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MEETING MINUTES

MEETING DATE: November 15, 2005

REFERENCE: Acton CWRMP
CAC Meeting

ATTENDEES: CAC:
Ann Chang – CAC / SAC
Nancy Tavernier – CAC / SAC
Art Gagne – CAC / SAC
Jane Ceraso – CAC / Acton Water District
Chris Schaffner – CAC / Planning Board
Lauren Rosenzweig – CAC / BOS
Helen Probst – CAC
Terra Friedrichs – Resident
Carol Holley – Resident
Eric Hilfer – CAC/ACES
Brent Reagor – Health Dept
Bob Rafferty – Woodard & Curran

DISTRIBUTION: Attendees
Doug Halley – Health Director
Dan Garson – W&C
Helen Gordon – W&C
W&C File
Posting on Town website

Submitted by: Robert Rafferty, P.E.

The following meeting minutes have been interpreted to the best of the writer's understanding with respect to topics discussed. A copy of these minutes has been sent to the attendees for their review and information. Additions and/or corrections are invited and will be made a matter of record. Mail, email, or fax additions/corrections to Woodard & Curran, Inc. Andover Massachusetts, Attn: Bob Rafferty. brafferty@woodardcurran.com

ATTACHED ITEMS

Agenda
Handouts:
Potential MEPA schedule
Summary of Hydrogeologic Study
Map – Figure 1: Potential Wastewater Disposal Sites (from Hydrogeologic Report)
Matrix of prioritized solutions
Final Report of the Acton Indirect Potable Reuse Working Group (without appendices)
Presentation – IPR working group

AGENDA AND GOALS

The CAC will rank its high priority Needs Areas to reflect the urgency, schedule, and implementability of each area. The highest ranked Needs Area and solution will be the area the CAC recommends to address first. The report presented at this meeting will guide the CAC to this decision by addressing indirect potable reuse, finalizing the availability and suitability of the remote disposal locations, and matching needs areas solutions to the disposal areas.

The CAC will discuss and recommend the format and content of the public meeting to be held December 8. The public meeting will present the draft CWRMP/EIR Phase 2 report and solicit public comment prior to delivering the report to DEP and proceeding with the MEPA review process.

REPORT UPDATES

Final Indirect Potable Reuse Group Report:
Brent Reagor presented the summary of the IPR working group. The attached presentation and report discuss the mission and recommendations of the IPR working group. CD's of the complete report will be distributed to CAC members requesting a copy. The CAC discussed the recommendations:

(Q = Question from CAC; A = Answer from Project Team; C = Comment from CAC; R = Response from Project Team)

Q: What is the problem the working group was trying to solve by investigating indirect potable reuse?

A: The issues are of supply of drinking water and disposal of wastewater.

For supply, The Nashoba Brook Basin is listed as a stressed basin and the Massachusetts Water Resources Commission is developing new withdrawal limits for stressed basins. The CWRMP/EIR is projecting needs over a 20-year planning period so drinking water supplies could become limited in that timeframe.

Disposal options are limited. The CAC formed the IPR group to investigate an alternative method for dispersal of reclaimed water. The hydrogeologic report (reviewed following this discussion) further demonstrates the limited options for disposal of treated wastewater effluent outside of the Zone II areas.

C: The outreach component appears to say that the Town should try to convince the residents that IPR is a good idea now.

R: The intent is to educate Acton residents so they can make an informed decision, whether to proceed with investing in an IPR study or to rule out the option.

C: It may be best not to move forward with such a controversial alternative in the CWRMP when there are viable solutions that should be the focus. The IPR could divert the discussion to an issue that is not a priority.

R: The CWRMP will include the entire IPR report in an appendix and will discuss the IPR option within the body of the report. The goal is not to rule out alternatives that may be feasible within the planning period, though not recommended as a viable solution in the

short-term. The IPR report recommends that as the Town assesses its needs in the future, reclaimed water use remains in consideration while the Town determines if the concept is ultimately viable.

MEPA Schedule:
The potential MEPA schedule reflects one alternative whereby the CWRMP is complete in December 2005, and DEP requires a two-step EIR, with submittal of both draft and final EIRs. However, it also assumes that the DEP will not require further hydrogeologic testing at the potential disposal sites, which would extend the schedule and require a town meeting vote for more funds.

The project team's intent is to request a single EIR, without additional hydrogeologic testing. Our opinion is that the hydrogeologic information we have developed is suitable to eliminate unsuitable parcels while addressing the unknown capacity issues for potentially suitable parcels. Further study of the one remaining potential parcel (at Wetherbee Street) can be conducted if the Town decides that centralized sewering in East Acton Village is the preferred solution and needed immediately, and the legislatively deeded conservation restriction on the parcel is resolved. However, the Town owns the parcel; therefore, CAC's opinion is there is no immediate and impending urgency to further refine the analysis or reserve the lot for a potential effluent disposal site while other alternatives still are viable.

Hydrogeological Investigation and Draft Technology (Solutions):
Bob Rafferty presented a summary of the hydrogeologic investigation findings. A summary of the report is included in the handouts. The CAC discussed each site in more detail:

Quarry Road, North Acton
This site was identified as a potential offsite solution for Needs Areas 1 and 2. The site is located at the Highway Department storage area, and is the location of decommissioned septage lagoons. Previous CAC meetings ruled out centralized sewering of Needs Areas 1 and 2. The hydrogeologic study confirms that the dispersal area does not have the capacity to accept all the projected wastewater from either area. The CAC ranking of alternatives remains as discussed in the previous meeting, with cluster/neighborhood systems as the preferred alternative. No further hydrogeologic study will be recommended at the Quarry Road site.

Weatherbee Street
This area is a potential solution to Needs Areas 3 and 4 by construction of a centralized collection system and a wastewater treatment and disposal facility on the Wetherbee Street parcel. The site is farmed by the state as part of a program affiliated with MCI Concord. The site borders Route 2 and Wetherbee Street. The site appears to be the most favorable hydrogeologically for a dispersal area, with a preliminary estimate of disposal capacity exceeding the expected wastewater flow. This parcel has a legislated conservation restriction on its deed, which will preclude moving forward with further hydrogeologic investigations in the short-term.

C: The Town should check with legal counsel to determine the best course of action, possibly go to the legislature to remove or amend the conservation restriction if needed.

R: This would likely extend the CWRMP schedule and is outside the scope of the CWRMP. There are other nearby alternatives for a satellite treatment facility and dispersal location, but the land is owned by MCI Concord. The soils appear to be favorable on the lot across Wetherbee Street. The Town may want to open discussion with the prison.

C: The CAC ranked cluster/neighborhhod systems as the second ranked solution. There may be suitable lots available to combine systems, especially with commercial development on contiguous parcels.

R: Cluster/shared systems are a recommended strategy in the East Acton Village Plan. (Strategy No. T4.1a – Plan and implement appropriate shared wastewater systems in East Acton.)

C: It would best to connect a centralized collection system to the construction of the Bruce Freeman rail trail. Can the Town move forward with the centralized sewering alternative?

R: The next phase of the hydrogeologic study includes pumping the expected amount of water into the ground and monitoring the groundwater. Conducting the next phase on the parcel would be difficult, given the reluctance to alter the use of the property, the costs involved with the required analyses, and the legislative conservation restriction on the parcel.

East Acton Village is a high priority Needs Area. The final recommendation of the CAC will be included the rankings of solutions for the high priority needs areas. The final recommendations then drive the order in which the projects should be completed. If the CAC wants to prioritize construction of a treatment facility at Wetherbee Street for East Acton Village, then the deeded restriction, or better alternatives, should be resolved. There may not be a quick resolution, so centralized collection and treatment for East Acton area should be ranked as the lowest priority of the high priority solutions to reflect the schedule, enabling the Town to proceed with other priorities unimpeded.

C: The CAC voted to alter the preferred solution for East Acton to investigate cluster/neighborhood systems while continuing to evaluate the deeded conservation restriction on the Wetherbee Street parcel.

Adams Street

This parcel is a potential solution to provide increased disposal capacity at the Adams Street treatment facility. The site is divided into two distinct dispersal areas separated by the vernal pool. The modeling results for this site are the most uncertain because of potential breakout on the slope, impact on the vernal pool and elevated groundwater levels at the Maynard WWTF, which is downhill of the potential disposal site. The eastern portion holds some promise but may be limited, so a consideration is the cost to develop the site and make modifications to the treatment facility to treat the additional capacity and pump the effluent.

Q: Should this site be investigated considering the capacity we may need from potential areas that could need sewers: West Acton, Spencer-Tuttle-Flint, and Indian Village?

R: The cost and feasibility of upgrading the WWTF to handle the potential capacity may drive this decision. The site also has drawbacks, specifically the overall lot size and potential for breakout on the slope toward the river. The capacity of the WWTF disposal area, as it now stands, may be the limiting factor in extending sewers to the Needs Areas.

C: The Assabet River still looks like a good place to discharge treated wastewater.

R: The Powdermill Plaza WWTF is continuing with plans to connect to the Acton sewer system, which may make its discharge permit available for transfer to the Town. The Town

is investigating whether the permitted discharge loadings to the Assabet River would be available for use by the Town. The permit allows the Powdermill facility to discharge 12,000 gpd.

C: The schools are a public need but the private residences and businesses are a private need. They should not be ranked equally.

R: Malfunctioning onsite wastewater systems are a public concern because their impacts are not restricted to property lines.

Q: Can the schools be sewered while avoiding sewering properties in West Acton Center?

A: No, current state requirements are to allow connection to the sewer by any property that abuts the sewer as long as capacity exists in the system. For new systems, we can not plan to skip properties.

The CAC discussed the alternatives for sewering and onsite or cluster treatment in the West Acton area. The previous rankings of solutions were discussed briefly, as were the limitations of onsite wastewater systems at the schools. An area photograph of the area was displayed showing Fort Pond Brook bisecting the Douglas and Gates properties.

C: The CAC concurred that onsite treatment and cluster systems are highly unlikely given the needs analysis.

<u>High Street</u>

This site is a potential solution to expansion of the existing WWTF to serve Needs Areas adjacent to the sewer system. The area is located on the same parcel as the High Street well field and the Assabet wells. The travel time from the disposal area to the wells is part of siting the location of the field. The state is currently reviewing proposed regulations for reclaimed water use, which may reduce the travel time restriction from 2 years to 1 year. The hydrogeologic evaluation was based on previous reports and other subsurface studies. No borings or test pits were performed for this project at this site.

We selected the disposal site to be outside the 1-year travel time requirement. There is no location on the parcel that is outside the 2-year requirement.

R: Until the indirect potable reuse issues are resolved this location should not be considered for a disposal site.

Q: What is the total expected wastewater flow from the Needs Areas adjacent to the sewer system?

Ranking of Solutions:

One option is the creation of Wastewater Management Districts. These have been discussed at previous CAC meetings, but the structure and implementation of districts can follow a wide range of possibilities. The Draft Technology Report discusses some of the alternatives. Further evaluation of implementing this alternative would be funded though a Town Meeting vote.

The five high priority areas are ranked in order of implementation schedule:

1. Powdermill Plaza
2. West Acton Center and schools
3. Spencer-Tuttle-Flint neighborhood

4. East Acton Village
5. Indian Village

Q: When do costs become part of the equation?
A: Costs are part of the evaluation. The ranking of the alternative includes costs as a qualitative consideration at this point. In the case of the Douglas and Gates schools the School Department will contribute toward a centralized collection system in the amount it would cost to construct an onsite system, so the costs are not a consideration for the schools. However, the Draft Technology Report begins the development of estimated costs for the primary structural solutions to the high priority needs areas. This will be continued to derive an estimated per lot cost to compare to the other recommended solutions for each Needs Areas.

Preparation for Public Meeting:

The CAC discussed the content of the December 8 public meeting. The meeting will be held in Town Hall room 204. The CAC suggested the following approach:

- The process and criteria that derived the Needs Areas should be presented, as well as the limited availability of disposal locations.
    - The criteria are: Technical and non-technical, regulatory limits, limits on economic growth, improvements to environmental and public health, balancing all the concerns, etc.
- The comprehensive evaluation of all water sources (drinking water, stormwater, surface water quality, groundwater) should be emphasized.
- Public notification should be increased. The CAC has attempted to get press releases published but have been unsuccessful.

The CAC will reformat the press release into a letter to the editor. The Health Department is planning a directed postcard mailing to the properties in the high priority areas. The department does not have the funds for a town-wide mailing.

CONSENSUS ACTION ITEMS

- W&C has forwarded the hydrogeologic report to DEP for comment. The Project Team will attempt to meet with DEP to reach consensus on the EIR process prior to the December 8 public meeting.
- CAC will prepare and submit a letter to The Beacon editor regarding the CWRMP and public meeting.
- The Project Team will compile the various reports into the Phase 2 CWRMP, with a target to complete and submit the CWRMP by the end of 2005.

UPDATE (FOLLOW UP) NOTES FOR CAC:

- The Eastern portion of Adams Street has been remodeled without the western portion. Disposal of water in this area would elevate the groundwater in the area of the vernal pool. In one scenario, the site is loaded at 1.5 gpd per square foot, which elevates the groundwater at the

vernal pool by over 3 feet. This scenario rules out the use of the eastern portion of the Adams Street site without caution and extensive analysis.

- *Clarification on the Town vote to accept the CWRMP/EIR:* The State does not require Town Meeting approval of the CWRMP. The official approval is done via the EIR and final MEPA Certificate from the Secretary of EOEA, once CAC approves release and submittal of the CWRMP. Town officials certainly can go to Town Meeting for a vote, which may be a good idea since the town appropriated the funding for the work, but this is a local decision and a process the State does not monitor or require.

WOODARD & CURRAN
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Town of Acton

ACTON WASTEWATER CITIZENS ADVISORY COMMITTEE

Comprehensive Water Resources Management Plan /
Environmental Impact Report
CWRMP/EIR
November 15, 2005
7:00 PM

PUBLIC SAFETY FACILITY

Meeting Goals:

Wrap up the needs areas & solutions discussion.

Prepare for the December 8 Public Meeting

Agenda:

• Welcome	Doug Halley	5 min
• Introductions	All	5 min
• Report Updates		45 minutes
• Final Indirect Potable Reuse Group Report	Brent Reagor	
• Final Hydrogeological Analysis Report	Bob Rafferty	
• Draft Technology (Solutions) Report	Bob Rafferty	
• Preliminary Schedule of Implementation	Brent Reagor	
• MEPA Update	Bob Rafferty	5 min
• Preparation for the Public Meeting	Doug Halley	5 min
• Q&A / General Discussion	Doug Halley	20 min
• Closing Remarks / Action Items	All	5 min

ACTON WASTEWATER CITIZENS ADVISORY COMMITTEE
Comprehensive Water Resources Management Plan /
Environmental Impact Report
CWRMP/EIR
November 15, 2005

Potential MEPA Schedule

Meet with DEP to discuss CWRMP/EIR process	Dec 5
Public Meeting to present draft CWRMP/EIR	Dec 8
Submit CWRMP/EIR Phase 2 Report	Dec 19
MEPA Approval of Phase and EIR approach	Feb 2006
Draft EIR preparation	March 2006
Submit Draft EIR – File with MEPA	June 2006
End public comment period - Certificate	Sept 2006
Submit Final EIR – File with MEPA	Nov 2006
End public comment period – Certificate	Jan 2007

Summary of Hydrogeologic Study

WETHERBEE STREET

The preliminary analysis shows that a groundwater mound of almost 8 feet would result from an application of approximately 1.5 gpd per square feet. The distance from ground surface to the mound would be about 6 feet under this scenario.

Wetherbee Site – Summary of Model Mounding Results

application rate gpd/ft^2		application total (gpd)		mound in ft above static GW
0.5		245,381		2.3
1.0		490,762		5.2
1.5		736,181		7.8

Note: 490,800 sq ft facility = approximately 11 acres
Maximum loading for subsurface methods by regulations is 3 gpd/sqft
K = 128 ft/day, which is average from testing at Wetherbee site

Assuming a .3 gpd per square foot application rate, gives a capacity of approximately 736,000 gpd. However, since the subsurface disposal system would require a reserve area, the actual maximum application rate is approximately 375,000 gpd over 5.5 acres.

NORTH ACTON

The groundwater elevation ranges from approximately 5 feet to approximately 19 feet. The preliminary analysis shows groundwater mounding ranging from 3.1 feet to 8.8 feet.

North Acton Site – Summary of Model Mounding Results

application rate gpd/ft^2		estimated K value ft/day		application total (gpd)		mound in ft above static GW
0.5		75.0		48,119		5.4
0.5		150.0		48,119		3.1
1.0		75.0		96,237		8.8
1.0		150.0		96,237		6.7

Note: 96,250 sq ft facility = approximately 2.2 acres

The test pits exhibited groundwater elevations too shallow for a disposal field, with cobbles and boulders through out the excavations. The groundwater elevation in the two borings was much further below the ground surface than the test pits. Boring/Well NA-1, however, is located in a heavily used and altered area, and further investigation would be required prior to conducting more precise modeling.

Test boring NA-2, in the northeast corner of the parcel, has bedrock at 15.5 feet below ground surface, with no groundwater, but the slope and bedrock in the area would warrant further investigation prior to a more refined analysis. The northeast portion of the parcel is mostly undisturbed, and therefore the most likely location for a potential disposal area.

ADAMS STREET

The field is divided into two sections because of topography and to avoid a vernal pool located on the parcel.

Adams Street Site – Summary of Model Mounding Results

application rate gpd/ft^2		estimated K value ft/day		application total (gpd)		mound in ft above static GW
0.5		30.0		83,746		4.8
0.5		50.0		83,746		3.0
1.0		30.0		167,484		8.8
1.0		50.0		167,484		5.6
1.5		50.0		251,238		8.0

Note: 167,500 sq ft facility = approximately 3.8 acres

The groundwater elevation ranges from approximately 15 feet between the sections, to over 24 feet at the eastern portion of the parcel. The mounding analysis shows that groundwater mounding should not cause interference with a disposal facility. However, the Adams Street site may be the most uncertain because of major terrain variations, potential for breakout on the slope in the eastern section, possible perched water table hydraulically connected to the vernal pool in the western section, and potential impact on the groundwater elevation at the nearby Maynard WWTF.

HIGH STREET

The one-year travel time appears to be approximately 1,000 feet up gradient from the Assabet #1 and Assabet #2 wells. Figure 7 displays the area selected for the proposed dispersal facility location.

Table 11: High Street Site – Summary of Model Mounding Results

application rate gpd/ft^2		estimated K value ft/day		application total (gpd)		mound in ft above static GW
0.5		130.0		83,192		0.4
1.0		130.0		166,385		0.7
1.5		130.0		249,592		1.1
2.0		130.0		332,785		1.5
2.5		130.0		415,992		1.8
3.0		130.0		499,200		2.2

The dispersal of reclaimed treated wastewater on land and the subsequent groundwater mound will change the local groundwater gradient. If the High Street site is selected for further study this aspect will have to be addressed with additional exploration and transport modeling.

CONCLUSIONS

The Wetherbee site has the greatest capacity for treated wastewater application with the least mound creation. Geologically this is the preferred location. The other three sites do not exhibit the potential capacity without other technical or hydrologic hurdles.

The North Acton site is able to accept loading rates up to one gallon per square foot per day, but it appears to be a small site with limited total capacity. The ground surface on the majority of the site is heavily disturbed and much of the native material has been removed. The CAC did not rank the offsite treatment facility and disposal field at this location as the preferred/priority solution. Therefore, we do not recommend further study of this area.

Loading at the Adams Street location is problematic because of potential disturbance to the vernal pool, possible slope breakout toward the river and potential influence on the groundwater level at the Maynard wastewater treatment facility site. The eastern portion of the proposed area may hold promise, but DEP/EPA recently agreed to permit an additional 49,000 gpd discharge capacity to the WWTF's rapid infiltration basins. Further study of this potential dispersal area, as part of this CWRMP/EIR, is not warranted to serve the priority needs parcels. The Town owns the parcel and can hold it available additional needs that justify further exploration.

Discharge of treated wastewater at the High Street location will require extensive exploration and groundwater flow testing to confirm that any possible dispersal location is more than one year's travel time from the municipal wells. The parcel does not support a dispersal location with a two year's travel time from the municipal wells. Use of this site is linked to expansion of the Town's WWTF, which is not needed to serve the Town's priority Needs Areas adjacent to the sewer system. We do not recommend further study at this site under this CWRMP/EIR.

The most promising location, hydrogeologically, is the Wetherbee Street site, which is aligned with the East Acton Needs Areas (Area 3 and Area 4) as an offsite alternative. However, research into the availability of the parcel has uncovered a deeded legislative conservation restriction. The town is pursuing further information through its Town Counsel. The CWRMP Phase 2 report will provide updates on this issue, and the EIR process will further refine the alternatives evaluation.

Needs Areas / Solutions Matrix per CAC Recommendations (8/25/05)

Needs Area #	Description	Current Priority Status	Rank (1-4) with 1 being your first choice, etc... Connect to Existing Sewers	Construct New WWTF/Sewers	Cluster/Neighboorhood System	Wastewater Management District
1	North Acton Village Robbins Brook Marshall Crossing	Medium	NA	3	1	2
2	Nagog Woods Acorn Park North Acton Woods	Low	NA	2	1	NA
3	East Acton Village Route 2A	High	NA	2	1	3
4	Concord Road Robbins Park	Medium	NA	2--EAST ACTON	3	1
5	Brucewood Estates	Medium	3	NA	2	1
6	Brookside Apts.	Low	2	NA	1	3
*7	Powdermill Plaza	High				
8	Maynard Border (Main St.)	Low	1 MAYNARD OR ACTON	NA	3	2
9	Heath Hen Meadow Liberty Street Stow Street	Low	3	NA	2	1
10	Spencer/Tuttle/Flint	High	1	NA	NA	2
11	Nash/Downey Dover Heights	Medium	1	NA	2	3
12	West Acton Center	High	1	NA	2	3
13	Indian Village	High	1	2	4	3
14	Colonial Acres Forest Glen Flagg Hill	Medium	NA	NA	2	1
15	Acton Center	Low	NA	2--EAST ACTON	3	1

NA = Not Applicable

* In process of connecting to MFPBS

INDIRECT POTABLE REUSE WORKING GROUP
Acton Board of Health - Telephone (978) 264-9634

FINAL REPORT

OF THE

ACTON INDIRECT POTABLE REUSE

WORKING GROUP

NOVEMBER 15, 2005

Executive Summary

Indirect Potable Reuse, which is groundwater recharge via surface or subsurface disposal in order to augment a potable aquifer, has been in practice across the United States for many years in both planned and unplanned fashions. In Massachusetts, according to the Reclaimed Water regulations now under review, Indirect Potable Reuse would be defined as a discharge of highly treated wastewater treatment plant effluent into the Zone II[1] of a wellfield, with no less than a one year travel time[2] from the point of discharge to the point of intake of the well(s), under normal hydrologic conditions.

The Indirect Potable Reuse Group, which met during the summer and early fall of 2005, evaluated information from regulatory and academic sources in an effort to explore the topic for possible future implementation to help solve water resources management difficulties in Acton.

After much discussion, four major areas of concern emerged:

1) Detection, removal and potential health effects of multiple classes of emerging contaminants
2) Timing of implementation in regards to technological, regulatory, and political timelines
3) Comparison of centralized Indirect Potable Reuse in one wellfield versus decentralized Indirect Potable Reuse in multiple wellfields
4) Coupling implementation with increased water conservation and emerging contaminant source reduction efforts

These four areas represent the foci of the unanswered questions regarding Indirect Potable Reuse and its potential for implementation in Acton. Knowing that a great percentage of these questions need answers, the Group developed a series of four recommendations through which the desired information may be discovered.

The recommendations of the Group are as follows:

1) Inclusion of the concept as a possible solution in the Comprehensive Water Resources Management Plan.

2) Continue to monitor academic and regulatory developments with Indirect Potable Reuse and their possible impact on Acton.

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[1] Zone II – that area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated

[2] Travel Time – a figure, calculated by computer modeling, which closely approximates the amount of time a water molecule will take to travel from one point to another in the ground under normal hydrologic conditions.

3) Development of a targeted public outreach and education program related to Indirect Potable Reuse, which could include the provision, if feasible and accepted by the community, of a small-scale pilot study through which "local" answers to important questions may be obtained.

4) In the event Indirect Potable Reuse is chosen for further study by the Town, a standing committee should be seated to direct these efforts. This committee should be similar in makeup to the Sewer Action Committee.

Group Report

Background

The Acton Indirect Potable Reuse Working Group was formed in May, 2005, as a sub-group of the Citizens Advisory Committee (CAC) for the Comprehensive Water Resources Management Plan (CWRMP). The Group was tasked with the evaluation of the concept of Indirect Potable Reuse, prior to any consideration of its implementation within Acton. The Group performed its duties under the following mission statement:

> "To evaluate the potential feasibility of the implementation of Indirect Potable Reuse of highly treated Wastewater Treatment Plant effluent through a discharge to the Zone II of a wellfield; the group will examine the issue from the "human" perspective, looking at the political and public relations impacts of any proposal. Those impacts can then be used to determine whether this concept is feasible as a discharge option within Acton."

The Group members are:

Art Gagne' –	Member of the CAC
Eric Hilfer –	ACES representative and member of the CAC
Joanne Bissetta –	Member of the Acton Board of Health
Greta Eckhardt –	Acton Resident
Pat Cumings –	Member of the CAC

Indirect Potable Reuse – The Concept

The reclamation of treated wastewater as a viable resource has been in practice, in many fashions, for over 50 years around the world. Most projects utilizing Indirect Potable Reuse are located in the western and southwestern United States. The closest planned project of significant size to Acton is the Upper Occoquan Sewage Authority, in suburban Washington D.C., which discharges highly treated effluent into a drinking water reservoir. Interest in Indirect Potable Reuse is growing as the grim picture of the scarcity of the world's water resources emerges. More and more communities are looking to innovative solutions, which allow them to recharge their own aquifers with the wastewater they are producing, thereby preserving the local hydrologic cycle.

Indirect Potable Reuse is only one facet of the larger concept of reclaimed water use. This holistic approach to preservation of the local hydrologic cycle includes reuse options for irrigation – residential, commercial, and agricultural; industrial cooling systems; process water in manufacturing facilities; toilet flushing; snowmaking; and fire protection systems. As greater awareness is achieved in regards to the growing

scarcity of water resources, water reclamation practices, like Indirect Potable Reuse, are growing in popularity.

Acton CWRMP

The Acton Comprehensive Water Resources Management Plan (CWRMP) was undertaken as part of the acceptance of the Middle Fort Pond Brook Sewer Project by the Massachusetts Department of Environmental Protection (DEP); to determine the wastewater disposal needs for the entire Town, along with the integrated planning necessary to protect Acton's vital liquid resources for the next 20 years.

The CWRMP is guided by two groups working jointly to develop a cohesive plan. The Project Team – consisting of Acton Health Department staff and Woodard and Curran, Inc. engineers and scientists; and the Citizens Advisory Committee – a group of local stakeholders appointed by the Acton Board of Selectmen to represent the broadest possible range of views in regards to Acton's water resources.

As part of the project, wastewater disposal options were evaluated for centralized and decentralized sewer projects of varying sizes. As Acton is both regulatorily and environmentally limited for surface discharge locations, subsurface discharge must be the primary option examined. Subsurface disposal of treated wastewater requires soils with high permeability in order to efficiently dispose of the effluent from both a cost and footprint perspective. As Acton is solely reliant on groundwater aquifers for its public water supply and those aquifers are located in the most permeable soils, the concept of Indirect Potable Reuse was a concept that could not be ignored as a part of a 20 year water resources management plan.

Indirect Potable Reuse Working Group

A sub-group of the Citizens Advisory Committee was formed in May of 2005 to further examine the issues surrounding Indirect Potable Reuse. This group was established to bring together local stakeholders with a variety of viewpoints.

The group received information packets, consisting of published educational journal articles, copies of government-produced information, and newspaper articles all directly related to Indirect Potable Reuse. Copies of these packets are included in Appendix A of this report. The group met during the summer of 2005, to discuss the issues related to Indirect Potable Reuse in accordance with the group's mission statement.

Discussion

After a review of the academic and professional research presented, the group delineated four major areas of concern, each containing topics requiring further research. These four major areas of concern are:

1) Detection, removal and potential health effects of multiple classes of emerging contaminants
2) Timing of implementation in regards to technological, regulatory, and political timelines
3) Comparison of centralized Indirect Potable Reuse in one wellfield versus decentralized Indirect Potable Reuse in multiple wellfields
4) Coupling implementation with increased water conservation and emerging contaminant source reduction efforts

Detection and removal of multiple classes of emerging contaminants

Current research by multiple educational and governmental institutions have identified new classes of emerging contaminants in wastewaters, drinking waters, groundwaters, and surface waters. While research into the possible health effects of these categories of contaminants is ongoing, the absence of concrete toxicological and medical data cannot be ignored. These new classes of contaminants include pharmaceuticals, personal care products, their metabolites and their by-products. Some commonly identified compounds are: Triclosan – an antibiotic found in various antibacterial household products; Caffeine; and Estradiol – one of the key hormones in oral contraceptives.

Studies in Europe, Australia, and the United States are in varying stages of completion in regards to the prevalence of these compounds in wastewater treatment plant influent and effluent. The Town of Acton is participating in one of these studies, sponsored by the Johns Hopkins Bloomberg School of Public Health. Further information on this study is included in Appendix B. This study will report the prevalence and concentration of many of the most common classes of these emerging contaminants, allowing the Town to develop a baseline against which to measure future treatment and disposal options. Separate studies are evaluating the capacity of different wastewater treatment technologies and processes to reduce or eliminate these compounds from the waste stream. Initial results of both sets of studies are presented in some of the articles attached to this report in Appendix A. It must be noted, that as with all academic efforts in the scientific realm, these studies are part of a continuum of discovery following a three-step process: detection, assessment of health risks, development of removal strategies.

Timing of implementation in regards to technological, regulatory, and political timelines

Further pursuit of Indirect Potable Reuse as a reclaimed water strategy will require funding that is not currently allocated within the Comprehensive Water Resources Management Plan. The disbursement of this funding will be at the discretion of the citizens of Acton. While economics will affect the local progression of Indirect Potable Reuse, acceptance of IPR at the state and federal levels will also greatly impact any possible implementation or exploration.

As have been shown by other reclaimed water projects around the U.S., a significant public participation and education campaign must be successfully mounted as the first step of any plan. In Acton, this campaign should be spearheaded by an elected or appointed Town official, not a staff member. It is important that the residents of Acton sufficiently understand the concept of Indirect Potable Reuse so that they may both collectively and individually accept or reject the proposal. This local acceptance must also fit into the Town's broader water resources management strategy in regards to the treatment and disposal capacity necessary to provide a solution to the designated needs areas.

Developments on the regulatory front may have the greatest impact on the possibilities for implementation of Indirect Potable Reuse in Acton. The Commonwealth of Massachusetts is currently developing a new set of Reclaimed Water Regulations, which will govern the reuse of highly treated wastewater in a variety of modalities. Indirect Potable Reuse will, of course, be included as a component of these regulations. These regulations will govern the effluent quality required for an Indirect Potable Reuse discharge, and the economic implications of the level of treatment may be the ultimate determining factor in implementation.

From a technological standpoint, the field of wastewater treatment advances each day in its ability to reduce various compounds to increasingly lower concentrations in treatment plant effluent for reuse projects. While it is impossible to predict what effluent limitations would be placed on any proposed Indirect Potable Reuse project in Acton sometime in the future, it can be expected that proven technologies will be available to meet those limits. The current wastewater treatment plant on Adams Street is discharging some of the highest quality effluent in the Commonwealth. The plant consistently discharges effluent with a Total Nitrogen of less than 3 mg/L (where the EPA drinking water standard is 10 mg/L) and 0 colonies of fecal coliform bacteria. These two contaminants, total nitrogen and fecal coliform bacteria, are two of the most important health-impacting contaminants in the drinking water standards as they relate to wastewater treatment. A caveat to this section would be the inclusion of any classes of emerging contaminants in effluent limitations. As stated previously, studies are still underway to determine which treatment process will most efficiently remove which classes of compounds. Further study would be required, possibly at the local level, in order to determine the best course of action in this case.

Comparison of centralized Indirect Potable Reuse in one wellfield versus decentralized Indirect Potable Reuse in multiple wellfields

The Town of Acton receives 95% of its drinking water from the five Acton Water District wellfields located across the community (see figure 1). As the implementation of Indirect Potable Reuse is evaluated against the needs areas identified in the Comprehensive Water Resources Management Plan, the possibility of lesser discharges spread across multiple wellfields should also be considered. This could allow for broader basin-wide recharge, which could be a benefit to stream flow; and it

could also allow for greater proliferation of offsite wastewater disposal solutions for needs areas across Acton.

Coupling implementation with increased water conservation and emerging contaminant source reduction efforts

The possible implementation of an Indirect Potable Reuse project in Acton, and the public participation and education campaign that would precede such a project, could offer a unique outreach opportunities to promote citizen involvement in the protection of water resources. Awareness of the consequences of waterborne disposal of personal care products and pharmaceuticals could lead to a reduction of those products which, along with their metabolites and by-products, make up the classes of emerging contaminants mentioned previously, in the waste stream. As with any other water resources based initiative, it would offer the opportunity to augment the already successful education efforts undertaken by the Acton Water District.

Recommendations

As the Town looks towards the future, all options for beneficial reclamation of wastewater must be evaluated to provide solutions for the 2/3's of the Town identified as having a need for an off-site wastewater disposal solution. This includes Indirect Potable Reuse. No possible solution should be discarded prior to an intensive, citizen-driven, review process.

The group recognizes the contribution that Indirect Potable Reuse could make to the water resource management efforts in Acton. It could serve to recharge aquifers within "stressed" basins and it addresses one of the primary components of the Massachusetts Water Policy, which encourages "keeping water local" by preserving the local hydrologic cycle. Through its deliberations, the group is aware of a number of unanswered questions under each of the four major topic areas.

1) Detection, removal and potential health effects of multiple classes of emerging contaminants
2) Timing of implementation in regards to technological, regulatory, and political timelines
3) Comparison of centralized Indirect Potable Reuse in one wellfield versus decentralized Indirect Potable Reuse in multiple wellfields
4) Coupling implementation with increased water conservation and emerging contaminant source reduction efforts

As with any major environmental decision, the Town must weigh the risks against the benefits and determine whether to progress forward.

The "local" answers to the questions that arise under these four areas may only be fully answered with a small-scale pilot project developed under close coordination with EPA, DEP, academia, and local officials. This project, if feasible, would serve to provide more

specific answers to many questions, for which the answers may currently come from project implemented in the Western United States. This pilot project would require funding appropriations, and would be subject to the approval of elected officials and their constituents in Acton.
Should the Town choose to further explore implementation of Indirect Potable Reuse, a permanent committee, similar to the Sewer Action Committee, should be appointed by the Board of Selectmen to further evaluate implementation options. This committee should be chaired by an elected or appointed town official who is also a resident of the community. It should include representation from, at least, the following stakeholders:

- Acton Board of Selectmen
- Acton Board of Health
- Acton Citizens for Environmental Safety
- Acton Planning Board
- Acton Water District
- Acton Conservation Commission
- The current incarnation of the Wastewater Citizens Advisory Committee
- Residents from those areas who will benefit from the additional disposal capacity
- Acton residents-at-large

This committee should work with the Town's consultants to cultivate a public participation and education plan devoted to Indirect Potable Reuse, and if the response is positive, should work to bring the project to fruition.

Indirect Potable Reuse, as a concept, holds much promise, not only for the Town of Acton, but for many other communities across New England, as the reality of the scarcity of our liquid reserves becomes readily apparent.

Indirect Potable Reuse in Acton

Report of the IPR Working Group

Mission Statement

"To evaluate the potential feasibility of the implementation of Indirect Potable Reuse of highly treated Wastewater Treatment Plant effluent through a discharge to the Zone II of a wellfield; the group will examine the issue from the "human" perspective, looking at the political and public relations impacts of any proposal. Those impacts can then be used to determine whether this

Working Group Members

Art Gagne' – Member of the CAC

Eric Hilfer – ACES representative and member of the CAC

Joanne Bissetta – Member of the Acton Board of Health

Greta Eckhardt – Acton Resident

Pat Cumings – Member of the CAC

Others Who Attended Meetings

Peter Shanahan, PhD – MIT Senior Lecturer and Co-Founder of Hydroanalysis Inc.

Mary Michelman – ACES President

Jim Gagliard – Former Acton WWTF Manager

Four Major Areas of Concern

1) Detection, removal and potential health effects of multiple classes of emerging contaminants

2) Timing of implementation in regards to technological, regulatory, and political timelines

3) Comparison of centralized Indirect Potable Reuse in one wellfield versus decentralized Indirect Potable Reuse in multiple wellfields

4) Coupling implementation with increased water conservation and emerging contaminant source reduction efforts

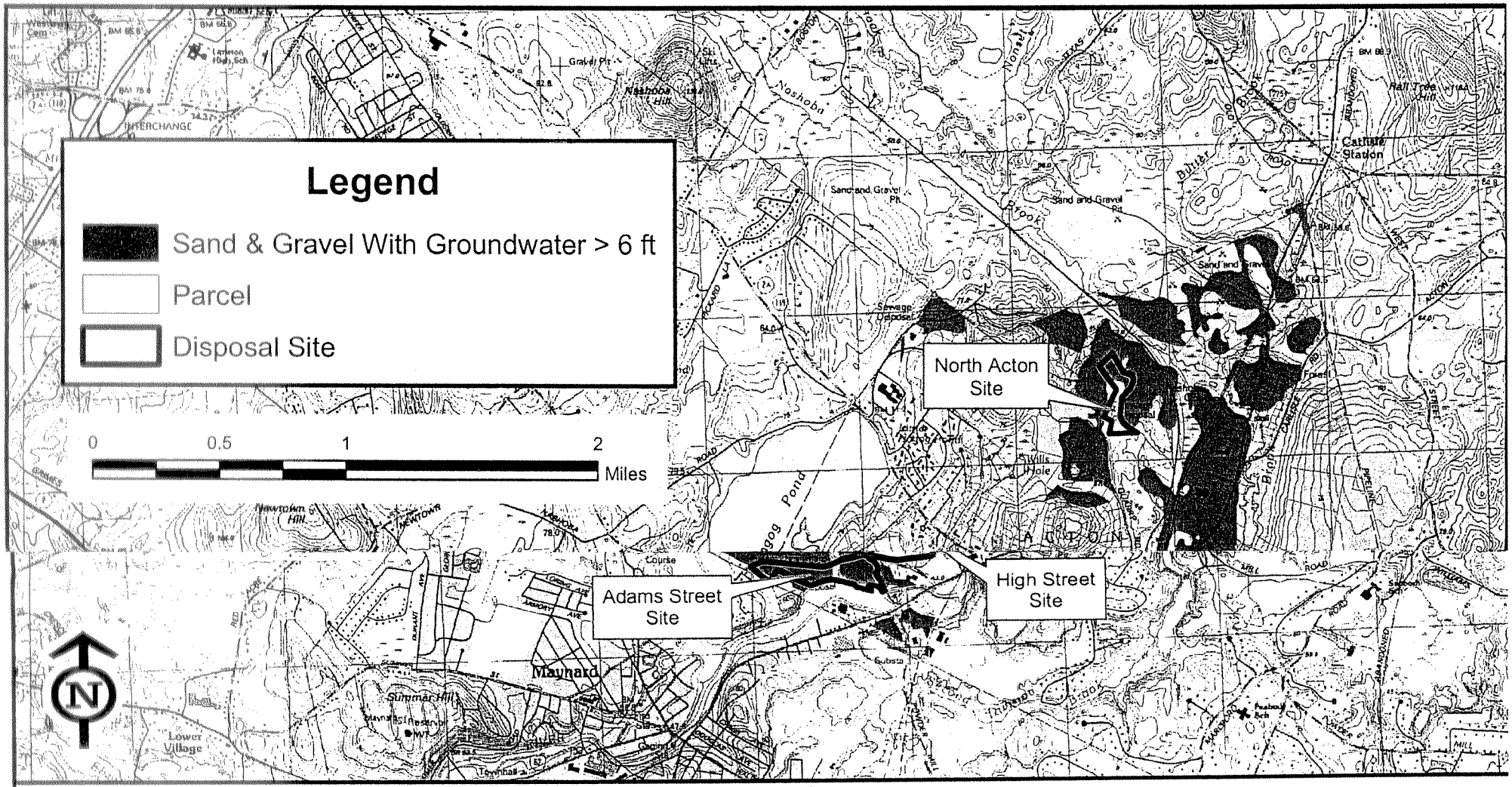
Final Recommendations

1) Inclusion of the concept as a possible solution in the Comprehensive Water Resources Management Plan.

2) Continue to monitor academic and regulatory developments with Indirect Potable Reuse and their possible impact on Acton.

3) Development of a targeted public outreach and education program related to Indirect Potable Reuse, which could include the provision, if feasible and accepted by the community, of a small-scale pilot study through which "local" answers to important questions may be obtained.

4) In the event Indirect Potable Reuse is chosen for further study by the Town, a standing committee should be seated to direct these efforts. This committee should be similar in makeup to the Sewer Action Committee.



Potential Wastewater Disposal Sites
Comprehensive Water Resource Management Plan
Acton, Massachusetts

Figure 1
November 2005

Source: MassGIS, Town of Acton, Woodard & Cuuran, Inc., Lombardo Associates, Inc.

INCORPORATED 1735 ACTON

WOODARD & CURRAN
Engineering • Science • Operations

Environmental Engineers/Consultants
LOMBARDO ASSOCIATES, INC.

Nov 1, 2005 Board of Selectmen

Where Are We Now?

Status of the Acton CWRMP

Lauren Rosenzweig
Citizen's Advisory Committee

CWRMP = Comprehensive Water Resources Management Plan

Planning commenced in 2002, with the Town Meeting appropriation of $500,000.

The project was required by the State of Massachusetts as part of the approval of the Middle Fort Pond Brook (South Acton) Sewer Project.

What is the Mission of the CAC?

- To advise Town and Consultants on CWRMP
- Identify issues for study
- Provide diverse views of process
- Communicate to community
- Build consensus for final Plan

The CAC is a group of Acton residents, representing a broad range of interests, which meet with the Project Team in a facilitated discussion format.

The Project Team is made of Health Department staff and consultants from Woodard and Curran Inc.

Phase I is Complete

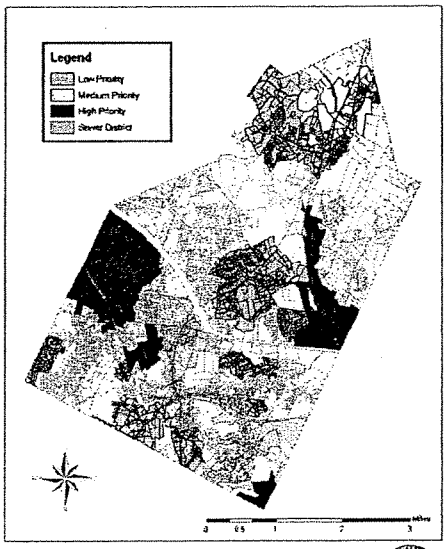
- Phase I
  - Identify Needs Areas
  - Prioritize Needs Areas
  - Identify solutions
    - Connect to existing sewer system
    - Construct new sewer system
    - Construct smaller "cluster" systems
    - Designate Wastewater Management Districts

Phase I was completed last winter

The CAC and the project team performed a lot-by-lot analysis of the Town, to determine which properties had a "need" for a wastewater disposal solution other than their current septic system

Every need has to have a solution, according to the State

Wastewater Management District – an area in which most properties would continue to rely on septic systems, but those systems would be managed and regulated more closely than they are now.



Acton CWRMP
Needs Planning Areas
Solution Priority Status

Needs Areas are the colored parcels

The needs areas were ranked in priority order by the CAC according to a variety of factors. This is a 20 year plan, and the intention is to service the "high" priority areas first, and so on

Color Key:

Red—High

Yellow—Medium

Green—Low

Needs areas cover approximately 2/3's of Acton

What Determines Need?

- High number failed systems
- Poor soils
- Wetlands, flood plains, environmentally sensitive areas
- Small lots
- Aesthetic and environmental impacts
- High groundwater elevations

Defining need is a risk-based process used to determine the environmental dangers present by the retention of the current septic systems serving a property

It also looks at whether a system fully compliant with all current regulations could be constructed on the lot if necessary

Phase II is almost Complete

- Phase II
  - Solutions ranked for each needs area
  - Technologies selected for each solution
  - 20 year plan developed for each needs area

Phase II will be complete by the end of this year

Each of the 4 solutions:
Connect to existing sewers
Construct new sewers
Connect to "cluster" systems
Wastewater Management Districts
Have been ranked in order of preference for each needs area by the CAC

This information will form the basis of the 20 year plan

What Happens Next?

- Public Meeting on December 8th, 7pm, at the Senior Center to present the findings of Phases I and II
- Submission of all reports to the State for review and approval

The Public Meeting on 12/8 will be the chance for Residents of Acton to provide input and comment on the proposal in Phase II, this is important as the Phase II report will determine the possible solutions for each of the needs areas

Once the public meeting is complete, the State will have its chance to review the report against certain benchmarks set back when the project began

Spring TM Article

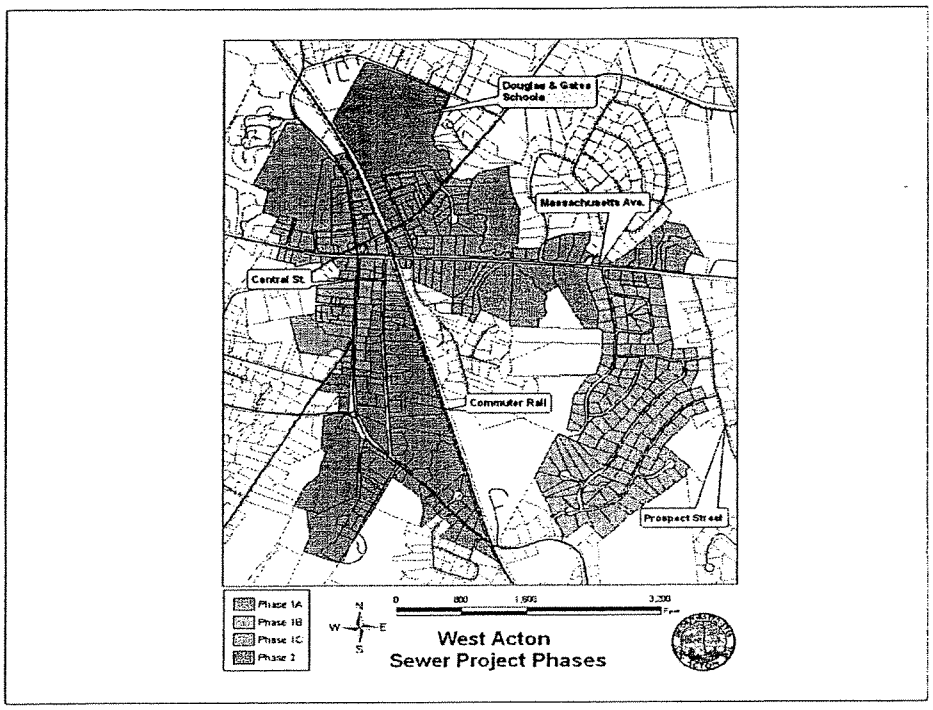
- Accept Final Comprehensive Water Resources Management Plan and its recommendations

Once the State has had a chance to comment, the Town must ratify the Report through a Town Meeting Vote. It is expected that this vote will happen at the 2006 Annual Town Meeting this coming spring

Special Town Meeting – Fall 06

- Articles for design and construction funding for West Acton Sewer Expansions
  - Douglas/Gates Schools
  - West Acton Village
  - Spencer/Tuttle/Flint Roads Neighborhood

One of the highest priority areas, even before this process fully began, was the West Acton Village area. Currently, the South Acton sewer facility has additional capacity available that can be used to serve some of the properties in this area. While planning is still underway, it is expected that by the Fall of 2006, this planning will be complete, and a presentation will be ready for a Special Town Meeting to vote to fund the design and construction of a sewer extension into West Acton Village.



This map shows the four distinct phases involved in a possible West Acton Sewer Project. Further analysis of current flows at the treatment plant on Adams Street, in conjunction with discussions with the State will determine how many of these phases will be able to be served by the initial project, and how many will need to wait until additional capacities are made available.

Thank You's

- Acton Health Department
- Woodard and Curran
- Members of the CAC
- Board of Selectmen

Questions?

If anyone would like more information related to the CWRMP they should contact the Acton Health Department at 978-264-9634, or the Phase I report can be found on the Health Department section of the Town's website.