

WATERSHED

A Newsletter of the Wood-Pawcatuck Watershed Association

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SUMMER 2004

Charbert to Install Aerators in Wastewater Lagoons at Alton Plant

Company says it is committed to installing comprehensive waste treatment facility

The Department of Environmental Management has been notified by representatives of the Charbert Division of NFA Corporation that aerators will be installed in the wastewater treatment lagoons at the Richmond textile plant. DEM has been pressing Charbert to develop an action plan to address the various environmental concerns associated with the facility, which would be backed by an enforceable order. During a June 21 meeting with Charbert officials, DEM told the company to immediately address the hydrogen sulfide odors coming from the plant.

Charbert reported that two, 10 HP mixing aerators had been ordered, and one has been installed in one of the mill's three active wastewater lagoons. Charbert will use a portable diesel generator to power the aerators until power lines to the site can be in-

stalled. DEM believes that odor levels in the area could increase during the first several days of operation, as water in the lagoons is mixed and aerated. However, this condition is expected to abate over a period of several days as dissolved oxygen levels in the lagoon respond to the aerators. Charbert has said that it would study the effectiveness of the two aerators, and would install additional aerators in the lagoons as needed.

DEM has been conducting continuous hydrogen sulfide monitoring in the neighborhood adjacent to the Charbert facility in Alton since May 14. The monitors are located in sheds on the properties of 10 Woodville-Alton Road, across Alton Pond from the facility, and 16 River Street, adjacent to the Charbert lagoons.

As in previous weeks, substantially elevated levels of hydrogen sulfide were recorded frequently during the period of June 28th to July 7th at the River Street location. On all of the

nine nights during that period, the concentrations were elevated during all or part of the late night- early morning hours. In addition, elevated concentrations occurred intermittently throughout the day on Monday, July 5th at the River Street site. The occurrences of elevated concentrations were all associated with wind conditions that were either calm or from the south, where the lagoons are located. Concentrations were lower at the Woodville-Alton Road location than at River Street, but were sporadically higher at that location than in previous weeks.

As in the previous week, one reading at the River Street monitor was at or above 90 ppb, the upper end of the range of concentrations that can be measured with the instrumentation in its current configuration. DEM is currently obtaining the supplies necessary to configure a monitor to measure higher hydrogen sulfide levels. DEM plans

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Alton Community Action a voice for local neighborhood

Alton Community Action (ACA) is a non-profit grassroots organization of neighbors who have come together to fight air and water contamination in their neighborhood. Through testing by DEM, DOH and other agencies, many of the wells have been found to be contaminated with various chemicals. Residents have been instructed by DEM and DOH to use bottled water since the well water is not safe for drinking, cooking or bathing infants. Recently, high levels of hydrogen sulfide were also found in the Alton air. This chemical is regularly emitted into the air from the various open-air hazardous waste lagoons, operated by Charbert.

Numerous complaints have been made to RI state agencies with little to no enforcement. With the invaluable assistance from Toxics Action Center <http://www.toxicsaction.org>, ACA has become stronger in fighting the on-going air and water contamination. ACA has now enlisted the help of Denny Larson, Director of Global Community Monitor and Community Environmental Protection Systems Worldwide to monitor the Alton air quality. Denny is known by his Bucket Brigade campaign which involves teaching citizens how to construct their own air quality monitoring equipment, how to capture a sample of air and how to get scientific results that are irrefutable. This process will allow ACA to test for concentrations of VOCs and

sulfers which can be detrimental to residents' health. See <http://www.gcmonitor.org> or <http://www.bucketbrigade.net> for more information about Bucket Brigades and Beyond. ACA relies heavily on donations to continue air monitoring and water testing. Any donations are appreciated. All funds will be used to support ACA's mission, which is to "ensure a safe and healthy environment for all people in the Alton community". Donations may be made to Alton Community Action at Citizens Bank, or mailed to Alton Community Action PO Box 65 Wood River Junction, RI 02894. For more information, visit the new ACA website at: <http://www.geocities.com/altoncommunityaction/>

Charbert

Cont'd from Page 1

to operate two monitors side by side at the River Street location; the current monitor will be used to measure the lower range, and the additional monitor will quantify higher concentrations should they occur. The Department hopes to have the additional monitor in place next week when the two aerators become operational.

The maximum levels recorded by the River Street monitor during the June 28th to July 7th period are similar to those in the previous week and

are well into the range of values that are classified as nuisance levels by the Rhode Island Department of Health (HEALTH). These levels would clearly be associated with a noticeable rotten-egg type odor. HEALTH warns that people exposed to nuisance levels of hydrogen sulfide may experience nausea and stress from the odors, an increase in non-specific symptoms and a possible exacerbation of chronic respiratory symptoms in hypersensitive individuals. The maximum concentrations at the Woodville-Alton Road location were higher than in

previous weeks and were also in the nuisance range. Hydrogen sulfide monitoring is continuing at the two locations.

Company spokesman Gregg Perry recently announced that Charbert is "committed to the installation of a comprehensive wastewater facility," though, he adds, they are "many months away from having any state permits or plans for construction" of such a facility.

Additional information about air sampling results is available by calling Barbara Morin of DEM's Office of Air Resources at 222-4700, ext. 7012.

RIDEM to repeat agricultural herbicide Dacthal testing in Richmond and So. Kingstown wells

The Department of Environmental Management and the Department of Health will sample 18 monitoring and private drinking water wells located near turf fields in Richmond and South Kingstown for the agricultural herbicide, Dacthal. The wells are in the vicinity of Switch Road in Richmond, Heaton Orchard Road and Route 2 in Richmond, and Route 138 in the South Kingstown village of Usquepaug.

Ten of the 18 wells that will be tested are the same drinking water wells that were recently found by DEM to have elevated nitrate levels, and were slated to be re-tested by DEM this summer. The monitoring wells are among the wells that DEM has been sampling for nitrate over the past few years. The tests will be conducted in three rounds, with final results for all 18 samples expected by mid-August. DEM and HEALTH have notified about 80 residents of the two communities about the upcoming well sampling activities.

DEM will test the wells based on the US Environmental Protection Agency's latest Health Advisory Level for Dacthal, which is set at 70 parts per billion, a change from the previous level of 4,000 parts per billion. According to HEALTH, contamination by agricultural chemicals, even low-risk products like Dacthal, indicates the vulnerability of the area's private drinking

water wells. Dacthal health advisories pertain to lifetime exposures; short-term exposures are lower risk.

DEM has sent a letter to applicators and users of Dacthal throughout the state, notifying them of EPA's revised health advisory level and reminding them to apply the product only in accordance with labeled advisories. The letter also recommends that users of Dacthal consider reducing application rates or use of alternative products, where feasible. DEM's Division of Agriculture is currently reviewing the use status of Dacthal, and considering additional restrictions, and increased monitoring of ground and surface water in use areas.

Dacthal is a general use herbicide that is used to control annual grasses and some broad leaf weeds in vegetable crops, nurseries and ornamental turf. In Rhode Island, the herbicide is primarily used on turf and strawberry fields for weed control. The products currently registered for use in Rhode Island are Dacthal W-75 Agricultural Herbicide, Dacthal W-75 Turf, and Dacthal Flowable Herbicide. Since Dacthal is classified as a general use product, applicators are not required to report its use to DEM's Division of Agriculture. The product has not been available for homeowner use since 2000, and commercial use of the product has diminished significantly during the past several years as well.

The most recent sampling data on Dacthal from the South County monitoring wells was collected on a quarterly basis from 1999 and 2002, and is extremely limited. The data shows the presence of Dacthal and/or its breakdown products in eight monitoring wells at levels ranging from 3.7 ppb to 480 ppb. Four monitoring wells were sampled consistently on a quarterly basis, and the remaining wells were tested on a random basis. No drinking water wells in the area were sampled. The monitoring wells were installed by US Geological Survey (USGS) between 1970 and 1989, and are located along roadsides or on private property. The sampling was discontinued in December 2002 due to budget constraints. Because of the limited data, no conclusions about the extent of the contamination can be made.

The new round of sampling is being conducted to investigate the current level of the herbicide and any breakdown products or related contaminants that may be present in the groundwater. A limited number of wells will be tested for the major breakdown products of Dacthal, and Hexachlorobenzene, a production contaminant.

The Dacthal product label contains a ground and surface water advisory that the product should not be applied to sandy and loamy soils where ground water is near the surface. Further, the advisory cautions that the product should not be applied where soils are very permeable.

From the President

Addressing the source of development pressures in our watershed

The recent decision by the Hopkinton Town Council to approve a major commercial development on open space and agricultural land near Exit One on I-95 is only the most recent example of local government seeking revenues from development that many believe are inconsistent with the rural character of our watershed. The economic forces that underlie these pro-development decisions are powerful and easy to identify. Funding education is a majority expense, often 70 to 80% of the local budget, and given that property taxes are essentially the only mechanism for raising local funds and that residential property tax rates are already in the top five in the nation, local governments naturally turn to commercial/industrial development, which is thought to bring in tax revenues but not school children.

It is true that community services for commercial/industrial development generally cost less than the property taxes they pay (assuming that not too much of the taxes have been traded away to provide incentives to locate the development in the town in the first place). So local governments – under intense pressures to fund local school budgets – can't be blamed for encouraging non-residential development. However, the evidence is that in fact the higher the commercial/industrial tax base, the higher the tax rate! (See *Land Conservation, Development and Property Taxes in Rhode Island*, a report by the

Southern New England Forest Consortium, Inc.) The suggested explanation for this apparent contradiction is that in time commercial/industrial development attracts more residents, pushing school expenses higher and feeding the spiral of increasing tax rates. The communities with the lowest tax rates are also those with the highest percentage of open space.

The present funding system is guaranteed to generate an inequity in public education and for that reason alone, other funding mechanisms should be explored. From an environmental perspective, no single change could do more to encourage local governments to make more sensible land use decisions. While the quality of development may be fine-tuned with performance standards (limiting appearance, lot coverage, impervious surface, etc.), the basic forces underlying development can be relieved only by revising the mechanism by which public education is funded.

At the suggestion of the Rhode Island Public Expenditures Council (RIPEC), a bill was submitted in the General Assembly session that just ended that would provide a statewide system for funding public education (H8318), and the General Assembly has created a legislative commission to study this and other options. H8318 Sub A). Those of us who care to protect the quality of the environment in our watershed would do well to follow the progress of this Commission and the proposal it is intended to produce and to lend our support to changes that would reduce development pressures here. -- Harold Ward

****WPWA News****

Harvey Buford Receives First "Salomon Award"

Harvey T. Buford, Chairman of the Hopkinton Conservation Commission, and long-time Ashaway resident and community activist, was presented the first annual Salomon Award for his dedication to preserving the local watershed environment.

Mal Grant Elected to WPWA Board of Trustees

Mal Grant of Hope Valley, former associate director of the RI Department of Environmental Management, and long-time WPWA member, was elected to a three-year term on WPWA's Board of Trustees at the Annual Meeting in May.

Board thanks Mike McAndrew for his service

After a two-year term on the Board of Trustees, Mike McAndrew has decided to step down to pursue other goals. WPWA is grateful to Mike for his service on the board and his dedication to the organization.

Board of Trustees elects slate of officers for 2004-2005

At the monthly board meeting in June, the Board of Trustees voted the following slate of officers: Harold R. Ward, President; Nancy Hess, Vice President; Kenneth F. Payne, Secretary; and Richard C. Holliday, Treasurer. Congratulations!

WPWA joins subcommittee to develop Pawcatuck Optimization Model scenarios

For the past two years, the Pawcatuck Watershed has been under intense study by several government agencies to determine how much water is available for human use if withdrawals from ground or surface waters are made at the optimal times and places. The goal is to collect enough data to utilize models that will help choose under what circumstances we should and should not be withdrawing water. WPWA has been working with the agencies involved - Natural Resource Conservation Service (NRCS), US Geologic Survey (USGS), and the RI Department of Environmental Management (DEM), to make sure that key questions are addressed in this process.

The data will be entered into two separate models - HSPF for watershed and surface water analysis and MODFLOW for ground water. It was originally planned that as part of this project, USGS would develop a link between the two models so that the output would provide a comprehensive analysis of the water availability in the whole watershed. Due to technical problems, it is not possible to develop the link within the time and budget of the project. It will be possible to take output from one model and reenter it into the other on a limited basis.

The project is now at a point where "what-ifs" need to be developed to be evaluated by the model. WPWA has been part of

the subcommittee, along with DEM, Water Resource Board (WRB), NRCS, USGS, and Audubon Society of RI, to develop the scenarios. This subcommittee is first determining what outside data are needed to complete the information necessary to run the models. For instance, areas of protected lands and land uses need to be entered. Also, more data are needed from the CT side of the watershed.

The committee will then focus on what questions to ask the model. As development increases in the watershed, it is important to identify sites that can supply water needs for new population centers without stressing aquatic habitat. It is also important to maintain water supply to agricultural areas, to protect the existence of the remaining farm lands in the region. Ultimately, WPWA is most concerned about protection of the high quality of the natural habitat. Of prime concern is the effect of water withdrawals, either by well or direct withdrawal, on small streams. Some of the scenarios being developed include:

- § changing direct withdrawal for irrigation from a stream to a ground water well
- § establishing one well that would supply a number of agricultural fields with irrigation water
- § looking at the effect of build-out (where all possible lots have buildings on them) on nearby streams, existing

- homes, and businesses
- § using gray water from proposed or existing population centers to irrigate lawns and nearby agriculture fields
- § establishing a gray water system at URI, which will reduce the amount of water that is sent out of the basin through sewer pipes
- § predicting the effects new wells proposed by WRB will have on streams and existing homes

As the subcommittee continues the process, we will be looking at specific sites in the Pawcatuck watershed. Due to the usual constraints, it will be necessary to focus on key sites that may be most helped or hurt by changing water use. It is hoped that information derived from many of these scenarios can be applied to other areas in the watershed and perhaps in the region. The models are complex and expensive to run. But their answers could give more power to municipal, state, and government agencies in directing development that protects the natural resources, water needs, and quality of life for everyone who uses the Pawcatuck Watershed.

Looking for Loosestrife

WPWA is starting to track the existence of purple loosestrife (*Lythrum salicaria*), a wetland plant with tall purple flower spikes that bloom late July into August. Call us at (401) 539-9017 or email: info@wpwa.org with accurate locations of large stands of this highly invasive plant on the Pawcatuck River.

Stream temperature studies expanded in watershed

Recognizing temperature as an important variable in the suitability of aquatic habitat, WPWA is expanding its study of temperature in watershed streams. To conduct the study, WPWA is using small instruments called "I-buttons" - these are small waterproof devices, about the size of a quarter, that can be unobtrusively installed in rivers and streams. They can record over 1,000 points of information during a deployment. They are set to record temperature every hour for one to two months. The data can be downloaded in the field using a laptop computer, then the loggers reset to begin recording a new set of data. This past summer the loggers were deployed from mid-August to late September along the Chipuxet, Queen, Beaver, and Wood Rivers. Next year WPWA hopes to record a full summer of temperature data.

Temperature is a critical part of any aquatic system with summer the most critical time of the year. A few degrees one way or another can determine what lives in the stream and what cannot. One of the functions of temperature is the amount of dissolved oxygen the water can retain. In general, the warmer the water, the less oxygen it can hold. At 10 degrees C (50° F), the maximum amount of dissolved oxygen water can hold is 11.3 parts per million (ppm), also known as mg/L. At 20° C (68° F) water can only hold 9.1 ppm of oxygen. When you get to 25° C (77° F) the most oxygen the water can hold is 8.1 ppm. There may

be other factors at work that also decrease the amount of oxygen available to the aquatic inhabitants. To put this in perspective, there are 220,000 ppm of oxygen in the air we breath, but no more than 14 ppm in water. Even a small decrease in dissolved oxygen can adversely affect aquatic life.

Another issue with higher temperatures is increased chemical reactions in the water. Some metals, such as mercury and lead, are normally bound in the sediments. However during certain circumstances, such as highly acidic or anoxic conditions, higher temperatures will accelerate reactions that cause metal compounds to become soluble. Higher water temperatures will also retain more of the metal compound. Algae blooms are increased in warm water. These algae blooms can further decrease the oxygen content of a water body. The decreased oxygen can cause more acidic conditions which allow more sediment bound elements to convert to soluble compounds and continue the cycle. A number of stressors to the system, such as a high oxygen demand caused by plant decay and the warm water, can quickly set up conditions that will kill or drive out fish and invertebrates.

High water temperatures can definitely make the difference in the animal communities found in streams and rivers. Some species of fish are very susceptible to the changes caused by warm water. They are biologically adapted to cold water. As soon as the water warms beyond a certain point, their biological processes begin to shut down. It is believed that

Brook Trout do not grow any larger in water that is greater than 18° C (64.4° F). Above 20° C they stop feeding and cannot survive in water warmer than 23° C (73.4° F) except in laboratory conditions. Even then, under very controlled methods, including complete saturation with dissolved oxygen, they do not live beyond 25° C (77° F).

There are many factors that affect water temperature. One is the amount of vegetation cover over the open water. A high percentage of trees and shrubs there are along a stream provide more shade to keep the water cool. That is why a 100 to 200 foot buffer of natural vegetation along a stream bank is required by the RI Wetland Regulations. Land use practices, such as golf courses, agricultural fields, or lawns that remove vegetation right down to the stream bank can contribute to warming problems of a stream. The source of the stream water is another factor affecting water temperature. Streams that are groundwater recharged in the summer, what is often referred to as "spring fed", are going to remain much cooler than streams that get their flow from surface water. The ground water stays at approximately 12.8 ° C (55 ° F) throughout the year. Problems may arise if groundwater is routinely withdrawn in large quantities near a stream bed, as in the case of irrigation wells. This may result in diverting cool water from that stream. Dams will also warm the water in a stream. Behind the impoundment as water slows down and spreads out, it will become heated by sunlight and warm air.. Water flowing from

WPWA CANOE AND HIKING GUIDES

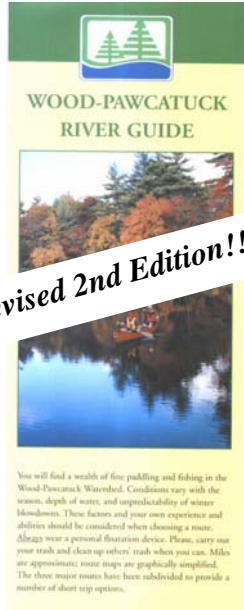
Order Form

Wood-Pawcatuck River Guide

By Charlie Hickox and Elly Heyder

\$4.50 per copy (\$3.50 members)

Navigate the Wood and Pawcatuck Rivers from source to sea with this colorful folded map.

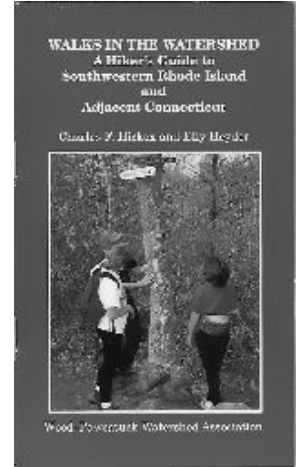


Walks in the Watershed

By Charlie Hickox and Elly Heyder

\$4.50 per copy (\$3.50 members)

Sixteen of the watershed's best loop hikes contained in a handy pocket-sized guide



Quantity:

_____ *Wood-Pawcatuck River Routes Map*

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Add \$1.50 postage and handling per item.

Name _____

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Mail form and payment to:

WPWA
203 Arcadia Road
Hope Valley, RI 02832

Recent Grants Announced

Lattner Foundation

\$ 30,000

This generous grant serves two purposes: \$ 20,000 in support of water quality monitoring programs for the year; \$10,000 for capital renovations to the headquarters.

EPA Education Grant

\$ 5,000

To standardize methodologies for water quality monitoring in public school curricula.

Miriam Horton Trust

\$5,000

Operational support for local watershed protection programs.

Thank you for your membership renewals!

Thank you to all members

who have paid their 2004-05 membership dues. We will publish a member list in the fall issue of *Watershed*.

We're sorry :(

Some spouses names were left off our member renewal forms during the last drive due to a computer glitch. We apologize to anyone who was left out. It happens!



Temperature

(cont'd from previous page)

the impoundment down stream is now much warmer. During WPWA's fish assemblage study these past two years, only warm water fish were characteristically

found below almost any size impoundment. Other factors that affect water temperature are the amount of precipitation, water volume, and any discharges into the stream. Discharges from industrial sources may contain water used to cool machinery. As expected this water is much warmer than the normal stream water, and can raise temperatures for quite a way downstream. This is known as thermal pollution.

By recording the daily, weekly, and monthly fluctuations of stream water temperatures, WPWA hopes to identify good brook trout habitat, and, with further studies, to locate and document sources of unusual thermal warming and perhaps look at simple remedial steps to take to correct them.

Application for Membership

Name _____

Street _____

City _____ State _____ Zip _____

Phone _____ Email _____

- _____ Individual \$25
- _____ Family \$40
- _____ Contributor \$50
- _____ Corporate \$100
- _____ Supporter \$100
- _____ Sponsor \$250
- _____ Patron \$500
- _____ Benefactor \$1000

In addition to my dues, I am enclosing an additional contribution of \$ _____

All but \$5.00 of your dues is tax deductible within the limits of the law.

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WPWA Campus

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 www.wpwa.org



Wood-Pawcatuck
Watershed Association



Participants in WPWA's summer camp program enjoy a cool kayak on a warm day.

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