

Assabet River Advisory Sessions, Fall 2008
Organization for the Assabet River + Consensus Building Institute
Draft 1/4/09

Key takeaways...

- Everyone agrees that water quality is very important, but many noted the potential tradeoffs, costs, and competing interests between a ‘working river’ (e.g. wastewater treatment, power generation) and a clean, free-flowing river (e.g., aesthetic and recreational resource).
- Increasingly strict water quality requirements produce major pressures on municipalities, which some view as unfunded mandates to deal with pollutants like phosphorous.
- Dam removal is extremely controversial; some see it as essential to restoring the natural character and biodiversity of the river, while others argue that the river has reached a new equilibrium after decades and even centuries of damming, and that the resulting impoundments provide a variety of important services, including recreational and aesthetic opportunities.
- Some argue that wastewater treatment plants, and other sources of pollution, should be responsible for reducing their impacts on the river, and that this should be sufficient for the river. Others argue that pollution needs to be reduced, and dam removal would address both the phosphorus cycling problem and allow fish to run freely and healthier ecosystems to return. Stakeholders perceive there to be a great deal of uncertainty around what impacts different interventions will have.
- The river is why many towns exist, with their history of mills. On the other hand, these towns have typically turned their backs to the river, and are only now bringing it back into focus via nature trails and urban design. In general, access to the river has been a problem.
- Interviewees almost universally state that it is important to raise awareness of the river and the resources it provides. Thoreau and Hawthorne both appreciated it enough to include it in their writings; it should be recognized as the treasure it is once again.
- Many support the notion that the process may be more successful if striving for a cohesive vision for the river, rather than focused on just dam removal or another specific issue.
 - Calls for a broad vision for the health of the river that is bought in to by all stakeholders.
- Many stated that more information is required before decisions should be made, including:
 - Reports on what has happened elsewhere when dams have been removed. What did it look like? What were the environmental changes?
 - More information on the ‘phosphorous cycling’ processes. What would be the impacts of setting phosphorous pollution limits to summer levels year-round? What would the impacts and costs would be if we drastically lowered phosphorus discharges today in scenarios both with and without the dams? Generally, a call for modeling of what the water column and ecosystem equilibrium would be at various points in the future under different conditions.
- The regulatory environment is calling for phosphorous to be addressed (essentially making it the number one concern), but this is not necessarily the primary concern of stakeholders. Some identify biological integrity, for example, as their primary concern.
- Beyond the regulatory requirements, there is a lack of clarity around what the goal or standard against which progress is measured is. Are we striving for a river pre-arrival of North Americans, pre-industrial revolution?

Current river uses:

- Recreation, including canoeing, kayaking and hiking
- Fishing (coldwater in tributaries; pond species in impoundments) and hunting
- Conveyance of treated wastewater
- Direct water source for drinking (Town of Billerica)
- Direct water source for irrigation (orchards, farms and golf courses)
- Water for fire suppression (including firefighting ponds near impoundments)
- Indirect water source (shallow wells along banks)

- Esthetic value for residents, office occupants, and visitors (both impounded and free-flowing sections)
- Supports wildlife (including fish, birds, and other animals both aquatic and along banks) and associated bird and wildlife watching
- Hydroelectric generation

Problems

- The river is severely eutrophic, especially in impoundments behind dams. One factor exacerbating the problem is the recycling of phosphorus from sediments in impoundments.
- Aesthetically, many complain about algae and duckweed, and the associated smells in late summer. Other invasive species are also problematic, including purple loosestrife. Some also complain about geese and swans, though others have a more positive opinion of them.
- Most municipalities still discharge high phosphorous loads from wastewater treatment plants. These are coming up against hard requirements set under the Clean Water Act and the Massachusetts Water Quality Standards.
 - The Total Maximum Daily Load is established by the Massachusetts DEP and approved by the EPA. It applies to the entire river.
 - They call for a “native, naturally diverse community of aquatic flora and fauna” to be achieved and protected.
 - There are regulatory mechanisms such as Use Attainability Analysis for modifying these requirements but fairly strict conditions have to be met.
 - Stakeholders should play a role in how we achieve the CWA goals, but cannot decide whether or not the goals themselves are achieved.
- Fish species diversity lost; it was asserted that shad, eastern brook trout and river herring populations have collapsed, for example (though some uncertainty around which species were historically found were). If dams are removed, will they return? What role does the Assabet play in broader regional recovery, given that it cannot be considered in isolation?
- There is a lack of certainty and disagreement around the most effective means for addressing issues. Modeling may be the best we have, but it should not be taken as gospel; it is valuable as an instrument for predicting trends, but cannot predict conclusive concrete outcomes.
- Concern raised that increasing development is problematic because:
 - More wells will draw the watertable down, potentially decreasing the flow at the headwaters, effectively ‘dewatering’ the river
 - Complaint that municipalities are strict on wastewater issues (septic systems), but sign-off on water withdrawal (private wells) with little thought. On the other hand, there are some restrictions on development close to the river in some municipalities.
 - Vital wetlands and headwaters may be destroyed (e.g. drumlin flattening).
 - Riverbanks are being degraded, decreasing water quality and spreading invasive species. The enforcement of buffer zones by the Conservation Commissions varies widely from community to community. Some clearing along riverbanks has destroyed important sources of shade.
- The river is not always aesthetically pleasing in built-up areas (e.g. unsightly storage areas and advertisements along the river in Hudson). Suggested that some of the landowners should fence or landscape to improve aesthetics
- Climate change may exacerbate problems, with irregular weather patterns, potential droughts, higher water temperatures.

Wastewater treatment

- The river's flow is dominated by wastewater effluent at certain times of year. When there is a lower base flow in the summer, the proportion can approach 90% effluent in Maynard.
- Municipalities are in the process of upgrading their treatment plants to meet new phosphorous standards and update aging facilities. This is financially difficult, particularly with rapidly increasing costs.
 - Uncertainty around what the next round of permitting will require. Will the work they are doing now be made redundant in a couple of years?
 - Cost is an issue to taxpayers and local government officials; rates already doubled in many municipalities. Also, risk of losing water-intensive industries that are sensitive to higher rates.
- Need to meet the needs of municipalities to discharge treated wastewater.
- From a funding perspective, the position municipalities took was that they would be willing to participate in the sediment study, then decide to either update treatment plants or fund some other work to clean up the river. Unfortunately, they no longer have the funds to do this and, they cannot wait to see the study outcomes with regulatory/permit requirements bearing down.
- The study estimates that a 60% reduction in phosphorous is possible with current (seasonally adjusted) standards; how much greater would the impact be if the summer standards were applied year-round? Why doesn't the study include an analysis of what would happen with a reduction in the winter limits for phosphorus?
- Some suggested that the municipalities should take responsibility for cleaning up the phosphorus via improved treatment; they are the source, so should be the solution, rather than making it someone else's problem. Assertion that, if they are successful, dam removal may not be necessary.

Dam removal

- Typically - unless there are safety issues - it is the owner that must decide to remove a dam.
- Every individual dam is a long, hard road that has many issues to be dealt with.
- Assertion that removing dams will improve pollution levels, as water will carry it away.
 - Others question, however, as increased flow may stir up highly polluted sediment behind dams. What is going to happen to this sediment? Will it be treated? Who will pay for it?
- Significant eutrophication behind dams is evident, as the impoundments smell and are full of weeds by late summer. Sewage treatment plants upstream may cause problem, but aided by water being kept stagnant when perhaps it shouldn't be.
- Concern that the Army Corps study focuses on phosphorus, and thus dam removal as a primary means for dealing with the problem, rather than considering the entire ecosystem and all of the values of the river to residents. There may be other ways to address phosphorous issue.
- Some communities left out of the Army Corps process, as they do not discharge wastewater directly into the river.
- Assertion that we should see how effective improved wastewater treatment is and go from there, rather than doing everything all at once.
- What will happen in flood conditions? What will change with dam removal and different flow rates?
- The state may have the authority to order dam removal due to broader river quality concerns, even if it is in compliance with TMDL standards, but this is not politically realistic. In practice, would only order dam removal due to safety issues or lack of compliance.
- Who is going to clean up and manage the "brownfields" that will be exposed along the former riverbed? What contaminants are left in the sediment? If you remove the water, can you stabilize the soil? Same with dredging (i.e. upsetting the sediments) – can it be controlled? Would landowners be liable for risks from contaminated soils?
- What would be the impacts of dam removal on: wetlands, water temperature, the groundwater table and fish habitat?
 - Will changes in the river flow and course create opportunities for invasive species to move in?
 - What would be the impact of dam removal on Zoning and Conservation Commission jurisdiction? Would development be extended out to new banks?

Ownership

- Dam ownership is an issue – many ownership situations unclear while some owners are not aware of or do not want to acknowledge ownership.
 - Only one is owned by a municipality: Hudson.
 - Some have not been inspected in decades, so seen as risky liabilities to municipalities. If something happens, they would have some responsibility, so would be happy to get rid of them.
- There are also legal issues around property ownership that need to be considered:
 - Who owns the newly exposed land when impoundments disappear? Different stipulations in deeds for different stretches of the river; some parcels go to mid-river, others to high water mark.
 - If going to dredge, whose land are you putting the dredge spoils on? Do you have access?
- There are potentially water rights too – would various changes to the river impact these?
- Some municipalities and organizations are working hard to purchase land along the river to create areas for wildlife, parks, and other recreational and/or redevelopment projects. They would lose out if dams were removed and they no longer had the waterfront property.
 - On the other hand, newly exposed land can be used for new parks or boat launches, becoming an asset to the community.
- If dams kept in place, who will cover their maintenance costs?

Aesthetics and recreation

- Impoundments are viewed as aesthetically pleasing, with paths along them – highly used and enjoyed. They add aesthetic value and character to communities. Some expressed concern with losing this.
- Some dams are historically significant, dating back as far as the 1700s (e.g. Martin's Grist Mill). They hold both historic value and the scenic value of water flowing over them.
 - However, removing dams may not mean that these resources are lost - in fact, they are often better preserved without water - but it does mean aesthetic change.
- Some dams may be protected under the National Historic Preservation Act. Each has to be assessed under the following framework: How historically significant is the dam? What is its structural integrity? Who owns it and what responsibility are they willing to take for its maintenance and long-term liability?
- What will the river be like in particular stretches if dams are removed? There are graphics of what it will look like immediately around dams, but what about 5 miles upstream?
 - Some concern that the river will be unsightly with removal – 'stinking mud flats'.
 - Counter claim that vegetation will move in quickly, and any dam removal will naturally include some remediation.
- General consensus that duckweed and other invasive species should be removed.
- No one has seen the stream in its natural state; with familiarity comes contentment, and people are familiar with a broad flat river.
- Will the river still be suitable for canoeing and kayaking without the impoundments? Some stated that they like the current wide, flat waters for paddling and are concerned about losing that. Others complained that it is difficult to travel the river because of the dams (portaging required).

Wildlife and wetlands

- Assertion that it would be a shame to spend tens of millions of dollars on water quality, but ignore habitat; just improving wastewater treatment is not a finished job.
- Assertion that, for the money spent on treatment, the single activity best and most certain payback is dam removal. It not only improves water quality, but also restores the natural habitat. Some organizations feel that native fish populations like shad and alewife should be restored, which requires dam removal and habitat restoration.
 - Counter argument that we need to consider the loss of the habitat that has developed over the past 100 years or more, including the major wetlands that will be lost or changed.
 - Also counterargument that species have been restored elsewhere without dam removal.

- Some questioned whether, if dams were removed, riverine fish species would really start traveling up and down the river again. This also depends on what restoration efforts take place on the Merrimack River.
- However, the Clean Water Act calls for the restoration of native/indigenous species.
- Once people see the result – thousands of fish traveling up the Assabet – they may appreciate the value of a restored river.
- Questions around how many wetlands will be lost if river changed. What new ones will be created? What are the legal repercussions of having this impact on wetlands?
 - DEP's counterargument is that alterations are restoring the overall balance, with overriding benefits. The wetlands impact evaluation process is streamlined for dam removal.
- The 'Wild and Scenic River' designation only applies to the lower four miles (up to the Damonmill Dam). Interest in entire river is based on fact that what happens upstream will have impacts on the aesthetic and recreational assets being protected. If dams removed, communities may seek to extend the designation.
- There are partial-removal options, including lowering the crest and creating a breach in the middle (though this can create safety issues with the increased current, and it is not certain that fish can swim upstream through it). Fish ladders and opening the bottom of dams to flush sediments are a couple of other options.
- If dams removed, could change the depth of the river, what wildlife is present and so on. Could have negative impacts on various species with their habitat altered significantly and quickly.
 - Vernal pool species in particular could suffer if they are no longer seasonally filled due to water table changes due to dam removal.

Water extraction

- Some municipalities draw water for fire suppression from impoundments. Cannot get rid of these impoundments without putting an alternative in place first.
- Some farmers (particularly orchards), golf courses, and the Town of Billerica draw water directly from the river; will they be able to meet their needs without impoundments?
 - Some expressed flexibility, provided that they are still able to meet their water needs (e.g. receive support for the construction of holding tanks).
- Also concern that, if dams are removed, shallow wells along the banks will be impacted due to water table drops. On a related note, concern that water table recharge rates will drop if dams are removed.

Hydroelectric power generation

- Micro-hydro is seen as a clean way of producing electricity.
- Not a major issue, but some possible: Powdermill Dam should be back up and producing power this winter; Clock Tower Place is also considering reintroducing hydroelectric.
- Hydroelectricity is not a priority to the state, but there are programs supporting development. Ironically, the State is putting money into investigating dam removal while channeling funds to dam owners to develop hydroelectric power (Mass. Technology Collaborative).
- Some argued that there is not necessarily any significant energy production potential, as it is a fairly flat river. Most of the sites worth developing have been developed; those being proposed now are only economically viable because of incentives. May be potential now due to the economic environment, but not necessarily for the long-term.
 - Counterargument that it is up to the individuals or businesses who make the investments to determine if energy production is worth pursuing. It is also up to them to justify their investments whether that includes incentives or not and whether their investment window is short or long term.
- Argued that, if we develop hydroelectricity on every dam possible, it is possible that riverine fish communities may be negatively impacted due to cumulative effects of turbine mortality.
 - Counter that fish mortality and dams is a complex issue and it is far from certain that mortality cannot be addressed via appropriate technology and management.

Non-point pollutants

- There are other (non-point) sources of pollution that can become significant, including stormwater runoff and agricultural and lawn runoff.
- The Army Corps models did not deal with non-point sources very well, lumping them all together. It also failed to look at how municipalities could address some of these non-point sources to more cost-effectively meet their requirements.
- Concern that the focus is on wastewater treatment and dam removal only. Treatment plants are definitely the main source of pollution, especially when evaluating based on ‘critical low-flow conditions’ (days after a long drought). However, on an annual basis, non-point sources do become substantial.
 - Counterargument that these two are overwhelmingly responsible for nutrient problems identified in the TMDL. Other sources, including stormwater runoff, will need to be considered as wastewater and sediments are addressed and these others become more significant.
- Stormwater runoff is one major non-point source, and it is being chipped away at slowly.
- Golf courses are another source; there are certain improvements being made in the industry, but no comprehensive effort being made yet.
- Other issues include: Landowners improperly altering the waterfront, and pesticide and herbicide use on lawns. These are things people can change at a personal level.
- What will be the implications of growth in the watershed, including demographic changes and growth in the volume of wastewater being released by treatment systems?
- Need to educate people on stormwater management, keeping their septic tanks repaired and so on.
- Opportunities to start doing things today. Each municipality needs to do in own way, but some best practices already taking place should be shared. For example:
 - Mapping and monitoring stormwater catch basins to ensure that they are in compliance, and improving them when possible. Able to use them as leverage for improvements when permits requested.
 - Northborough’s public paths network to raise profile of the river and provide recreation opportunities.
- There are, of course, other things that can be done that will not necessarily directly impact phosphorous levels, but address many of the other concerns of stakeholders.
 - For example, removing invasive species like knotweed upstream will prevent it from spreading downstream

Visions of the river

- The river gets used recreationally (canoeing, fishing, boating and so on) but these uses should be increased greatly all along the river and its tributaries. Also, people swimming in it again.
- Some prefer the pond fish species that currently populate the river – it is what they are used to – over the more riverine species that would populate a free-flowing river.
- Others would like to see a return to the river’s wild state, with riverine (possibly coldwater) fish species and native plant and bird communities, and feel that you cannot have a natural fishery with the dams there, so would like to see all of them removed.
- More green space along the banks for wildlife and development pushed further back from the shore. Keeping undeveloped land along the river still undeveloped.
 - Acton, for example, has passed a bylaw mandating a 50’ no-disturbance zone and 70’ no-construction zone along the river. Some would like this implemented elsewhere.
- Connections between urban life and the river:
 - Events on the river, like ‘Water Fire’ in Providence, RI.
 - Urban river walks and restaurants oriented towards the river.

- A clean river that is free of duckweed; and free of invasive species, including swans.
- A river where you can canoe all summer long free of aquatic weeds.
- A river that does not smell bad.
- A river of the same dimensions as today, but without duckweed.
- Can stick feet in, walk along, and fish without concern for contaminants, even in vicinity of currently problematic sites, like the W.R. Grace Superfund site in Acton.
- Completion of the Assabet River Rail Trail (ARRT) along its length
- The sources of pollution addressed, and they are not permitted to put more in.
- Cleanup of contaminated sediments already in the river, provided this will not cause more harm than good (i.e. stirring up silt, resulting in release of pollutants). Heal the brownfields under the river.
- Not have to see a ‘wall of suds’ caused by wastewater treatment plant overflows.
- People along the river being active stewards of it, so that it is functioning optimally.
- Dams stay, with hydroelectric power generation; bioremediation to clean up the pollutants rather than the nuts-and-bolts status quo solution; dealing with pollution at the sources; recreation and commerce on a nice wide river.
- An engaged community--even abutters are not engaged with it now. Also need to engage the open space committees, Conservation Commissioners, and other decision makers.
- An educated community, with programs offered via various organizations to familiarize residents with the river, its history and its myriad of various issues.

Community engagement

- Target very specific interests associated with different river issues (e.g. dam owners on public safety and liability).
- Speak at Selectmen meetings, partly because it will get the issue on community cable TV, raising profile.
- Should get regulators involved (rather than just having them mandate).
- It is difficult to get municipalities to work together, but this was achieved with the Assabet Consortium. Fostered recognition that water quality in one place is impacting others. Not always easy, but municipalities committed to process, including financially.
- Should show the pros and cons of the different alternative uses of the river, illustrating benefits, costs and changes that may be positive or negative, depending on perception.
- Should use renderings to help people visualize what changes will look like.
- Challenge will be in extending interest beyond 200ft away from the shore and/or people that have a vested interest in things like hydroelectricity. Some stakeholders convinced that people are not that interested, as low participation in meetings around multimillion dollar wastewater treatment plant upgrades would suggest. On the other hand, some say that mentioning dam removal will likely get more interest.
 - Dilemma between saying ‘dam removal’ to get people out and risking locking people into positions and that single issue instead of broader visioning for the river.
 - Can’t get to the regional vision collectively until you get beyond the dam issue. May get some careful side-stepping, but real deep disagreement will persist.
 - Will need very good and careful facilitation to make sure it does not devolve to just the dam issue. Suggested strategy is to enlist dam owners as advocates of a broader river vision. They have a vested interest in river improvement and may be in the best position to steer discussion away from the single (dam removal) issue.
- One option is getting a large group together and developing complex matrices for a variety of different options, then honing in on the preferred ones and developing an ideal outcome collectively with discussion, education and an expanded buy-in.
 - Extremely useful, with everyone having an opportunity to contribute that, ideally, will lead to better outcomes.
 - However, it will take a great deal of facilitation, and requires defined alternatives.

- The bigger the group, the greater the number of grandstanders. One option is to start with smaller meetings so they can ‘fan the flames’ much less effectively, and give them the opportunity to support a shared vision in larger, meetings. On the other hand, it may be valuable to have larger meetings first to get the information out and make everyone feel included/welcome, then move to smaller meetings with key stakeholders.
- Drawing from experience: Plymouth and Andover have gone through processes like this, They could be presented as case studies. Also look at Taunton and Greenfield rivers. Riverways Program has worked with a lot of communities.
- In many municipalities, town managers are the conduits for reaching selectmen and are important shapers of local opinions. It is good to get their buy-in early, along with the Conservation Commission chairs and town planners.
- Offer lots of people, including tribes, the possibility to be involved in this process.
- May not want to invite everyone, but rather just representatives from various groups.
 - Is this going to be perceived as inclusive enough?
 - Disadvantage is that innovative ideas often come from unexpected sources, and this will be missed. Further, there is an educational component in reaching many.
 - Advantage of limiting is that it will otherwise be difficult to make sense of the mass of information and perspectives that will come out.
 - Another advantage is that an open meeting may attract many participants that have no idea of riverine dynamics and so on.
 - Smaller, more focused meetings are more conducive to going beyond grandstanding and rehashing positions.
- One idea is a charette-style process that moves towards co-creating a plan.
 - Could be based on 2-3 visions (e.g. no dams removed, some removed, all removed)
- Question is, what happens after plans are developed? Who is going to be the proponent moving the project forward? In practice, it is often a partnership that may involve private landowners, the municipalities, and a non-profit. An organization like OAR may need to step forward to take project management responsibility.
 - Need to have vision and see it as their job to make the project happen. Get on the phone and push progress, engage stakeholders, and so on.
- Ideally, have some meetings in the evening, for working people, and some in the day for retirees.
- Would be nice to have meetings involving more than one town, as they are addressing the same issues, and even the same dams in some cases.
- It is important that the study group is diverse, ensuring that no one is left out of the process and that there is a good balance of different voices from across town.
- Getting people of all ages and types out on the river itself is important; they need to realize that it is there. This will also make them more sympathetic when rates need to be raised to improve sewage works or buy a parcel of land.
- Need to focus on both meetings and public outreach – current plan is to get information out first (primarily in printed form), then hold stakeholder meetings/consultation.
- Different groups will have varying ideas of what constitutes ‘the region’.
- There is a tremendous need for facts. The Army Corps, and other experts, should be brought in to answer a variety of questions, including what will happen if phosphorous discharge levels are lowered year-round, and what the impacts of their recommendations will be.
 - Some complained that the Army Corps study was not sufficient, looking at the situation with a very narrow scope, and that there are a lot of questions unanswered.
 - It is not clear whether or not OAR should, or wants to, take responsibility for the education component, but how education supports and is connected to this process needs to be considered.
 - Need to have all of these questions and answers prepared and distributed in advance. This will start people off from a bit more informed point.
- Target captive audiences, like students and Scout troops for education.

- Engage important, relevant, groups, like: Boards of Health; Planning Boards, Conservation Commissions, and Departments of Public Works. The latter (and Mass Highway) need training on best practices for stormwater management and highway maintenance.
- Provide education on things like good vegetation management, potentially connecting with people and organizations already doing good work (e.g. Bigelow Nurseries).
 - Should use storytelling around the river as a way to raise interest.
- Build awareness and appreciation through activities like: Community service projects; paddling trips; and partnerships with historical societies.
- Important to give people the sense that this process will result in something. People not interested in talking about the same issues again if they don't feel there will be any impact.
- Argument that discussion should extend beyond the river itself to topics like industry, lifestyle, and energy when appropriate.

Information needs

- Impact of year-round application of summer phosphorus discharge limits on water quality
- Impact of dam removal on:
 - Wetlands and wetlands-related wildlife.
 - Fish species and fish habitat, including water temperature
 - Groundwater/watertable (impacting wells and ponds)
 - The Assabet's role in broader regional recovery of migratory fish populations
 - What the impoundments would look like (renderings)
 - Flood levels
- Ownership of land under impoundments
- Implications of growth in the watershed for wastewater generation and disposal
- Impacts and costs associated with decreasing the phosphorus limits lower than is currently planned. Corps/CDM modeling study showed that with dams in place further reductions in summer limits has minimal effect on water quality improvement, as with winter limits of 1 mg/l the P flux in the summer is controlled by the winter instream P concentration. More options to deal with phosphorus in the impoundments.
- Impacts and costs of further lowered phosphorus discharges today in scenarios both with and without the dams.
- Case studies of river restoration with and without dam removal
- Options for managing contaminated sediments while protecting human and ecosystem health
- Water quality—what are the other pollutants in the river?
- Impact of hydroelectric turbines on fish, including eels
- Options for local regulatory changes to improve stormwater management and increase recharge