drought years, including normally occurring peaks.

"Potable water" means water that does not contain objectionable pollution, contamination, minerals, or infective agents and is considered satisfactory for domestic consumption using conventional water treatment processes (e.g., chemical coagulation/flocculation, clarification, filtration, disinfection).

"Purveyor" means any company, authority, or person who owns or operates a public community water supply system.

"Safe yield from surface sources" means the yield maintainable by a water system continuously throughout a repetition of the most severe drought of record, after compliance with requirements of maintaining minimum passing flows, assuming no significant changes in upstream or upgradient depletive withdrawals.

"Semi-confined aquifer" is an aquifer that is overlain by a layer of material with low permeability, which permits water to slowly flow through it to recharge the underlying aquifer.

"Single prime source" means a single diversion of surface or ground water, including an interconnection, capable of providing the peak water demand of a public community water supply system.

"Stipulated surface water withdrawals" these are surface water uses that are not supported by storage, have no associated safe yield, and can be rescinded during droughts.

"Treated wastewater" means the treated spent water of a community. From the standpoint of source, it may be a combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any ground water, surface water, and storm water that may be present.

"Unconfined aquifer" means an aquifer close to the land surface with continuous layers of materials with high permeability, extending from the land surface to the base of the aquifer. This type of aquifer has a water table.

"User" means any person or other entity that utilizes water.

"Water allocation: or certification" means the authority to withdraw surface or groundwater for use, pursuant to a permit issued under N.J.A.C. 7:19-1 et seq. or 7:20A-1.1 et seq.

"Watershed" means a geographic area in which all water, sediments and dissolved material drain to a particular receiving body.

"Watershed Management Plan" means a strategy of which the goals and objectives are to achieve the restoration, protection and management of the water resources and any associated uses within the watershed.

"Water supply deficit" means the amount or amounts by which the available resources fall short of a given demand.

"Water supply system" means a facility for providing potable water.

"Water table" means the surface of the water-saturated zone that is at atmospheric pressure.

"Water table aquifer" is synonymous with unconfined aquifer.

"Yield of a water resource system" means the output of water from a system, available with monthly variations corresponding to the needs of the system.

Common Acronyms for Water Availability

cfs	cubic feet per second
gpd	gallons per day
gpcd	gallons per capita (person) per day
MGD	million gallons per day
NJDEP	NJ Department of Environmental Protection
NJGS	New Jersey Geological Survey
NJPDES	NJ Pollutant Discharge Elimination System
NJSWSP	1995 NJ Statewide Water Supply Plan
RWRPA	Regional Water Resource Planning Areas
USGS	US Geological Survey
WBM	Water Balance Model
WSCA	Water Supply Critical Area
WSMA	Water Supply Management Act

References for Water Availability

Hoffmann, J. 2000. Personal communication. NJ Department of Environmental Protection, Trenton, NJ.

New Jersey Department of Environmental Protection. 1992. Eastern Raritan Basin Water Supply Feasibility Study, Final Report, Task Report 12. Prepared by Alfred Crew Consulting Engineers and Hazen and Sawyer.

New Jersey Department of Environmental Protection. 1994. Implementation Plan for the Eastern Raritan Basin Water Supply Feasibility Study.

New Jersey Department of Environmental Protection. 1996. New Jersey Statewide Water Supply Plan – with Appendixes.

CH2M Hill, Metcalf & Eddy, NJ First. 1992-94. New Jersey Statewide Water Supply Plan – Consultant Reports

New Jersey Department of Environmental Protection and Metcalf & Eddy. 1995. New Jersey Statewide Water Supply Plan – Water Data Model.

Zripko, N.P., and Hasan, A. 1994. Depletive Water Use Project for Regional Water Resource Planning Areas of New Jersey. NJ Department of Environmental Protection, Trenton, NJ.

Figure 1

Stream Gauging Stations within the Raritan Basin

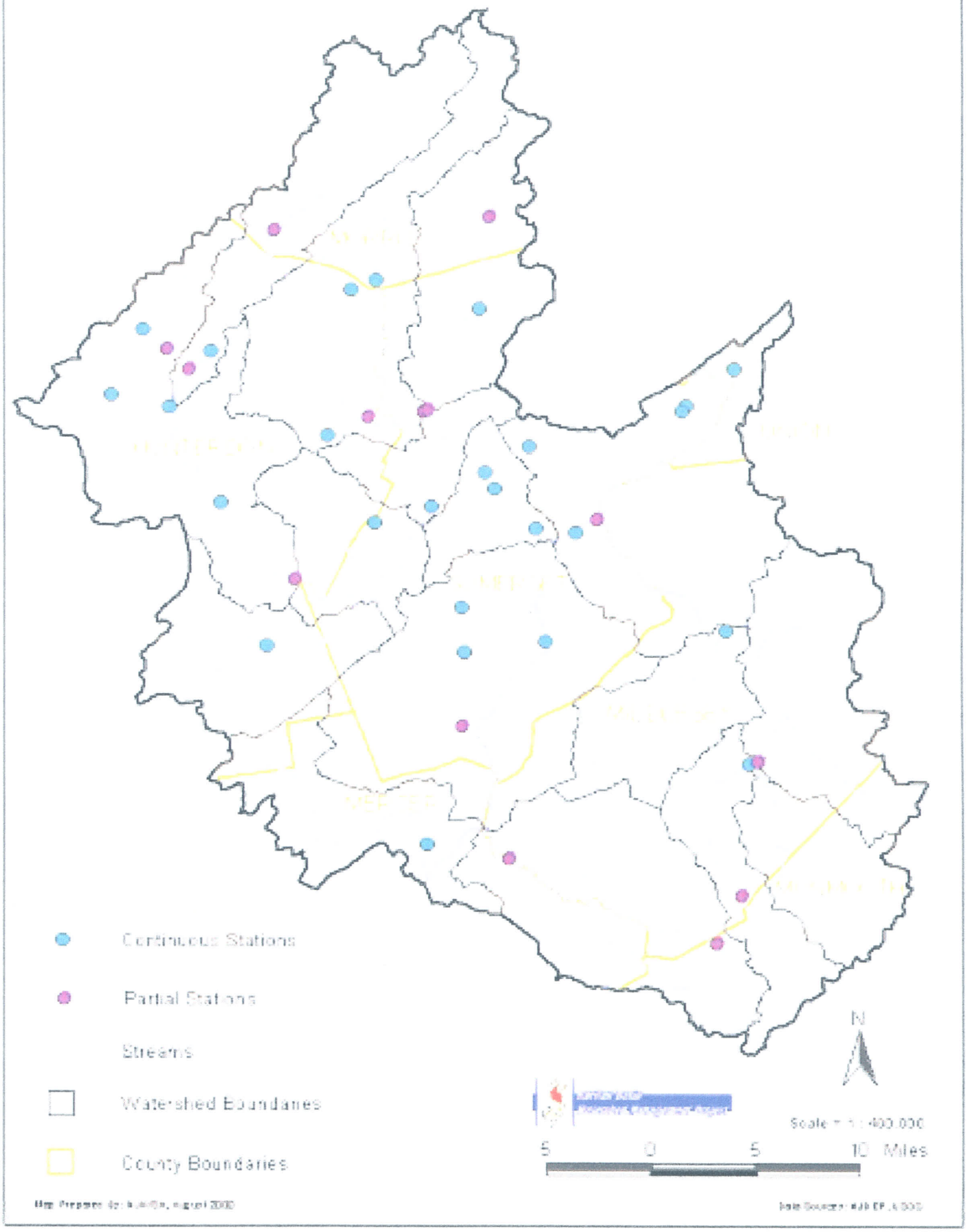


Figure 2

Major Current and Planned Surface Water Supply Facilities within the Raritan Basin

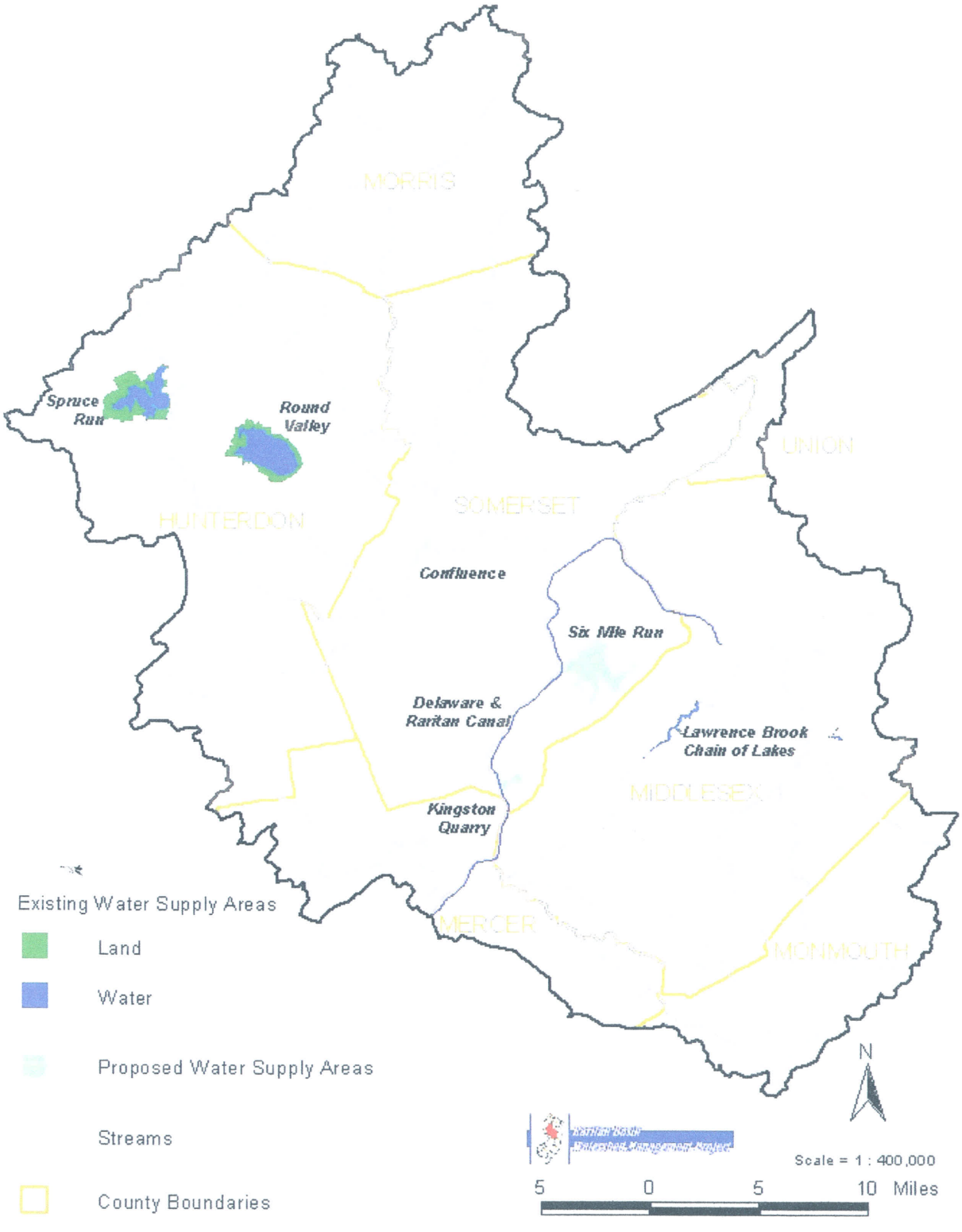


Figure 3

1990 Households Using Individual Wells within the Raritan Basin

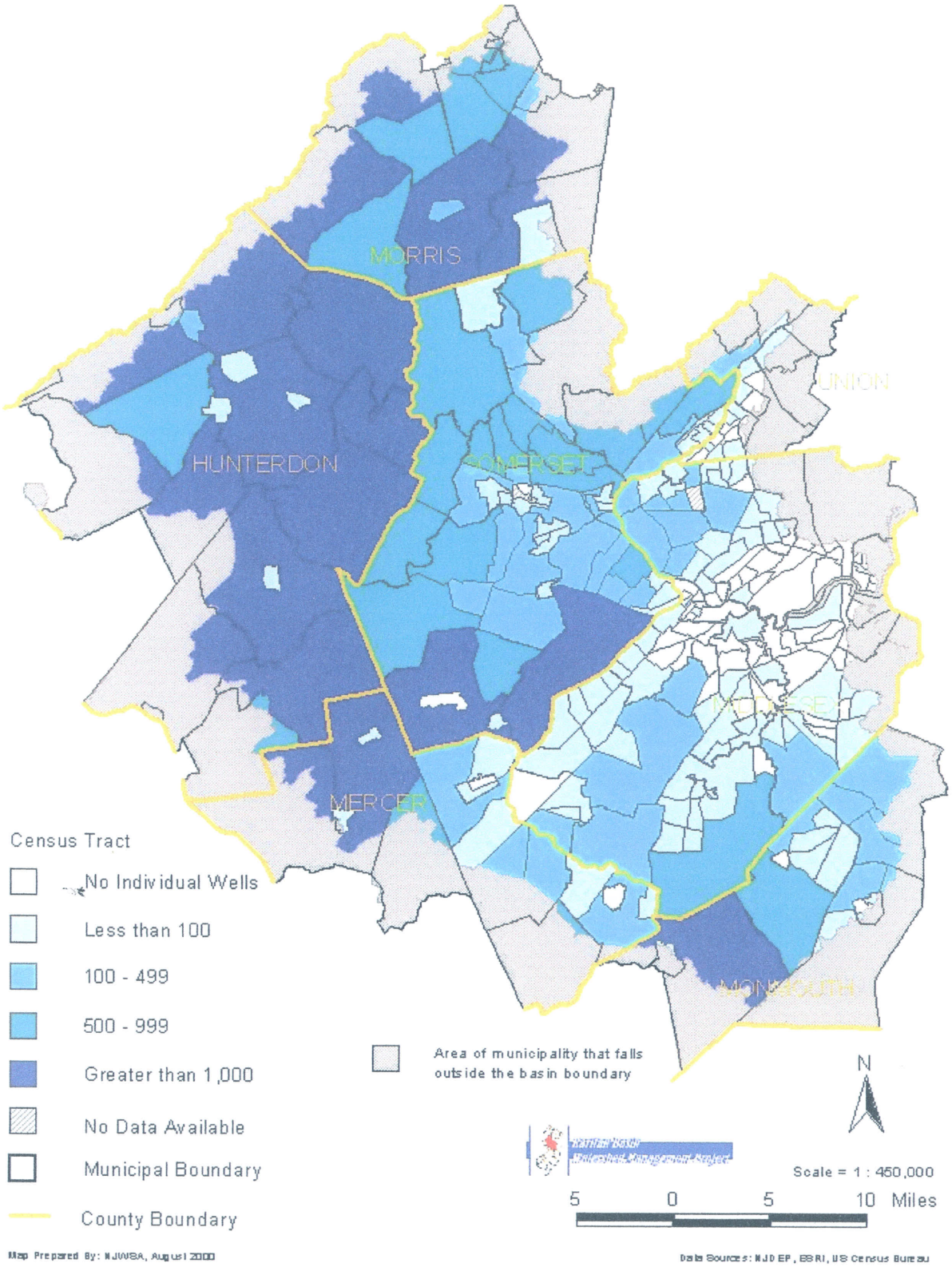


TABLE 1
RARITAN BASIN 1996 WATER WITHDRAWALS

ALL WATER ALLOCATION PERMITS

SOURCE	WMA	MGY	Average MGD	% Basin
GROUND	8	4381		
SURFACE	8	409		
TOTAL	**8**	**4790**	13	6.5
GROUND	9	20746		
SURFACE	9	44245		
TOTAL	**9**	**64992**	178	87.6
GROUND	10	4284		
SURFACE	10	90		
TOTAL	**10**	**4374**	12	5.9
GROUND	BASIN	29412		
SURFACE	BASIN	44744		
TOTAL	**BASIN**	**74155**	203	100

PUBLIC WATER SUPPLY SYSTEMS

SOURCE	WMA	MGY	Average MGD	% Basin
GROUND	8	3345		
SURFACE	8	10		
TOTAL	**8**	**3355**	9	5.2
GROUND	9	13359		
SURFACE	9	44166		
TOTAL	**9**	**57526**	158	89.3
GROUND	10	3551		
SURFACE	10	0		
TOTAL	**10**	**3551**	10	5.5
GROUND	BASIN	20255		
SURFACE	BASIN	44176		
TOTAL	**BASIN**	**64431**	177	100

Data Source: Hoffmann, 2000.

State of New Jersey

James E. McGreevey
Governor

Department of Environmental Protection

Bradley M. Campt
Commissioner

WATER SUPPLY ADMINISTRATION
BUREAU OF WATER ALLOCATION
P.O. BOX 426
TRENTON, NEW JERSEY 08625-0426
TEL.# 609-292-2957
FAX.# 609-633-1495

2003 MAR 27 A 11:42

NEW JERSEY
WATER SUPPLY AUTHORITY
CLINTON, NJ 08809

MAR 25 2003

Elizabethtown Water Company
600 South Avenue
Westfield, New Jersey 07090
Attn: Robert R. Schaefer
Director – Engineering & Technical Services

Dear Mr. Schaefer:

Re: Water Allocation Permit No. 5033

Enclosed is a permit dated MAR 25 2003 issued pursuant to the Water Supply Management Act, N.J.S.A. 58:1A-1 et seq. This permit is to divert water from the Raritan and Millstone Rivers in Bridgewater Township and Manville Borough, Somerset County.

Please be advised that as you are responsible for complying with the terms and conditions of the enclosed permit you should review them thoroughly. Failure to comply with any or all of the terms and conditions could result in penalties and/or revocation of the permit.

Within 20 calendar days following your receipt of this permit you may submit a request for an adjudicatory hearing to contest the conditions of this permit. Regulations regarding the format and requirements for requesting an adjudicatory hearing may be found in N.J.A.C. 7:19-2.13.

To request a hearing, the permittee must complete the enclosed Tracking Form and supply all the information specified in Part III of the Tracking Form. A copy of the completed, signed and dated Tracking Form, together with all of the information required by Part III of the Tracking Form, including attachments where specified, must be submitted to:

1. Janis Hoagland, Director
New Jersey Department of Environmental Protection
Office of Legal Affairs
P.O. Box 402
Trenton, New Jersey 08625

2. Dennis Hart, Administrator (without attachments)
New Jersey Department of Environmental Protection
Water Supply Administration
Bureau of Water Allocation
P.O. Box 426
Trenton, New Jersey 08625

Very truly yours,

Dennis Hart
Administrator
Water Supply Administration

JGG:bu

Enclosure

CERTIFIED MAIL NO. 7001 2510 0005 3947 6318

c: Bureau of Water Allocation
Bureau of Safe Drinking Water
Northern Bureau of Water Compliance & Enforcement

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER ALLOCATION
PO BOX 426, TRENTON, N.J. 08625-0426

PERMIT*

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to the further conditions and stipulations enumerated in the supporting documents.

Permit No.	Issuance Date	Effective Date	Expiration Date
5033	MAR 25 2003	MAR 25 2003	April 30, 2013

Name and Address of Applicant

Elizabethtown Water Company
600 South Avenue
Westfield, NJ 07090

Location of Activity/Facility

Bridgewater Township & Manville Borough
Somerset County

Type of Permit	Statute(s)
Water Allocation Diversion	N.J.S.A. 58:1A-1

This permit grants permission to:

Divert water from the Raritan and Millstone Rivers in Bridgewater Township and Manville Borough, Somerset County.

This permit is subject to the following Specific and General Conditions:

A) WATER DIVERSION SOURCES

1. Water may be diverted under this modified permit for public community water supply from the following sources at the maximum rates specified below:

Surface Water

Intake No.	Source	Pump Capacity (mgd)
1	Raritan River	263
2	Raritan River	
3	Raritan River	
4	Raritan River	
Millstone	Millstone River	
Canal Road	Raritan River	110

Comments submitted at Highlands Council Meeting on July 10, 2008 by David Shope Page 35 of 51

Approved by the Authority of:

Dennis Hart, Administrator
Water Supply Administration

Dennis Hart, Administrator, Bureau of Water Allocation — 3/25/03 Date

*The word permit means "approval, certification, registration, etc."

(GENERAL CONDITIONS ARE ON THE REVERSE SIDE.)

DEP-007 (BWA 5/99)

This permit is subject to the following general conditions:

1. This permit is revocable, or subject to modification or change at any time, pursuant to the applicable regulations, when in the judgement of the Department of Environmental Protection of the State of New Jersey such revocation, modification or change shall be necessary.

2. The issuance of this permit shall not be deemed to affect in any way action by the Department of Environmental Protection of the State of New Jersey on any future application.

3. The works, facilities, and/or activities shown by plans and/or other engineering data, which are this day approved, subject to the conditions herewith established, shall be constructed and/or executed in conformity with such plans and/or engineering data and the said conditions.

4. No change in plans or specifications shall be made except with the prior written permission of the Department of Environmental Protection of the State of New Jersey.

5. The granting of this permit shall not be construed to in any way affect the title or ownership of property, and shall not make the Department of Environmental Protection or the State a party in any suit or question of ownership of property.

6. This permit does not waive the obtaining of Federal or other State or local government consent when necessary. This permit is not valid and no work shall be undertaken until such time as all other required approvals and permits have been obtained.

7. A copy of this permit shall be kept at the work site, and shall be exhibited upon request of any person.

8. The Department has the right to enter and inspect any site, building or equipment, or any portion thereof, owned or operated by the permittee, at any time, in order to ascertain compliance or non-compliance with N.J.A.C. 58:1A-1 et seq., 58:4A-4.1 et seq., 58:12A-1 et seq., these rules, or any other agreement or order issued or entered into pursuant thereto. Such right shall include, but not be limited to, the right to require the testing of any equipment at the facility, to sketch or photograph any document or records necessary to determine such compliance or noncompliance, and to interview any employees or representative of the owner, operator or applicant. Such right shall be absolute and shall not be conditioned upon any action by the Department, except the presentation of appropriate credentials as requested and compliance with appropriate standard safety procedures.

9. This permit may be transferred, with the consent of the Department, but only for the identical use of the waters.

10. If the authorized diversion privileges are not currently diverted, subject to contract, or reasonably required for a demonstrated future need, they shall revert back to the State upon renewal or modification of the permit.

11. The permittee shall protect each diversion source from vandalism, tampering, and contamination at all times.

B) ALLOCATION = 201.6 Mgd

2. The total diversion from the above sources shall not exceed 6250 million gallons per month at a maximum rate of 172,000 gpm.

= 161.64 Mgd

3. The total diversion from the above sources shall not exceed 59,000 million gallons per year.

4. The permittee shall not be considered to have violated their allocation limits if the allocation limit exceedance is a result of water transfers ordered by the Department during times of drought or other water emergencies.

C) INITIAL PERMIT REQUIREMENTS

5. The permittee shall enter into a contract within 120 days of issuance of this permit with the New Jersey Water Supply Authority for a minimum quantity of 124.1 million gallons per day (Raritan system normal demand water use).

Due 6-25, Done?

6. The permittee shall submit to the Bureau of Water Allocation within 90 days of the issuance of this permit, a status report of the various wells for which the permittee currently holds a water allocation permit that are currently unutilized or underutilized. The report shall include the current status of each well, and identify the reason each source is currently unutilized or underutilized. The report shall also include existing and any proposed interconnections with Trenton.

By December 31, 2003, a plan of action shall be submitted that outlines what improvements to the wells or interconnection will be necessary in order to either bring the well into service or fully utilize the well, and implement interconnections with Trenton. The plan shall identify those wells that are being considered for rehabilitation, identify the necessary improvements, and include estimated dates for making the necessary improvements. The permittee shall file a progress report every six months thereafter until all improvements are completed.

7. The permittee shall adopt and shall implement to the satisfaction of the Department, a water conservation and drought management plan. The plan shall encourage water conservation in all types of use within the area served by the permittee. An update to the existing plan shall be submitted to the Bureau of Water Allocation on or before October 31, 2003. The update shall specifically address the feasibility of developing other water resources of lesser quality to replace or supplement non potable demands placed upon the Elizabethtown water system. The conservation plan shall be updated every other year thereafter, on the actions taken pursuant to this program and the impact thereof.

Progress?

D) MONTHLY PERMIT REQUIREMENTS

8. The monthly raw water diversion from the Millstone and Raritan Rivers and the quantity diverted during each month from the D & R Canal shall be recorded monthly and reported quarterly on forms provided by the Department under Permit No. 5033.

9. The permittee shall submit a quarterly system totals report for the combined monthly diversions from all the permittee's diversion sources.

E) GENERAL REQUIREMENTS

10. The permittee shall submit a water conservation and drought management plan update as outlined in Item C.7. above.

11. All diversion sources shall be metered with a totalizing flow meter, which, at a minimum shall be calibrated at least once every five years.

12. The pumping equipment capacity shall not be increased without prior approval from the Bureau of Water Allocation.

13. All new services shall be metered in accordance with all applicable laws, regulations or codes including, but not limited to, the Water Supply Management Act.

14. All existing services shall be metered.

15. Water charges for each service connection shall be based in part on metered usage.

16. The permittee shall investigate to the Department's satisfaction complaints by users of wells or surface water supplies within the zone of influence of its diversion to determine what impact the diversion has had on such wells or surface water supplies. A report on these investigations shall be forwarded to the Bureau of Water Allocation. Any well or surface water supply which becomes damaged, dry, has reduced capacity, reduced water quality or is otherwise rendered unusable as a water well or surface water supply system as a result of the permittee's diversions shall be repaired or replaced at the expense of the permittee. Work shall be in accordance with all State, County and Municipal construction standards for potable water. After reviewing all applicable investigational reports the Department of Environmental Protection will make the final determination regarding the validity of such complaints, the scope or sufficiency of such investigations, and will determine how to resolve any problems resulting from the diversion.

17. The Department may modify, suspend or terminate this permit, after due process, for violations of permit conditions, N.J.S.A. 58:1A-1, N.J.A.C. 7:19-1 et seq., any orders issued by the Department, or when in the public interest.

18. This permit is issued for a limited period, and is not subject to automatic renewal.

19. The permittee is subject to such initial, modification and annual fees as may be prescribed by the regulations.

20. The permittee shall have the right to apply at any time for modification of this permit by submission of the appropriate application forms. The permittee may informally discuss the terms and conditions of this permit at any time with the Bureau of Water Allocation. An application for renewal shall be filed 3 months prior to the expiration date.

21. In addition to the specific management requirements cited above, and when so directed by the Department, the permittee shall comply with applicable portions of the Water Supply Management Rules (N.J.A.C. 7:19-6 et seq.) to include the determination of dependable yield; unaccounted-for water; rehabilitation; system pressure and storage; interconnections; and operation of interconnections. % OF UNACCOUNTED FOR WATER, % OF MGD

22. This permit is only valid for the sources identified in Section A above, at the maximum allocation and pumping rates also identified in Section A. A major modification of this permit may be required in order to request approval of any additional diversion sources or an increase in the pumping capacity of an approved source pursuant to N.J.A.C. 7:19-1.5.

23. If the permittee violates any condition of this permit or has violated any condition of their previous permit, the permittee is subject to administrative penalties up to $5000 per day per offense as specified in N.J.S.A. 58:1A-16 and N.J.A.C. 7:19-18.2.

F) PERMIT EXPIRATION

24. This permit shall expire on April 30, 2013.

3/25/2003

STAFF REPORT

In the matter of

Elizabethtown Water Company

Application No. 5033 to modify permit to divert water from the Raritan and Millstone Rivers in Bridgewater Township and Manville Borough, Somerset County

In compliance with the provisions of N.J.S.A. 58:1A-1 et seq., Elizabethtown Water Company, 600 South Avenue, Westfield, New Jersey 07090, filed an application with the Department of Environmental Protection on February 26, 2001. The application was deemed administratively complete on August 13, 2001 to divert a maximum of 6250 million gallons of water during any month (mgm) at a maximum rate of 172,000 gallons per minute from existing intakes on the Raritan and Millstone Rivers. The applicant's Canal Road Plant on the Raritan River has been upgraded by 20 million gallons per day (mgd). The applicant has contractual arrangements with the New Jersey Water Supply Authority (NJWSA), who is responsible for maintaining passing flows in the Raritan River, for diverting water from Raritan and Millstone Rivers and the D & R Canal.

Diversion is for the purpose of public community water supply and serves the following communities: Branchburg Township, Bridgewater Township, Bound Brook Borough, Clark Township, Cranford Township, Dunellen Borough, Fanwood Borough, Garwood Borough, Greenbrook Township, Hillsborough Township, Hillside Township, Kenilworth Borough, Linden City, Middlesex Borough, Millstone Borough, Montgomery Township, Mountainside Borough, North Plainfield Borough, Peapack & Gladstone, Piscataway Township, Plainsboro Township, Plainfield City, Princeton Borough, Princeton Township, Raritan Borough, Raritan Township, Roselle Borough, Roselle Park Borough, Scotch Plains Township, Somerville Borough, South Bound Brook Borough, Union Township, Warren Township, Watchung Borough, Westfield Town, West Windsor Township and portions of Bedminster Township, Chester Township, Cranbury Township, Edison Township, Franklin Township, Lawrence Township, Readington Township, South Plainfield Borough, South Brunswick Township, Tewksbury Township, Manville Borough, Hopewell Township, City of Elizabeth, Highland Park, Lawrenceville, Monroe Township, New Brunswick City, City of Rahway, and Winfield Park.

Public notice was required due to the requested increase in allocation and increased pumping capacity.

No requests for a hearing were filed upon the notice published on February 14, 2003 in The Courier News.

Findings

1. This application request is for a modification of an allocation granted previously under Permit No. 5033. The applicant also maintains several other allocation permits in Somerset County: 5021, 5023 and 5068. These are in addition to twelve other allocation permits for diversions from wells held by Elizabethtown.

2. This request represents an increase in the current overall allocations of 2291 million gallons of water during any month and 20,087 million gallons of water per year. However, given the operational considerations outlined in 4 and 5 below this increase is not as large as it appears.

3. Water flows by gravity from the intakes on the Raritan and Millstone Rivers to low lift treatment facilities. Intakes 1, 2, 3, 4, and Millstone feed the Raritan Millstone Treatment Plant. The low lift treatment facilities have 11 pumps with a total capacity of 263 mgd. The Canal Road intake feeds the Canal Road Treatment Plant, from 4 low lift pumps with a total capacity of 110 mgd. The intake capability at any given time is limited to the treatment capacity of the two plants which is 255 mgd. This pumping capacity provides system redundancy for maintenance and backup purposes should a pump fail.

4. The NJWSA made a number of operational changes regarding the use of 10-Mile Lock to facilitate operating the Spruce Run/Round Valley Reservoir Raritan River System and the D & R Canal as an integrated system with a combined safe yield of 225 million gallons per day (mgd). These changes included operating the lock waste gate to allow transfers of canal water to the Millstone and Raritan River by gravity. In the mid 1980's a pumping station was constructed to allow the transfer of up to 60 mgd of water from the Millstone River to the canal.

   The NJWSA has been making releases from 10 Mile Lock to meet their passing flow requirements at the Bound Brook gage. Additional releases have been made at 10 Mile Lock on a routine basis, transferring water from the D & R Canal to the Raritan River so that Elizabethtown can use their Raritan River intakes rather than their D & R Canal intake. Therefore, when considering their 32 mgd canal diversion as being utilized instead from the Raritan River there have been no allocation exceedances by Elizabethtown.

NJWSA, D & R Canal Releases to Raritan River:

Year	Annual Release (mg)	Maximum Monthly Release (mg)
2001	4437	835
2000	8890	889
1999	8555	930
1998	10302	1066
1997	4555	903

5. The applicant currently has a long-term contract with the NJWSA for a base diversion of 72 mgd from the Raritan and Millstone Rivers. Annually the applicant has been signing 20 mgd supplemental short term agreements. The applicant also has a contract with the NJWSA for diversion of up to 32 mgd from the Delaware and Raritan Canal (D & R Canal). The applicant has grandfathered diversion privileges of 2.91 mgd from the former Somerville Water Company. Since these diversion privileges pre date the NJWSA the applicant is not required to have a contract with the NJWSA for this quantity of water, but it is included in the allocation under this permit. The applicant is also utilizing 10 mgd of Middlesex Water Company's contracted amount of Raritan River water. In turn, Middlesex uses 10 mgd of Elizabethtown's contracted D & R Canal water. (It should be noted that Middlesex does not have any allocation for diversion privileges from the Raritan River. Therefore, the allocation and diversion by Elizabethtown under this swapping arrangement is a part of the existing Elizabethtown permit.) Elizabethtown has the ability to divert water from the Millstone and Raritan Rivers, and the D & R Canal. However, Middlesex only has the ability to divert water from the D & R Canal, and cannot physically divert from the Raritan River.

6. Flow into the D & R Canal is regulated by the Delaware River Basin Commission. During periods of drought or during other water supply emergencies the flow into the D & R Canal may be affected. During these periods NJWSA may direct the applicant to reduce or cease their D & R Canal diversion because of the reduced flows.

7. A review of quarterly diversion reports indicates the following diversions from the Raritan River made under this permit:

Year	Annual Use (mg)	Maximum Monthly Use (mg)	Average Monthly Use (mg)	Existing Allocation (mgm)	(mgy)
2001	45,631	4314**	3803	3959*	42413
2000	46,246	4529**	3854	3959*	42413
1999	43,435	5006**	3620	3959*	42413

ALL AC
DIVERS
EXCEE
ALLOCA

2001-1998

NJWSA COMPLI
IN VIOLATING
ALLOCATIONS
(MGY

Year	Annual Use (mg)	Maximum Monthly Use (mg)	Average Monthly Use (mg)	Existing Allocation (mgm)	(mgy)
1998	43,245	4560**	3604	3959*	42413
1997	39,342	3979**	3279	3959*	42413

It should be noted that Elizabethtown has been reporting delivered water rather than raw water. WHY? NO METERS? WHAT HAPPENED TO UN ACCOUNTED FOR WATER?

* If directed by NJWSA to reduce take from D & R Canal, the total diversion from the Canal and the Millstone and Raritan Rivers could be increased to 4641 mgm.

** Directed to reduce take from canal.

Diversions by the applicant from the D & R Canal:

Year	Annual Use (mg)	Maximum Monthly Use (mg)
2001	4055	940
2000	87	73
1999	1094	628
1998	58	34
1997	3284	614

Combined Diversions Under NJWSA Contract:

Year	Annual Use (mg)	Maximum Monthly Use (mg)
2001	47339	4655 (May)
2000	46333	4602 (July)
1999	44529	5634 (July)
1998	43260	4560 (Aug.)
1997	42626	4566 (July)

8. As noted at N.J.A.C. 7:19-6.3(b) a purveyor is required to have sufficient supply to provide for the "normal demand" of its customers. "Normal demand" is the average daily demand during the three preceding non-drought years. In this case, that would be 2001, 2000, and 1998. Since finished water has been reported to the Department, the diversion amounts reported to the NJWSA should be used. The average daily surface diversion by Elizabethtown over these three years is 124.1 mgd, {[115.68 + 123.36 + 133.36] ÷ 3}. These numbers have been adjusted for the 2.91 mgd grandfathered allocation.

Thus, at a minimum, Elizabethtown should be contracting with the NJWSA for 124.1 mgd.

9. Because the applicant is shifting its demands between 16 permits, it is not practical to determine their exact average and peak monthly per capita use for the communities covered under this permit. However, based upon their 1996 combined conservation plan for the 16 permits issued to Elizabethtown, with a total population of 575,070, their average monthly consumption was 63 gpcd, and their peak monthly consumption was 81 gpcd. Based upon the information provided with the application the applicant's industrial, commercial, and industrial wholesale supplies amounted to about 54% of their total diversion. The applicant is in the process of finalizing a new system wide conservation plan.

10. Flow meters for all diversion sources are calibrated quarterly on an annual basis.

11. The applicant has failed to comply with existing permit condition no. 6 dealing with failing to submit quarterly diversion reports.

12. The system is fully metered.

13. The applicant has indicated that their unaccounted-for-water was 16.4 percent for 2001, however there was a 60 inch main break in 2001. Unaccounted-for-water for the first quarter of 2002 was 12.9 percent.

14. The applicant has not submitted a Water Conservation Plan since 1996, a new conservation plan is currently being worked on.

15. According to the applicant, a review of the NJDEP's 2001 Known Contaminated Sites from the imap NJ webpage, and the application, there are 14 known near by potential pollution sites within one mile of the proposed diversion, including 2 Groundwater Contamination Areas.

16. There are no minimum passing flow requirements for these surface diversions as the NJWSA is responsible for maintaining the passing flows in the Raritan River. The passing flow has been established at 90 mgd (140 cfs) at Bound Brook gage, #01403060. This gage is approximately 5000 feet downstream of the Canal Road intake, and 1000 feet downstream from the Calco Dam and Cuckholds Brook. The NJWSA makes releases from Spruce Run/Round Valley Reservoirs and from the 10 Mile Lock on the D & R Canal when needed to maintain the passing flow in the Raritan River.

17. Drainage area at the point of diversion is 748 square miles.

18. At the point of diversion, the water quality classification is FW-2 Non-trout.

19. The diverted flow is metered.

20. There are three upstream surface water diversions within five miles of the applicant's intakes, these include:

Diverter	Water Source	Diversion (mgm)	Distance (miles)
Selody Sod Farm	Millstone River	1.8	1 ½
Royce Brook Golf Course	Millstone River	16.6	2 ¼
Duke Farms	Raritan River	33.0	4 ½

In addition, within 5 miles there are two golf courses that utilize ponds on Peter's Brook, a tributary to the Raritan River. These are the Raritan Valley Country Club and Somerset County's Green Knoll Golf Course.

21. There are approximately 72 wastewater discharges into the mainstream of the Raritan River, 23 wastewater discharges into the South Branch of the Raritan, 20 wastewater discharges into the North Branch of the Raritan, and 40 wastewater discharges into the Millstone River. Approximately 50 percent of the discharges are municipal while the remainder are industrial/commercial. The nearest municipal discharge is the Somerset Raritan Valley Sewerage Authority (SRVSA) which discharges approximately 21.3 mgd into Cuckholds Brook, a tributary to the Raritan River. Cuckholds Brook flows into the Raritan River approximately 6000 feet downstream of the Canal Road intake. A planned expansion of the SRVSA will allow the discharge of up to 24.31 mgd directly to the Raritan River above the Calco Dam.

22. The estimated consumptive use of water system wide is 75 percent. This is equivalent to 95 mgd based upon 2000 water use data for the diversion under this permit. This high consumptive use is due to water being transferred out of basin via wastewater treatment plants.

75% CONSUMPTIVE

Staff Analysis

1. The applicant's failure to comply with condition 5, by not submitting quarterly diversion reports in a timely manner should be addressed by the applicant through the immediate submission of quarterly diversion reports in accordance with new condition 6. With the NJEMS data management system, future omissions will automatically become enforcement actions.

2. The applicant currently has alternate sources of water from its wells under other permits, the D & R Canal, and an interconnection with Trenton. Many wells in the applicant's other permits have not been used for several years and their current status is unknown. The applicant is considering upgrading its interconnection with Trenton. The status of these potential sources must be determined.

3. The applicant's current water use appears to be reasonable.

4. Public community water supply systems are in the public interest because they are generally safer and more reliable than individual domestic wells that are not subject to the same testing, monitoring and standards. Historically the Department has viewed local governmental approval of a project as signifying that it is in the public interest. Therefore the proposed diversion is considered to be in the public interest in accordance with N.J.A.C. 7:19-2.2(f)1.

5. The increased diversion from the Raritan River should not impact the flow in the Raritan River because the NJWSA will maintain the flows in the River at the Bound Brook gauge at 90 mgd, the established minimum passing flow.

6. The practice of transferring water from the D & R Canal, via 10-Mile Lock, to the Raritan River to allow Elizabethtown to utilize their Raritan River intakes helps to maximize the yield of the Spruce Run/Round Valley reservoir system and does not have an adverse impact upon the Raritan River.

7. Since this is a surface water diversion it should not impact any groundwater pollution sites.

8. The applicant initially requested allocations of 44895 mgy and 4939 mgm while they were projecting their ten year demands to be 61320 mgy and 5110 mgm. Their ten year projections represent an approximate 30 percent increase in demand above existing allocations. Applying this growth rate to historical usage results in projected demands of 62500 mgy and 6250 mgm, which should be sufficient to meet the applicant's needs.

However, if 62500 mgy (171 mgd) of water was allocated to Elizabethtown, considering the NJWSA's existing contracts of 152 mgd (104 Elizabethtown) and pending contracts of 25 mgd (20 Elizabethtown) the entire safe yield of the system, 225 mgd would be allocated and no additional allocations within the Raritan River could be approved up stream of the Bound Brook stream gage.

Furthermore, the applicant has proposed to rehabilitate their Springfield wellfield, which is expected to provide at least 3 mgd of additional water. As discussed in item 2 above numerous other

wells could be rehabilitated and provide additional quantities of water.

Therefore, in consideration of the possible rehabilitation of several well fields, and in order to preserve the ability to allocate water up stream of the Bound Brook stream gage the annual allocation should be set at 59000 mgy. This preserves in excess of 9.5 mgd of allocable water within the basin.

9. As noted above, this is one of several permits held by the applicant that provides water service to many municipalities throughout central New Jersey. Under their other permits the applicant has several million gallons per day of un-utilized ground water resources. The applicant should be required to submit a report on the current status of their groundwater resources. The report should also identify the improvements necessary to fully utilize their groundwater sources, and provide an implementation schedule to making necessary improvements. The report should also include a section on the operational readiness of the interconnection with Trenton and identify necessary improvements and a schedule for implementation.

10. With this increase in allocation the applicant should have adequate supply for the South Brunswick contract which had previously been denied. This contract request should be reexamined. The applicant has purchased the Manville system so that contract is no longer an issue.

11. Since flow in the D & R Canal can be reduced from 100 mgd to 65 mgd the applicant may be directed by the NJWSA to reduce or cease their use of water from the canal. The NJWSA would make additional releases from Spruce Run/Round Valley Reservoir system as needed to support an increased diversion from the Raritan River by the applicant. In the past during these periods the applicant's allocation from the Raritan River would be increased, including an allowance for Middlesex Water Company's contracted amount of Raritan water.

    This practice is reflected in the historical diversions reported by Elizabethtown. The applicant's demand projections were added to the historical usage, therefore there is no longer any need to make adjustments to the monthly allocation for this practice.

Summary

The Department has completed its review of this application pursuant to N.J.A.C. 7:19-1 et. seq. The review of this application reveals that the proposed increase in diversion of 20 mgd from the Canal Road plant and increases in both the monthly and annual allocations does not have any

adverse impacts and meets, based upon the information certified to in the application, the statutory requirements of N.J.S.A. 58:1A-1 et. seq.

Therefore, based upon a review of the information submitted with the application, the existing water allocation, and safe drinking water files, the following conclusions have been reached regarding this application:

The increased pumping capacity and increased diversion rates for the Canal Road intakes, and increases in monthly and annual allocations should be approved in accordance with the following recommendations as the applicant has satisfied the requirements of N.J.A.C. 7:19-2.2 et seq.

Recommendations

Issuance of the permit is recommended subject to the general conditions and to the following specific conditions:

A) WATER DIVERSION SOURCES

1. Water may be diverted under this modified permit for public community water supply from the following sources at the maximum rates specified below:

Surface Water

Intake No.	Source	Pump Capacity (mgd)
1	Raritan River	263
2	Raritan River	
3	Raritan River	
4	Raritan River	
Millstone	Millstone River	
Canal Road	Raritan River	110

B) ALLOCATION

201.6 mgd

2. The total diversion from the above sources shall not exceed 6250 million gallons per month at a maximum rate of 172,000 gpm.

3. The total diversion from the above sources shall not exceed 59,000 million gallons per year. 161.64 mgd

4. The permittee shall not be considered to have violated their allocation limits if the allocation limit exceedance is a result of

water transfers ordered by the Department during times of drought or other water emergencies.

C) INITIAL PERMIT REQUIREMENTS

5. The permittee shall enter into a contract within 120 days of issuance of this permit with the New Jersey Water Supply Authority for a minimum quantity of 124.1 million gallons per day (Raritan system normal demand water use).

6. The permittee shall submit to the Bureau of Water Allocation within 90 days of the issuance of this permit, a status report of the various wells for which the permittee currently holds a water allocation permit that are currently unutilized or underutilized. The report shall include the current status of each well, and identify the reason each source is currently unutilized or underutilized. The report shall also include existing and any proposed interconnections with Trenton.

By December 31, 2003, a plan of action shall be submitted that outlines what improvements to the wells or interconnection will be necessary in order to either bring the well into service or fully utilize the well, and implement interconnections with Trenton. The plan shall identify those wells that are being considered for rehabilitation, identify the necessary improvements, and include estimated dates for making the necessary improvements. The permittee shall file a progress report every six months thereafter until all improvements are completed.

7. The permittee shall adopt and shall implement to the satisfaction of the Department, a water conservation and drought management plan. The plan shall encourage water conservation in all types of use within the area served by the permittee. An update to the existing plan shall be submitted to the Bureau of Water Allocation on or before October 31, 2003. The update shall specifically address the feasibility of developing other water resources of lesser quality to replace or supplement non potable demands placed upon the Elizabethtown water system. The conservation plan shall be updated every other year thereafter, on the actions taken pursuant to this program and the impact thereof.

D) MONTHLY PERMIT REQUIREMENTS

8. The monthly raw water diversion from the Millstone and Raritan Rivers and the quantity diverted during each month from the D & R Canal shall be recorded monthly and reported quarterly on forms provided by the Department under Permit No. 5033.

9. The permittee shall submit a quarterly system totals report for the combined monthly diversions from all the permittee's diversion

sources.

E) GENERAL REQUIREMENTS

10. The permittee shall submit a water conservation and drought management plan update as outlined in Item C.7. above.

11. All diversion sources shall be metered with a totalizing flow meter, which, at a minimum shall be calibrated at least once every five years.

12. The pumping equipment capacity shall not be increased without prior approval from the Bureau of Water Allocation.

13. All new services shall be metered in accordance with all applicable laws, regulations or codes including, but not limited to, the Water Supply Management Act.

14. All existing services shall be metered.

15. Water charges for each service connection shall be based in part on metered usage.

16. The permittee shall investigate to the Department's satisfaction complaints by users of wells or surface water supplies within the zone of influence of its diversion to determine what impact the diversion has had on such wells or surface water supplies. A report on these investigations shall be forwarded to the Bureau of Water Allocation. Any well or surface water supply which becomes damaged, dry, has reduced capacity, reduced water quality or is otherwise rendered unusable as a water well or surface water supply system as a result of the permittee's diversions shall be repaired or replaced at the expense of the permittee. Work shall be in accordance with all State, County and Municipal construction standards for potable water. After reviewing all applicable investigational reports the Department of Environmental Protection will make the final determination regarding the validity of such complaints, the scope or sufficiency of such investigations, and will determine how to resolve any problems resulting from the diversion.

17. The Department may modify, suspend or terminate this permit, after due process, for violations of permit conditions, N.J.S.A. 58:1A-1, N.J.A.C. 7:19-1 et seq., any orders issued by the Department, or when in the public interest.

18. This permit is issued for a limited period, and is not subject to automatic renewal.

19. The permittee is subject to such initial, modification and annual fees as may be prescribed by the regulations.

20. The permittee shall have the right to apply at any time for modification of this permit by submission of the appropriate application forms. The permittee may informally discuss the terms and conditions of this permit at any time with the Bureau of Water Allocation. An application for renewal shall be filed 3 months prior to the expiration date.

21. In addition to the specific management requirements cited above, and when so directed by the Department, the permittee shall comply with applicable portions of the Water Supply Management Rules (N.J.A.C. 7:19-6 et seq.) to include the determination of dependable yield; unaccounted-for water; rehabilitation; system pressure and storage; interconnections; and operation of interconnections.

22. This permit is only valid for the sources identified in Section A above, at the maximum allocation and pumping rates also identified in Section A. A major modification of this permit may be required in order to request approval of any additional diversion sources or an increase in the pumping capacity of an approved source pursuant to N.J.A.C. 7:19-1.5.

23. If the permittee violates any condition of this permit or has violated any condition of their previous permit, the permittee is subject to administrative penalties up to $5000 per day per offense as specified in N.J.S.A. 58:1A-16 and N.J.A.C. 7:19-18.2.

F) PERMIT EXPIRATION

24. This permit shall expire on April 30, 2013.

Jan Gheen by 3/25/03

Jan Gheen
Bureau of Water Allocation

Date: 3/25/03

JGG:bu

Issues for Council Discussion

July 10, 2008

Regional Master Plan
Plan Endorsement Petition

- In accordance with Section 8 of the Highlands Act, within 60 days of adoption of the RMP the Council shall submit the RMP to the SPC for Plan Endorsement of the Planning Area.
- In accordance with Section 69 of the Highlands Act, any portion of a municipality or county located in the Preservation Area shall be exempt from the SPC PE process.
- Staff recommendation is to submit the RMP PE petition for the Planning Area as soon as possible after adoption of the RMP so as to expedite the PE process and support Planning Area Conformance activities.
- Upon endorsement of the RMP by the SPC, municipalities and counties in the Planning Area will be eligible for benefits from PE and Plan Conformance.

Regional Master Plan
Plan Endorsement Petition

- On December 19, 2007 the Council, SPC and OSG signed a MOU in support of developing a cooperative planning process.

- The current PE Rules and Guidelines address similar requirements for county and regional PE petitions. On June 16, 2008 the SPC published proposed PE Rules with a 60 day comment period that include criteria for Special Resource Area plans.
- The RMP PE petition in accordance with the MOU has been waived from select PE petition requirements.

- OSG has shared the State Plan policy map results of the most recent Cross-Acceptance process (deliberative document) though this mapping has not yet been approved, the information will facilitate the PE process for the RMP.

Draft Plan Conformance Standards (Guidance for conformance)

Draft Plan Conformance Standards

- Designed to provide guidance for municipalities and counties for Plan Conformance. These are the detailed standards for Plan Conformance based upon the RMP.
- Will be refined during conformance to reflect the learning process as we partner with the municipalities and counties.
- These documents will not be included in the RMP but are consistent with the GPOs.
- Consistency is determined by the RMP and the Plan Conformance Standards are guidelines to assist municipalities to achieve that conformance.

Draft Plan Conformance Standards

- Steep Slopes Protection
- Critical Habitat
- Land Preservation and Stewardship
- Carbonate Rock Area
- Lake Management Area
- Well Head Protection
- Agricultural Resource Area
- Right to Farm
- Redevelopment
- Housing
- Community Facilities
- Sustainable Economic Development

Summary of County Plan Conformance

County Plan Conformance

- **Planning Analyses:**

a) Capacity constraints;
b) Natural resource protection;
c) Open space and farmland preservation;
d) Historic preservation
e) Optimizing use of public infrastructure;
f) Transportation constraints and opportunities;
g) Fiscal impact and economic sustainability;
h) County needs and obligations; and
i) Principles of sustainability and smart growth.

- **Develop Land Use Plan (update or overlay)**

County Plan Conformance

- Environmental and infrastructure capacity analyses:
  - RMP Update Analysis
  - Environmental Resource Inventory
  - Conservation
  - Water and Wastewater Analyses
  - "Limiting Factor" Analysis
  - Build-Out Analysis

County Plan Conformance

- **County Master Plan Components:**
  - *Policies, Goals, Objectives*
  - *Land Use Plan*
  - *Relationship of Master Plan to other Plans (SDRP and RMP)*
  - *Environmental Resource Inventory*
  - *Conservation Plan*
  - *Wastewater Utilities Plan*
  - *Water Use and Conservation Plan*
  - *Transportation/Circulation Plan*
  - *Open Space and Recreation Plan*
  - *Agriculture Retention/Farmland Preservation Plan (if applicable*
  - *County Facilities Plan*
  - *Historic Preservation Plan*

County Plan Conformance

Supporting regulations updated for consistency:

- *Steep Slopes*
- *Forest Areas*
- *Open Water and Riparian Areas*
- *Ground Water Recharge Management*
- *Wellhead Protection*
- *Stormwater Management*
- *Right to Farm*
- *Critical Habitat*
- *Carbonate Rock Areas*
- *Agricultural Resources*
- *Lake Management*
- *Low Impact Development*
- *Scenic Resources*
- *Historic/Cultural*

County Self-Assessment

- As a result of the environmental/infrastructure analyses and the planning analyses county to complete a self-assessment
- Identify areas requiring coordination with Highlands Council and/or affected municipalities and other agencies
- County Self-assessment Report to list and provide schedule for all items necessary to achieve Plan Conformance

Basic Plan Conformance

- **Basic Plan Conformance:**
  - Plan Conformance with conditions
  - Subset of Plan Conformance
  - First steps to plan conformance to be achieved within 15 months of RMP adoption for Preservation Area lands
- **Initial Assessment Grant Program** - $15,000 grants - similar to that of municipalities for initial assessment

RMP Discussion

Revisions

Historic, Cultural and Archaeological

As directed by the Council on June 12th, the GPOs are being modified to encourage the creation of advisory historic preservation body rather than requiring the creation of a historic commission. Language in the GPOs is being changed where necessary to be consistent with that directive.

Water Conservation

As suggested by Council members, the RMP should include a GPO for agency coordination with NJDEP to promote water conservation, reuse, recycling, and other related measures and mitigate for water distribution system losses both in Highlands municipalities and in municipalities supplied with Highlands-derived water.

Revisions

Highlands Open Waters

In the Highlands Open Waters policy for Highlands Redevelopment Areas (Objective 1D4i Step 5), language allowing for Council approval of buffer modifications for Highlands Redevelopment Areas was limited to Category Two waters and should have also included Category One waters. The modification would permit nothing less than the extent allowed under State regulation which presently does limit the amount of buffer modification for all Category One waters. This change is consistent with the waiver provision in the Highlands Act.

Agricultural Cluster

Council member suggested that a minor revision be included in agricultural cluster GPOs in Objective 3A5d to "encourage that the original or new farmstead remain attached to the preserved land wherever feasible."

Council Proposed Revisions

Amendment 1 Chapter 4 Part 2: WATER RESOURCES AND WATER UTILITIES

Water Deficit Program

DELETE the following: Policy 2B3, Objectives 2Ba, b, and c and Objective 2B8b. "To conditionally provide water availability within a Current Deficit Area with appropriate standards regarding its use."

Alternate to Amendment 1

Part 1:

Objective 2B8b(1)

"Each project shall achieve mitigation ranging from 125% to 200% based on the severity of the Current Deficit and the amount of consumptive or depletive water use proposed, and for large consumptive and depletive water uses or high Current Deficits will require achievement of the mitigation prior to initiating the water use." ADD: Water Use and Conservation Plans as described in Objective 2B8c shall resolve the current deficit in a subwatershed prior to approval for new water uses in the subwatersheds with high deficits (according to Highlands Council analysis)

Council Proposed Revisions

Amendment 1 **Chapter 4 Part 2: WATER RESOURCES AND WATER UTILITIES**

Alternate to Amendment 1

Part 2:

Policy 2B3, Objectives 2B3a, 2B3b and 2B9b

"To conditionally provide water availability (Conditional Water Availability) within a Current Deficit Area **and Existing Constrained Area** with appropriate standards regarding its use.

Amendment 2 **Chapter 4 Part 1 Natural Resources**

Highlands Forest Resources

Policy 1B8, Goal 1C, Objective 1C2d. Support incentives and funding opportunities and provide criteria for demonstrating and maintaining intrinsic forest values and societal benefits **through various means including but not limited to the use of stewardship benefit credits in lieu of cash receipts under the Woodland Management Program of the Farmland Assessment program.**

Council Proposed Revisions

Amendment 3 **Chapter 4 - Part 1 Natural Resources**

Highlands Open Waters and Riparian Areas
Policy 1D4 Objective 1D4i. DELETE (4) and (5).

Amendment 4 **Chapter 4 Part 1 Natural Resources**

Highlands Open Waters and Riparian Areas
Policy 1D4 Objective 1Db, d, e, f, and i. ADD: For purposes of this section, historical or current non-structural agricultural land uses shall not be considered "development", "improvements", "land disturbances", or "land uses".

Council Proposed Revisions

Amendment 5 **Chapter 4 Part 2 Water Resources and Water Utilities**

On Site Wastewater Systems (Nitrates)
Policy 2L2 Objective 2L2d "Use a nitrate target of **(DELETE 2mg/L) 1.17 mg/L** for the Existing Community Zone within Planning Area, on a project-by-project basis, where new development will rely on septic systems."

Amendment 6 **Chapter 4 Part 2 Water Resources and Water Utilities**

On Site Wastewater Systems (Nitrates)
Policy 2L2 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, **without treatment,** or any more stringent requirement as required by NJAC 7:15."

Council Proposed Revisions

Amendment 7 **Chapter 4 Part 2 Water Resources and Water Utilities**

On Site Wastewater Systems (Nitrates)

Policy 2L2 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, Protection, **and Existing Community Zone** and all environmental constrained subzones for each HUC 14 subwatershed, taking into account the nitrate target, the HUC 14 subwatershed drought ground water recharge, and the acreage that is privately owned, undeveloped or under developed, **whether or not it is preserved**."

DELETE 2L2g (counting preserved lands in calculating septic system yields).

Council Proposed Revisions

Amendment 8 **Chapter 4 Part 2 Water Resources and Water Utilities**

Refinement and Improvement of Groundwater Resource Management
Policy 2M1: To monitor and assess nitrate-related impacts to water resources within the Highlands Region,
Add Objective 2M1a. To monitor well water and surface water for nitrate concentrations to evaluate background nitrate changes on a HUC 14 basis and to track new sources of nitrates from Highlands development projects on a site specific basis.

Add Objective 2M1b. To track other new pollutant inputs from on site septic systems and other sources to Highlands waters that result from development projects through a defined water quality sampling program on a site specific and watershed basis.

Council Proposed Revisions

Amendment 9 **SUBPART D Federal, State and Regional Agency Coordination**

1. Delete 2nd and 3rd paragraphs (those beginning "For a regional planning…" and "This extraordinary degree…"

Add:

The Act, in Sections 38 through 82 (See Act provisions in Supporting Information), also amends numerous statutes of sister State agencies to specifically require coordinated action to implement the RMP. In these sections, the Act requires consultation between the Council and State agencies to ensure that the RMP is considered prior to State agency action. For plans and other decisions proposed in the Highlands Region, the Council will deliver consistency determinations based on the RMP to appropriate State agencies which will use the Council's information and recommendations to reach resolution in a manner consistent with their respective enabling legislation or regulatory mandate.

The Highlands Act stipulates that Highlands municipalities ad counties are under no obligation to revise local master plans and development ordinances applicable to any parts of the Planning Area to bring them into conformance with the RMP. The Act is also clear that the Council is required to consult with State agencies and, in certain cases, to issue RMP consistency determinations for actions and plans proposed in any part of the Highlands Region.

Council Proposed Revisions

Amendment 9 continued

These requirements for interaction and coordination between the Highlands Council and other State agencies for actions proposed in the Planning as well as the Preservation Area do not negate Sections 14 and 15 of the Act which specify that conformance with the RMP is voluntary for the Planning Area portions of Highlands municipalities and counties.

The following Objective would have to be changed to be consistent with the above suggested language, changed from:
Objective 2K3a. Areawide Water Quality Management Plans, including Wastewater Management Plans and project-specific amendments, shall be consistent with requirements of this Plan. The Highlands Council shall prepare consistency determinations for proposed amendments prior to NJDEP approval in accordance with N.J.A.C. 7:38-1.1 and N.J.A.C. 7:15.
To:
Objective 2K3a. Areawide Water Quality Management Plans, including Wastewater Management Plans and project-specific amendments, shall be examined for consistency with requirements of this Plan. The Highlands Council shall prepare and transmit to NJDEP consistency determinations for proposed amendments prior to NJDEP decision in accordance with N.J.A.C. 7:38-11 and N.J.A.C. 7:38-11 and N.J.A.C. 7:15.

Council Proposed Revisions

Amendment 10 **Chapter 4 Part 6: FUTURE LAND USE**

Subpart B - MAP ADJUSTMENTS

ADD to Objective 6G2b:

(Map Adjustments) are prohibited in the Preservation Area, Core Forest Areas, Agricultural Resource Areas, Prime Groundwater Recharge Areas, High Integrity Riparian Areas, Critical Habitat Areas and Significant Natural Areas.

(Map Adjustments) are allowed only during the plan conformance process and Highlands Council initiated plan updates.

(Map Adjustments) are limited to 1% of the total acreage within the municipality.
ADD . ...and demonstrates that it will utilize Highlands Development Credits to a degree which ensures a level of protection equivalent to (2, no net loss protection) and reduces the net impact on Highlands natural and agricultural resources (as determined by whether the proposed change effects the Protection or Conservation Zone respectively) by demonstrating that it will extinguish currently valid exemptions within similarly situated parts of the municipality.