



Connecticut River Watch Program

TANKERHOOSEN RIVER STREAM WALK SUMMARY REPORT



Funded in part by the CT DEP through a US EPA Clean Water Act §319 nonpoint source grant



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Hockanum River Stream Walk Summary Report
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INTRODUCTION

During the summer and fall of 2000 the Connecticut River Watch Program (CRWP), in cooperation with the Hockanum River Watershed Association (HRWA) and the Tolland County Soil and Water Conservation District, conducted a Stream Walk Survey of the Tankerhoosen River. Teams of volunteers walked, canoed or kayaked segments of the Tankerhoosen River to collect visual information about its physical condition. The survey project was the second component of a multi-year effort to assess the Hockanum River and tributaries, which began in 1999 with a survey of the Hockanum River main stem. It is our hope that the effort will evolve into a long-term community-based monitoring and assessment program, designed to help insure the improvement and protection of this valuable resource.

Survey goals included: to establish a baseline of physical conditions; to identify areas of the River in need of protection or restoration; and to raise community awareness of the River and the need to restore and protect it. The information collected will be used to plan and prioritize conservation and improvement efforts. The Stream Walk Survey was intended to build upon ongoing efforts to improve conditions in the watershed and raise public awareness of the river.

BACKGROUND

The Hockanum River Watershed

The Hockanum River is a major tributary of the Connecticut River located in north central Connecticut. From its beginning in Shenipsit Lake in Ellington, the Hockanum flows approximately twenty-five (25) miles to its confluence with the Connecticut River in East Hartford. The River's watershed comprises a seventy-seven (77) square mile area draining large portions of Ellington, Tolland, Vernon and Manchester, and smaller portions of Somers, Stafford, Bolton and East Hartford. While areas of the watershed are undeveloped, the Hockanum flows through an increasingly urbanized landscape as it travels downstream. The River also assimilates waste from three sewage treatment plants.

The Hockanum River is included in Connecticut's Unified Watershed Assessment as a category 1 (impaired) watershed, and was recommended for monitoring/assessment by the Department of Environmental Protection (DEP) ambient monitoring group. The River is on DEP's list of impaired waters (Vernon to Mouth), with impairments listed as aquatic life support, contact recreation/bacteria, and inadequate fish passage. Suspected causes of these water quality impairments include agriculture, landfills, highway maintenance and runoff, urban runoff and wet weather discharges. Shenipsit Lake is also included on the list due to flow modification from public water supply diversion.

Despite its water quality problems, the Hockanum River is a well-used recreational resource. An annual spring canoe race brings many enthusiasts to the river. The Hockanum River Linear Park not only protects areas of the river and riparian habitats, but also contains a network of riverside hiking trails. The trails provide casual hikers the opportunity to enjoy the natural beauty of the river, even in some bustling commercial areas. Further, the presence and use of the Linear Trail helps to promote stewardship of the river.

Hockanum River Restoration Efforts

The Hockanum River has been the focus of a number of local and regional efforts to improve its health. In 1995, the Tolland and Hartford County Soil and Water Conservation Districts initiated a watershed management project with funding from the DEP through a grant from the US Environmental Protection Agency (EPA) under Section 319 of the Clean Water Act. Activities undertaken as part of this project have focused on identifying and reducing pollution problems associated with storm water runoff, and restoring fish and wildlife habitat.

Seven different restoration and stabilization projects in the Hockanum River and tributaries have been funded through the DEP River Restoration Grant program, one in East Hartford, two in Vernon, and four in Manchester. Two of these projects have been completed, and the rest are in the planning stages.

The Hockanum River Watershed Association (HRWA) sponsors periodic river clean-ups, in addition to other outreach and education activities, and town-based Hockanum River Linear Park committees in Manchester and Vernon create and maintain a network of trails. The CRWP monitoring program is intended to complement and enhance these efforts to improve conditions in the watershed and raise public awareness of the river by the HRWA, the Linear Park committees, the Tolland and Hartford County Conservation Districts, and the watershed municipalities.

The Connecticut River Watch Program

The Connecticut River Watch Program (CRWP) is a volunteer water quality monitoring, protection and improvement program for the Connecticut River and its tributaries. CRWP is sponsored by the Middlesex County Conservation District and was initiated in 1992 in cooperation with River Watch Network, a national organization based in Vermont.

Over its first eight years CRWP focused its monitoring activities on the lower Connecticut River main stem and two tributary watersheds, the Mattabesset and the Coginchaug. The program has generated an extensive water quality database for these rivers, and raised local awareness of river resources and water quality issues through public involvement and outreach activities. Information collected through CRWP has been used by towns to investigate potential sources of pollution, and by the state for planning purposes. It has become a model program, with wide support from the local communities and state and federal environmental officials. Funding for CRWP has come primarily from the DEP through grants from the US EPA under Section 319 of the Clean Water Act.

In 1999, CRWP expanded into new watersheds within the Connecticut River basin. The program has become a regional support service, whose focus is to initiate, support and coordinate community-based river monitoring, assessment and improvement programs in regional watersheds throughout the basin. Through the new program, CRWP continues to put water quality and physical survey information into the hands of local communities, and support efforts to use that information to direct river and other watershed protection and improvement efforts.

PROJECT SUMMARY

Survey Goals

The Hockanum River Stream Walk Survey was undertaken to initiate a long-term community-based volunteer monitoring program in the Hockanum River watershed. In the first year of the program, a survey of the Hockanum River main stem was completed. Based on input from HRWA and the Tolland Conservation District, the program continued this year with a survey of the Tankerhoosen River, the Hockanum River's major tributary. The overall goals of the survey activity include:

- ◆ Develop a baseline of information about the physical characteristics of the Hockanum River and its tributaries
- ◆ Identify areas of concern and potential pollution problems that can be used to plan conservation and improvement efforts
- ◆ Raise public interest in and knowledge of the Hockanum River, both about the resources it has to offer and the problems it faces
- ◆ Develop public awareness of water quality issues and human impacts on our rivers
- ◆ Build on the existing local constituency for the Hockanum River and expand the base of active volunteers
- ◆ Form the basis for more complex water quality monitoring activities that can be pursued in future years according to needs, level of interest, ability to commit time, and the availability of other resources

Survey Design and Methodology

A Stream Walk survey is a survey of the physical characteristics of a river corridor. The survey is a systematic way to observe and record information about the river channel (water and stream bottom), the stream banks, and the adjacent land. Physical characteristics of streams are important to the aquatic life that a stream supports – physical changes can degrade stream habitat (where a plant or animal lives naturally) and make the stream inhabitable by naturally occurring plants and animals.

Stream surveys are designed to take place in late summer and early fall, when water flows are low and slower, making it both possible and safe for volunteers to walk through streams to record observations. At this time water temperatures also tend to be warmer and aquatic plant growth is at its most abundant. In addition, emergent plants are tall and trees and shrubs have their leaves, important for estimating the types of streamside vegetation.

Survey sheets were developed to collect visual information on the physical conditions of the Hockanum River and surrounding land, and to help identify possible areas of concern. The Hockanum survey form is adapted from the 1998 Mattabesset River Stream Walk Survey form.¹ Survey sheets include the main survey with questions about general stream corridor characteristics, including water depth and width, streambank cover, width of riparian corridor, water color/clarity, aquatic vegetation, composition of substrate, adjacent land uses, potential sources of pollution, and recreational use. An additional sheet was used to further describe possible areas of concern

¹ The Mattabesset survey was adapted from those used for the Quinebaug and Norwalk River watershed stream surveys, developed by the Natural Resources Conservation Service (NRCS) and the New London and Windham County Soil & Water Conservation Districts.

(see Attachment A). Detailed instructions for completing the survey were also included on the survey sheet. Survey sheets were copied on waterproof paper for use in the field.

The Tankerhoosen River was delineated into seven (7) segments for the Stream Walk Survey, primarily based on access and distance (see Table 1, below). Color topographic maps (8 ½" by 11") were produced for each segment, showing the beginning and end of the segment. These were designed to be used for reference in the field, and to record the approximate location of photographs and areas of concern.

Table 1. Tankerhoosen River Stream Walk Segments

Town	Segment # and Location	Distance
Vernon	1 Walker Reservoir to Reservoir Road	~ 6000 ft
Vernon	2 Reservoir Road to Bolton Road	~ 5000 ft
Vernon	3 Bolton Road to Tunnel Road	~ 5000 ft
Vernon	4 Tunnel Road to Phoenix Street	~ 5000 ft
Vernon	5 Phoenix Street to Dobson Road	~ 2500 ft
Vernon	6 Dobson Road to Main Street	~ 3000 ft
Vernon	7 Main Street to the Hockanum River	~ 2000 ft

Volunteer Recruitment, Training and Participation

The Middlesex and Tolland Conservation Districts took primary responsibility for recruiting volunteers. A recruitment flyer, developed by CRWP, was sent to HRWA members, Linear Trail Committee members, scout groups, and other local contacts. Notices were also sent to local papers and the Hartford Courant. Volunteers were also recruited through the United Way of the Capital Area – Volunteer Services, and Aetna’s Hartford Chapter Volunteer Council.

Prior to conducting their surveys, volunteers were trained in assessment procedures. Nine community volunteers attended the Stream Walk training, held on September 9, 2000 at the Tolland Agricultural Center in Vernon. Training included both indoor and field components, and was modeled after the training format developed for the 1999 Shetucket River stream survey. Middlesex Conservation District staff conducted the training, with assistance from Tolland Conservation District staff.

The training agenda included: an introduction to the River Watch program, the Hockanum Watershed Management Project, and the Hockanum River Watershed Association; an introductory video on Stream Walks²; a presentation on use of topographic maps; and a review of survey questions and slide presentation illustrating stream characteristics and areas of concern. Etiquette and safety issues were also reviewed, as were the contents of volunteer packets (see below). Volunteers were offered the opportunity to sign up as Earth Team Volunteers, a volunteer program sponsored by the USDA Natural Resources Conservation Service, to receive coverage for tort claims and injuries incurred during volunteer activities.

² This training video was produced for the Quinebaug-Shetucket Stream Walk Survey project by the New London and Windham Soil & Water Conservation Districts and the Natural Resources Conservation Service.

The training included a guided stream walk; volunteers walked a stretch of an actual stream segment and instructors demonstrated hands-on techniques when conducting a survey, including substrate classification, describing river profile, estimating stream width and depth, and identifying vegetation and aquatic organisms. Preparation tips were given to the participants and questions were addressed.

Volunteers signed up for specific river segments and received needed materials and supplies. Volunteers were given a Stream Walk Training Manual, providing both instructions and background information on physical characteristics used to describe streams, and physical conditions indicative of water quality problems or stream habitat degradation. The training manual was adapted from the manual developed by NRCS and the Conservation Districts for the Quinebaug and Shetucket River surveys.

In addition to the survey sheets and training manual, volunteers received a packet of materials that included safety information, fact sheets about the Stream Walk Survey project and the Connecticut River Watch Program to give to interested residents, and color topographic maps of the area of the stream segment to be walked. They were also provided film and asked to take pictures of areas identified as potential areas of concern, as well as areas representative of the character of the stream.

Training staff recommended that volunteers walk their stream segments upstream to downstream. If possible, they were advised to walk their entire segment prior to recording any observations on survey sheets. This would allow them to define the different stream sections in their segment; a separate survey form was to be filled out every time there was an abrupt change in the physical characteristics of the stream, including slope, width, depth, substrate materials, streamside vegetation, channel pattern, etc.). The minimum length for a stream section was defined as 1000 feet.

Actual Stream Walks took place primarily in September, October and early November. One segment had to be re-done because the results were never received in the mail; this survey was completed in June 2001. A total of nineteen people participated in the Stream Walks (14 community volunteers and 3 staff people).

SURVEY RESULTS

Stream Walk survey results are summarized by segment in a table format (Attachment B). All of the seven segments identified originally were surveyed. In all cases the entire segment was surveyed. Each segment summary includes data and notes recorded on the survey sheets.

Segment summaries are provided in sections, designated by volunteers when performing their surveys. As described above, a section is defined by the physical characteristics of the River, including slope, width, depth, substrate materials, streamside vegetation, channel pattern, etc. A separate survey form was filled out when volunteers noted an abrupt change in any of these characteristics, with a minimum length for a section of 1000 feet. All stream segments were surveyed as two or more sections. A color topographic map showing the segment is included with each segment summary. Selected photographs are provided in Attachment C.

The summaries provide a good picture of the general condition of the River, existing and potential recreational uses, and possible sources of pollution and areas requiring restoration. As the technical expertise of the volunteers varies, so do the descriptions. Some volunteers were more thorough than others and noted additional information.

Observations about the River include:

- ◆ The River's profile varies considerably. Some sections are described as gently sloped (<1%) or high gradient (1-3%) with a glide flow and pool-riffle sequences, and some as high gradient (1-3%) or steep (>3%) with cascades and step-pool sequences. The River also has several impounded areas.
- ◆ Streambank cover is primarily conifers, deciduous trees, and small trees and shrubs. Cultivated lawns were noted infrequently, with the exception of the most downstream segment, where they were abundant in the commercial/recreational area near the Tankerhoosen's confluence with the Hockanum.
- ◆ Invasive non-native species were present but somewhat limited. Japanese barberry was noted in the two upstream segments, though few in numbers. Multiflora rose and Asiatic bittersweet were noted as common in segment 3, and Multiflora rose as common in the most downstream segment.
- ◆ Riparian buffers were most commonly >100 feet in width, though in some more developed areas were 25-100 and <25 feet. Smaller buffers were located in areas of segments 3, 4, 5, 6 and 7, while the upstream segments (1 and 2) had only buffers >100 feet.
- ◆ The water condition was for the most part clear with no smell. The most notable exception was in segment 5, where the water was characterized as turbid (the previous 3 days weather included a rainstorm of almost 1"). In addition, a smell of rotten eggs was noted in areas of segment 3, as well as in the downstream section of segment 2.
- ◆ Algae and aquatic plants were noted most frequently as either "absent" or "in spots". Exceptions included the pond in segment 6, where aquatic plant growth and algae were noted "everywhere", and in segment 1 and a portion of segment 7, where algae was noted "everywhere".
- ◆ Substrate materials vary from segment to segment. Cobbles were the predominant substrate material, followed by silt/clay or sand.
- ◆ Primary land uses include Undeveloped (forested), Suburban and Recreational, with some Commercial, Industrial, Urban and Rural Residential, and Agricultural. Segments 1, 2 and 6 were almost entirely undeveloped, while segments 3, 4, 5 and 7 had a mix of land uses. Segments 3 and 7 were the only ones with areas of commercial and industrial land use.
- ◆ Potential sources of pollution identified were primarily lawns/gardens, roads, yard waste, with some farms/nurseries, parking lots, and commercial dumpsters. Also noted were waterfowl, a golf course, and a possible failing septic system.

- ◆ Evidence of recreational use was plentiful, with many hiking/biking trails and some fishing, boating, and camping noted. Potential access was noted frequently in the downstream segments (4,5,6,7) and also in segment 2. Boating was noted as possible primarily in the impounded areas.
- ◆ Reports of wildlife were limited. Of note were two separate accounts of 100+ geese, in Tankerhoosen Lake and the small pond in segment 6.
- ◆ Areas of concern included dams, sediment islands, vegetation cut from banks and discarded in river, yard waste in streams, stream choked with garbage, debris dam, eroded banks, lawns, and irrigation pipes. None were noted in the three upstream segments, and in segment 6.

Stream Walk observations raise a number of issues related to water quality and watershed management:

- ◆ In areas where the width of riparian vegetation is less than twenty-five (25) feet, and where lawns are kept to the edge of the River, buffering from adjacent activities may not be adequate. In particular, if fertilizers, pesticides or herbicides are applied to adjacent lawns, these chemicals are likely to run off into streams and degrade aquatic habitat. Of particular concern is the commercial area in the downstream segment, which also includes a golf course with no naturally vegetated stream buffers.
- ◆ The presence of non-native invasive species in several areas suggest the need for eradication and restoration projects before they spread, as well as education about the harm caused by use of non-native invasive plants in landscaping.
- ◆ Nutrient loading to streams, while evident only in limited areas, can be seen in the growth of algae/aquatic plants in the stream or impounded areas; sources could include chemical fertilizers, decomposing yard waste, and manure/fertilizers from agricultural sources.
- ◆ Erosion and sedimentation is likely where sand and silt comprise the majority of materials in the stream substrate or sediment islands have formed in the stream. Sources could include road runoff, as well as streambank soils, where noted as exposed. Increased water flow from impervious surface development (roads, parking lots, buildings), prevalent in the more urbanized areas of the watershed, increases the impacts to streams from road runoff.
- ◆ Several large dams on the river suggest the need to address obstruction of fish passage.

RECOMMENDATIONS

The information collected from the Stream Walk Survey not only provides a baseline against which we can measure future changes, but also can be used for planning purposes for local and watershed-based improvement and protection efforts. A number of management considerations are raised by the results of the survey; certain segments appear to be impacted adversely by human development, as evidenced by observations such as inadequate stream buffers, adjacent residential, commercial and industrial development, non-native invasive plant species, yard waste, algae and aquatic plant growth, eroded stream banks, and sedimentation. In addition,

While certain observations suggest the need for restoration and improved management, others are quite positive. Several areas of the river appear to be in relatively good condition, both upstream and downstream. Also, there are very few areas where the stream buffers are less than 25 feet and where there are lawns adjacent to the stream. Further, numerous opportunities for recreational access and use were identified in the survey; development and use of new access areas will help to heighten awareness of the river's values and promote stewardship activities.

As a follow-up to the Tankerhoosen River Stream Walk Survey, general recommendations include:

- ◆ Complete the collection of baseline information by surveying new areas of the watershed;
- ◆ Investigate potential river access areas and determine feasibility of development;
- ◆ Develop and implement a community education program to inform residents and streamside property owners of the importance of maintaining naturally vegetated streambank buffers, and about the detrimental effects of putting yard waste in streams;
- ◆ Investigate areas of concern identified to determine the extent of problems and to plan and prioritize improvements;
- ◆ Identify areas for non-native species eradication and restoration projects, and educate residents, nurseries and landscapers about the harm caused by use of non-native invasives in landscaping;
- ◆ Work with DEP Fisheries to investigate the need to improve fish passage in areas where dams obstruct passage;
- ◆ Community members concerned with the conditions of the Hockanum and Tankerhoosen Rivers and other streams in the watershed should
 - contact their municipal government to urge education of residents, restoration of degraded areas, and improved river protection regulations (e.g. minimum setbacks)
 - support the efforts of the Hockanum River Watershed Association, an advocacy and educational organization working to improve the conditions in the watershed.
- ◆ Walk segments periodically to assess conditions. This could be accomplished through a stream segment adoption program whereby volunteers walk specific segments on an annual basis and file a written status report.

For assistance and further information, please contact:

*Middlesex County
Soil and Water Conservation District
deKoven House – 27 Washington Street
Middletown, CT 06457
860/346-3282*

*Tolland County
Soil and Water Conservation District
24 Hyde Avenue
Vernon, CT 06066
860/875-3881 x108*

ACKNOWLEDGEMENTS

The Hockanum River Watershed Stream Walk Survey would not have been possible without the assistance of numerous volunteers and cooperating agencies. Our sincere thanks to all of the following who contributed to the survey project. *Special thanks to Middlesex County Soil and Water Conservation District intern Damien Drobinski, whose assistance with various aspects of the Stream Walk project was key to its success.*

Stream Walk Survey Team Volunteers

George Arthur
Ed Dresner
Damien Drobinski
Matt Fitzpatrick
Robin Glenney
Tom Halligan
Robert Hance
John Karpinski
Barbara Kelly
Vyctoria Loulakis
Elizabeth Marks
Dave, Alex and Jesse Merriman
Megan Shoemaker
Heather Smith
Sarah Smith
Karen Strong
Pete Wawzniecki

Cooperating Organizations, Businesses and Municipalities

Hockanum River Watershed Association: Special thanks to members, who assisted in planning and performing the Stream Walk survey.

Natural Resources Conservation Services: Special thanks to *Javier Cruz*, who wrote the Quinebaug River Survey Streamwalk Training Manual that we adapted for our use; *Seth Lerman*, who provided us with a copy of the training video; and *Fernando Rincon*, who lent us slides for the training.

Tolland County Soil & Water Conservation District: Special thanks to *David Askew and Barbara Kelly*, for their assistance in planning and publicizing the Stream Walk, coordinating Stream Walk volunteers, and gathering the completed surveys.

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Attachment A

Stream Walk Survey Form

HOCKANUM RIVER WATERSHED STREAM WALK SURVEY

NAME(S): _____ NAME OF STREAM: _____

_____ CURRENT WEATHER: _____

PHONE(S): _____ PREVIOUS 3 DAYS WEATHER: _____

DATE: _____

DID YOU SURVEY THIS WHOLE SECTION OF THE STREAM? YES NO – Which section(s) were not surveyed? Why?

Make all observations facing DOWNSTREAM.

NOTE: Items marked with an asterisk (*) may indicate an area of concern. If observed, you may need to describe further on the attached Areas of Concern sheet.

1. Section code (e.g. 1A): _____ Locate starting point of section on map, and label using section code letter (e.g. – A)

Describe location and extent of section (i.e. from ___ to ___). If possible, use landmarks and road names.

2. AVERAGE WATER DEPTH _____ feet AVERAGE WATER WIDTH _____ feet

3. HOW WOULD YOU DESCRIBE THIS SECTION OF THE STREAM? CHECK ANY THAT APPLY:

- A. _____ Cascade _____ Step-Pool sequence _____ Pool-Riffle sequence _____ Glide
- B. _____ Steep (slope > 3%) _____ High Gradient (1% ≤ slope ≤ 3%) _____ Flat (slope < 1%)
- C. _____ Closely associated with an inland or riverine wetland (marsh, meadow, swamp).
 _____ Flood control or water reservoir area or lake (>5ac.)
 _____ Piped* _____ Channeled* _____ Lined (stone, concrete)*
 _____ Other (Describe):

4. STREAM BANK COVER/VEGETATION:

<i>Type</i>	<i>Few</i>	<i>Common</i>	<i>Abundant</i>
Conifers (pines, higher than 20 ft.)	_____	_____	_____
Deciduous (oaks/maples, higher than 20 ft.)	_____	_____	_____
Small trees and shrubs (smaller than 20 ft.)	_____	_____	_____
Grasses/Emergent (cattails/rushes)	_____	_____	_____
Lawns*	_____	_____	_____
Natural Rock/Ledge	_____	_____	_____
Artificial (concrete/riprap/walls/buildings)*	_____	_____	_____
Non-native invasive plants (purple loosestrife, phragmites, other? – please note)	_____	_____	_____

Are stream bank soils mostly exposed? Yes* No

Does vegetation appear natural or cultivated? _____

5. LOOKING DOWNSTREAM, ESTIMATE THE AVERAGE, UNINTERRUPTED, WIDTH OF RIPARIAN VEGETATION:

Right side: ___ <25'* ___ 25-100' ___ >100'
Left side: ___ <25'* ___ 25-100' ___ >100'

6. ESTIMATE THE NUMBER OF:

Impoundments (Small ponds, Dams)* _____ Discharge pipes* _____ Stream Crossings _____
*Height of Dam:

7. VISUALLY DESCRIBE WATER CONDITIONS:

___ Clear ___ Turbid* ___ Green* ___ Rusty - Red*
___ Yellow - Brown* ___ Foamy* ___ Oil Slicks* ___ Milky*

If water is a color other than clear, does anything appear to be affecting water quality?

YES* NO

COMMENTS:

8. DESCRIBE AQUATIC VEGETATION:

A. ALGAE GROWTH:

Where? ___ Absent* **What kind?** ___ Floating ___ Matted on substrate
 ___ In spots ___ Hairy ___ Brown
 ___ Everywhere ___ Scum ___ Green

B. Large Aquatic Plants:

Where? **What kind?**
___ Everywhere* ___ Floating free (duck weed) ___ Submerged rooted (eel grass)
___ In spots ___ Floating rooted (water lily) ___ Emergent (cattails, rushes)
___ Absent ___ Submerged free (coontail, milfoil)

Does anything appear to be contributing to the algae blooms (discharge pipes, runoff)?

YES* NO

COMMENTS:

9. APPROXIMATE COMPOSITION (%) OF SUBSTRATE MATERIALS (SUM SHOULD EQUAL 100%):

___ % Silt or Clay (smooth)* ___ % Sand (gritty)* ___ % Gravel (.1-2")
___ % Cobbles (2-10") ___ % Boulders (>10") ___ % Bedrock
___ % Concrete or Riprap ___ % Organic (Plant debris, muck, and shells)

Does anything appear to be contributing to excessive fine sediment deposits on the stream banks, or sediment deltas (storm pipe outlets, tributaries, or runoff)?

YES* NO

COMMENTS:

10. DESCRIBE THE SMELL OF WATER AND SEDIMENTS:

___ None ___ Rotten Eggs* ___ Sewage* ___ Musky
___ Oil/Gas* ___ Other (describe):

11. IMMEDIATELY ADJACENT LAND USES:

Label: 1 = most 4 = least 0 = none

- | | | | |
|--|--|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Rural Residential | <input type="checkbox"/> Suburban | <input type="checkbox"/> Agricultural | <input type="checkbox"/> Industrial |
| <input type="checkbox"/> Urban Residential | <input type="checkbox"/> Forest | <input type="checkbox"/> Commercial | <input type="checkbox"/> Recreational |
| <input type="checkbox"/> Schools | <input type="checkbox"/> Non Residential Roads | | |

12. INDICATE SPECIFIC POTENTIAL SOURCES OF POLLUTION ALONG THE STREAM:

- | | | |
|---|--|--|
| <input type="checkbox"/> Lawns/Gardens | <input type="checkbox"/> Parking Lots | <input type="checkbox"/> Roads |
| <input type="checkbox"/> Commercial Dumpsters | <input type="checkbox"/> Farms/Nurseries | <input type="checkbox"/> Yard Waste |
| <input type="checkbox"/> Golf Courses | <input type="checkbox"/> Failing Septic System | <input type="checkbox"/> Other (describe): |

13. RECREATIONAL USE AND OPPORTUNITIES:

- Visible human activities as evidenced by litter, bike & hiking trails, roads, camping areas. Do you see people using the river for recreation? How many? Describe activities.
- Potential off road parking within 500 ft of the stream
- Existing or potential access to the stream without disturbance to residents.
- Watercourse is at least 10 feet wide and 1 foot deep, and for the most part is free of obstructions for non-powered boating. Describe any visible boating activity.

14. (Optional) FISH AND WILDLIFE - IF YOU ARE ABLE, LIST AND ESTIMATE NUMBERS OF ANY FISH AND WILDLIFE THAT YOU CAN IDENTIFY UNDER THE FOLLOWING CATEGORIES, AND MAKE NOTE OF NESTS AND NESTING BOXES:

- A. Birds of Prey (osprey, hawks, etc.)
- B. Water Fowl (wood ducks, mallards, Canada geese*, etc)
- C. Riverine Fur-Bearers (muskrat, beaver, otter, etc.)
- D. Water Birds (herons, egrets, etc.)
- E. Song Birds & Other Small Birds (black birds, robins , blue jays, etc.)
- F. Amphibians & Reptiles (salamander, snakes, etc.)
- G. Fish (trout, bass, alewife, etc.)
- H. Aquatic Invertebrates (mayflies, stoneflies, caddisflies, mussels, clams, snails, etc.)

15. ADDITIONAL COMMENTS OR OBSERVATIONS:

Please return completed surveys and film to the Middlesex County Soil and Water Conservation District, deKoven House – 27 Washington Street, Middletown, CT 06457

Further Description of Areas of Concern

Site Number	Type of Concern(s)	Description of Location (Locate & Label on Map)	Description of Site

Label: Assign a number to each impaired site you identify starting with the number 1.

Areas of Concern: Excessive algae growth, Barriers to fish passage (dams, culverts above low flows, obstructions higher than 8 inches), Litter, Sedimentation, Stream bank erosion, Lack of riparian vegetation, Discharges (from pipes or channels), Channelization or Stream bank manipulation, etc.

Location: Approximate distance and direction from nearest landmarks (i.e.- Roads, Buildings, Power lines, etc.).

Description: Describe conditions - water colors, smells, algae and large aquatic plant growth, adjacent land uses, potential sources of pollution, etc.

INSTRUCTIONS:

The purposes of this form are to collect information about the overall characteristics of a particular section of the stream, and to identify areas of concern where restoration efforts can be pursued. **A separate survey sheet should be filled out every time you observe abrupt changes in the physical characteristics of the stream** (gradient, width, depth, substrate materials, stream bank vegetation, channel pattern, etc.), which would indicate that you are in a different section of the stream. Use questions 2, 3, and 4 as guidelines.

The minimum length of a stream segment should be **1000 feet**. Large ponds (>5 acres), lakes, or reservoirs should have a separate survey sheet.

Write the name of the stream as it appears on the topographic map. If the stream does not have a name, write **unnamed**, and describe its location. Use capital letters in alphabetical order to label stream segments as you survey the stream. Make sure to mark the segments on the topographic map. Because the survey may be conducted by canoeing or walking, **observations should be recorded facing downstream** to maintain consistency.

1. With as much detail as possible describe the location and the extent of the area that is being covered. When possible, use road names or landmarks.
2. Measure or estimate the average water width and depth of the stream.
3. Select the statements that best describe this section of the stream. If you do not feel it meets the provided descriptions, describe under *other*.

Cascade: narrow and steep channel, fast turbulent flows, rocky substrate. **Step:** Steep stairway pattern channel, fast turbulent flows, large substrate materials. **Riffle:** shallow fast running water, substrate mostly composed of cobble and gravel. **Pool:** slow flowing area, deeper than adjacent areas, but not wide enough to change the character of the stream (not a pond). **Glide:** smooth flowing deep water; substrate materials tend to have little influence on the flow of surface water.

4. Describe the presence and type of streamside cover. This description helps define the section's ecosystem and health.
5. **Riparian** zones are areas adjacent to watercourses. Riparian vegetation refers to the plants that naturally occur in riparian zones. Lawns and mowed areas should not be considered natural riparian vegetation. Estimate the uninterrupted width of riparian **vegetation** on both sides of the stream.
6. As you walk, keep count of any discharge pipes, small ponds (<5 acres), and dams. At the end of the section, record the total numbers observed.
7. Color and clarity of water could indicate pollution problems in the stream. Also note floating foam or slicks in the water.
8. **Algae** are mostly single cell plants. They can color the water green, and they can grow in colonies that can form long filamentous bodies or can form a mat on the stream's substrate. Algae are usually green and slimy and do not have any visible structural characteristics. Algae growth can point to nutrient problems in the stream. **Aquatic plants** are visible to the naked eye and have distinct features such as stems, leaves, and flowers. Their presence is a sign of biological productivity and of slow water flows.
9. **Substrate:** the material that makes up the bottom (or floor) of a stream. There is a direct relationship between the stream's substrate and the rate of water flow. The composition of the substrate is indicative of fish habitat quality. Visually estimate in percentage the relative proportion of each of the substrate types listed.
10. **Odors-** Describe how the stream smells.
11. Adjacent land uses can impact the water quality of a stream, especially through storm water discharges. Concentrate on describing the areas closer to this section of the stream. Label the four most abundant land uses, use 1 for the most abundant land use and 4 for the least.
12. Indicate, from your observation, possible sources of pollution along the stream.
13. If people are currently using the stream, describe this. If you see opportunities for recreational use, please describe.
14. (Optional) If you are familiar with wildlife please fill out this section to the best of your ability.
15. Please make note of any additional observations not noted in the preceding spaces.

Additional Sheet: Areas of concern are sections of the stream where the physical characteristics are indicative of conditions adverse to aquatic life and human uses. At least 50 feet of the stream should be affected. Use numbers to label every area of concern you identify starting with the number 1.

NOTE: Sewage spills should be immediately reported to town officials. Oil or chemical spills should be immediately reported to DEP at (860) 424-3338.

Attachment B

Summary of Survey Data

Connecticut River Watch Program
 2000 Hockanum River Watershed Stream Walk Survey – Tankerhoosen River – Summary of Survey Data

Segment 1 – Walker Reservoir to Reservoir Road

Survey Date: 9/24/00

Weather: Cloudy, dry; ½ inch rain previous night

<i>Section Code & Location</i>	<i>Avg. Width (feet)</i>	<i>Avg. Depth</i>	<i>Profile</i>	<i>Streambank Cover/ Vegetation</i> <i>*invasive species</i>	<i>Buffer Width (feet)</i>	<i>Water Condition</i>	<i>Aquatic Vegetation</i>	<i>Substrate Materials</i>	<i>Primary Land Uses</i>	<i>Potential Pollution Sources and Concerns</i>	<i>Recreation</i>	<i>Wildlife</i>
1A North end of Reservoir Road to Fish and Game Road	14	6 inches	Pool-Riffle Flat slope	Conifers (C) Deciduous (C) Streambank soils mostly exposed	R >100 L >100	Clear No smell	Algae everywhere: brown Aquatic plants absent	Cobble (75%) Boulders (14%) Gravel (10%) Sand (1%)	Undeveloped (forested)	None noted		Mayflies
1B Fish and Game Road to the south end of Reservoir Road	8	9 inches	Cascade & Step-Pool High gradient	Conifers(C) Deciduous (C) Small trees/shrubs (F) Natural Rock/Ledge (F) Japanese Barberry* (F)	R >100 L >100	Clear No smell	Algae: brown Aquatic plants absent	Boulders (40%) Sand (25%) Cobbles (18%) Gravel (17%)	Undeveloped (forested)	Roads		None noted

Connecticut River Watch Program
2000 Hockanum River Watershed Stream Walk Survey – Tankerhoosen River – Summary of Survey Data

Segment 2 – Reservoir Road to Bolton Road

Survey Date: 9/17/00

Weather: Clear, bright & sunny, cool

Section Code & Location	Avg. Width (feet)	Avg. Depth	Profile	Stream Bank Cover/ Vegetation <i>*invasive species</i>	Buffer Width (feet)	Water Condition	Aquatic Vegetation	Substrate Materials	Primary Land Uses	Potential Pollution Sources and Concerns	Recreation	Wildlife
2A Reservoir Road crossing to old ruined brick structure adjacent to stream	5	1.5 feet	Pool-Riffle & Glide Flat slope	Conifers (C) Deciduous (A) Small trees/shrubs (F) Japanese Barberry* (F)	R >100 L >100	Clear No smell	Algae in spots: matted on substrate Aquatic plants absent	Cobbles (40%) Gravel (35%) Sand (15%) Silt/Clay (5%) Boulders (4%) Organic (1%)	Undeveloped (forested)	Roads	Potential access	None noted
2B From Old ruined brick structure to old bridge/trail crossing	6	1 foot	Pool-Riffle & Glide High Gradient slope	Conifers (A) Deciduous (C) Small trees/shrubs (F) Japanese Barberry* (F)	R >100 L >100	Clear No smell	Algae in spots: matted on substrate Aquatic plants absent	Sand (50%) Silt/Clay (25%) Gravel (13%) Cobbles (7%) Organic (4%) Boulders (1%)	Undeveloped (forested)	None noted	Potential access	None noted
2C Old Bridge/trail crossing to spot where tributary enters from left side	6	1 foot	Pool-Riffle & Glide High Gradient slope	Conifers (A) Deciduous (C) Small trees/shrubs (F)	R >100 L >100	Clear No smell	Algae in spots: matted on substrate Aquatic plants absent	Cobbles (30%) Gravel (28%) Sand (20%) Silt/Clay (15%) Organic (5%) Boulders (2%)	Undeveloped (forested) Recreational	None noted	Evidence of use: hikers and people walking dogs Potential access	None noted
2D From tributary stream to Bolton Road	4	2 feet	Pool-Riffle & Glide Flat slope Small pond near Bolton Road	Conifers (A) Deciduous (A) Small trees/shrubs (C) Grasses/Emergent (F) Lawns (F) Japanese Barberry* (F)	R >100 L >100	Clear No smell and Rotten Eggs smell	Algae in spots: matted on substrate Aquatic plants in spots: submerged free and emergent	Sand (40%) Gravel (25%) Silt/Clay (15%) Cobbles (10%) Organic (9%) Boulders (1%)	Undeveloped (forested) Recreational Rural Residential	Dam near Bolton Road causing build-up of sediment and organic material	Evidence of use: hikers and people walking dogs Potential access	None noted

Connecticut River Watch Program
 2000 Hockanum River Watershed Stream Walk Survey – Tankerhoosen River – Summary of Survey Data

Segment 3 – Bolton Road to Tunnel Road

Survey Dates: 10/1, 10/15, 11/5/00 Weather: Clear, sunny and cool, some rain on 10/12/01

Section Code & Location	Avg. Width (feet)	Avg. Depth	Profile	Stream Bank Cover/ Vegetation <i>*invasive species</i>	Buffer Width (feet)	Water Condition	Aquatic Vegetation	Substrate Materials	Primary Land Uses	Potential Pollution Sources and Concerns	Recreation	Wildlife
3A From Bolton Rd to tributary stream coming in from North (Clarks Brook)	12	3 feet	Pool-Riffle & Glides High gradient Meadow to swamp-like in areas	Conifers (F) Deciduous (A) Small trees/shrubs (A) Grasses/Emergent (A) Artificial (F) Multiflora Rose* (C)	R >100 L >100	Clear, with foam in a few spots Musky smell, with rotten eggs smell in some areas	Algae in spots: hairy, matted on substrate Large aquatic plants in spots: submerged rooted	Silt/Clay (50%) Cobbles (30%) Gravel (10%) Sand (5%) Boulders (4%) Organic (1%)	Agricultural Suburban Undeveloped (forested) Industrial	Farms/Nurseries Roads	Evidence of use: some fishing, litter, small trails and logging road	Owls, mouse/rat footprints, woodpeckers, turtle, trout, minnows, dace, insects
3B From Tunnel Road to about 1000 feet west of the tributary stream	19	8 feet	Cascade, pool-riffle, and glide. High gradient.	Conifers (F) Deciduous (C) Small trees/shrubs (C) Grasses/Emergent (F) Artificial (C) Bittersweet, Multiflora Rose * (C)	R <25 L <25	Clear, with foam in some spots Rotten eggs smell Oily footprints in sand	Algae in spots: green floating, hairy and scum Large aquatic plants in spots: submerged free, submerged rooted, and emergent	Cobbles (55%) Silt/Clay (20%) Sand (10%) Boulders (10%) Gravel (5%)	Suburban Agricultural Commercial Industrial	Lawns/Gardens Farm/Nurseries Roads	Evidence of use: hiking, fishing, litter	Hawk, raccoon tracks, white egret, finches, garter snake, minnows, clams

Connecticut River Watch Program
 2000 Hockanum River Watershed Stream Walk Survey – Tankerhoosen River – Summary of Survey Data

Segment 4 – Tunnel Road to Phoenix Street (Tankerhoosen Lake)

Survey Dates: 10/3/00

Weather: Sunny, Clear

<i>Section Code & Location</i>	<i>Avg. Width (feet)</i>	<i>Avg. Depth</i>	<i>Profile</i>	<i>Stream Bank Cover/ Vegetation</i> <i>*invasive species</i>	<i>Buffer Width (feet)</i>	<i>Water Condition</i>	<i>Aquatic Vegetation</i>	<i>Substrate Materials</i>	<i>Primary Land Uses</i>	<i>Potential Pollution Sources and Concerns</i>	<i>Recreation</i>	<i>Wildlife</i>
4A Tunnel Rd to Eastern end of Tankerhoosen Lake	14	1.5 feet	Pool riffle Flat slope Closely associated with inland or riverine wetland	Conifers (F) Deciduous (A) Small trees/shrubs (A) Grasses/Emergent (F) Lawns (F) Artificial (F)	R 25-100 L 25-100	Clear No smell	Algae in spots: hairy, green Aquatic plants in spots: submerged free (milfoil)	Cobbles (70%) Sand (20%) Organic (10%)	Urban Residential	Lawns/Gardens Roads Yard Waste Water intake pump at Tunnel Road bridge Unstable bank by "S" curves	Evidence of use: backyard barbecue	Raccoons, evidence of deer, trout (6-8 inches), caddisflies, mayflies
4B Tankerhoosen Lake	250	~8 feet	Flat slope Closely associated with inland or riverine wetland Lake (impoundment)	Conifers (F) Deciduous (C) Small trees/shrubs (C) Grasses/Emergent (A) Lawns (F)	R < 25 L 25-100	Clear No smell	Algae in spots in shallow areas: hairy, green Aquatic plants in spots: floating free, floating rooted, submerged free (milfoil and elodea) and emergent	Silt/Clay (75%) Sand (25%)	Suburban	Lawns/Gardens Geese Failing septic systems?	Evidence of use: fishing, non-motorized boating Potential parking and access	Canada geese (100+), mallards (20+)

Connecticut River Watch Program
 2000 Hockanum River Watershed Stream Walk Survey – Tankerhoosen River – Summary of Survey Data

Segment 5 – Phoenix Street to Dobson Road (Dobsonville Pond)
 Survey Dates: 9/15/00 Weather: Sunny, light breeze

<i>Section Code & Location</i>	<i>Avg. Width (feet)</i>	<i>Avg. Depth</i>	<i>Profile</i>	<i>Stream Bank Cover/ Vegetation</i> <i>*invasive species</i>	<i>Buffer Width (feet)</i>	<i>Water Condition</i>	<i>Aquatic Vegetation</i>	<i>Substrate Materials</i>	<i>Primary Land Uses</i>	<i>Potential Pollution Sources and Concerns</i>	<i>Recreation</i>	<i>Wildlife</i>
5A Phoenix Street Bridge to junction with tributary stream from Maple Pond	25	1.5 feet	Pool-Riffle & Glide Flat slope	Deciduous (C) Small trees/shrubs (C)	R 25-100 L >100	Turbid No smell	Algae in spots: brown	Cobbles (45%) Silt/Clay (23%) Sand (15%) Gravel (15%) Boulders (1%) Organic (1%)	Undeveloped (forested) Suburban Recreational	Lawns/Gardens Roads Yard Waste Decaying vegetation Sediment island	Evidence of use: hiking trail, fisherman, minimal litter Potential parking and access	Woodpecker, chickadees water striders
5B Junction of stream from Maple Pond to Dobsonville Pond	40	~3 feet	Glide Flat slope	Conifers (F) Deciduous (C) Small trees/shrubs (C)	R >100 L >100	Turbid No smell	Algae absent Aquatic plants absent	Silt/clay (50%) Sand (23%) Cobbles (15%) Gravel (10%) Organic (2%) Boulders (1%)	Undeveloped (forested) Recreational Suburban	Decaying vegetation Sediment island	Evidence of use: hiking trail, minimal litter Potential access Boating possible	Fish
5C Dobsonville Pond to Dam at Dobsonville Rd	200	Unknown	Flat slope Pond (dammed)	Conifers (F) Deciduous (C) Small trees/shrubs (C) Grasses/Emergent (F) Lawns (F) Artificial (F)	R <25 L 25-100	Turbid No smell	Algae absent Aquatic plants in spots: floating rooted, and emergent	Silt/Clay (40%) Sand (32%) Gravel (20%) Cobbles (5%) Organic (2%) Concrete/Riprap (1%)	Suburban Recreational Undeveloped (forested)	Lawns/Gardens Roads Yard Waste Decaying vegetation	Evidence of use: hiking trail, boating Potential parking and access Boating possible	Fish, crayfish

Connecticut River Watch Program
 2000 Hockanum River Watershed Stream Walk Survey – Tankerhoosen River – Summary of Survey Data

Segment 6 – Dobson Road to Talcottville Road
 Survey Dates: 9/29/00 Weather: Warm and dry

<i>Section Code & Location</i>	<i>Avg. Width (feet)</i>	<i>Avg. Depth</i>	<i>Profile</i>	<i>Stream Bank Cover/ Vegetation</i> <i>*invasive species</i>	<i>Buffer Width (feet)</i>	<i>Water Condition</i>	<i>Aquatic Vegetation</i>	<i>Substrate Materials</i>	<i>Primary Land Uses</i>	<i>Potential Pollution Sources and Concerns</i>	<i>Recreation</i>	<i>Wildlife</i>
6A From Dobson Road dam, to 300 feet downstream	15	1.5 feet	Step-pool sequence Steep slope	Conifers (A) Deciduous (A) Small trees/shrubs (F) Natural Rock/Ledge (A)	R >100 L >100	Clear No smell	Algae absent Aquatic plants absent	Bedrock (80%) Boulders (10%) Cobbles (10%)	Undeveloped (forested)	None noted	Evidence of use: hiking/biking trails, camping areas, litter Potential access and parking	Sunfish
6B 300 feet downstream from Dobson Road dam and proceeds 1200 ft to a point 300 feet below buried natural gas pipeline sign.	20	1 foot	Pool-riffle sequence High gradient	Conifers (A) Deciduous (A) Small trees/shrubs (C) Grasses/Emergent (F) Natural Rock/Ledge (A)	R >100 L >100	Clear No smell	Algae absent Aquatic plants absent	Cobble (40%) Boulders (30%) Gravel (15%) Sand (10%) Silt/Clay (5%)	Undeveloped (forested)	None noted	Evidence of use: hiking/biking trails, camping areas, litter Potential access and parking	None noted
6C 300 feet below buried natural gas pipeline sign to small pond.	20	1 foot	Glide Flat slope	Conifers (C) Deciduous (A) Small trees/shrubs (C) Grasses/Emergent (F)	R >100 L >100	Clear Musky odor	Algae in spots: brown Aquatic plants absent	Organic (40%) Silt/clay (30%) Cobbles (10%) Gravel (10%) Sand (10%)	Undeveloped (forested)		Evidence of use: hiking/biking trails, camping areas, litter Potential access and parking	None noted
6D Pond. Starts from end of 20 foot wide stream bed and goes about 1000 feet to dam and bridge at Talcotville Road	300	2 feet	Pond	Conifers (A) Deciduous (A) Small trees/shrubs (A) Grasses/Emergent (F)	R 25-100 L >100	Clear Musky odor	Algae everywhere: brown and green, matted on substrate Aquatic plants everywhere: floating free, submerged rooted, submerged free	Organic (80%) Silt/Clay (20%)	Undeveloped (forested) Rural residential	Waterfowl	Evidence of use: hiking/biking trails, camping areas, litter Potential access and parking Potential boating	Ducks, Canada geese (about 150 altogether)

Connecticut River Watch Program
2000 Hockanum River Watershed Stream Walk Survey – Tankerhoosen River – Summary of Survey Data

Segment 7 – Talcottville Rd to Confluence

Survey Dates: 6/27/01

Weather: hot, humid, clear

<i>Section Code & Location</i>	<i>Avg. Width (feet)</i>	<i>Avg. Depth</i>	<i>Profile</i>	<i>Stream Bank Cover/ Vegetation</i> <i>*invasive species</i>	<i>Buffer Width (feet)</i>	<i>Water Condition</i>	<i>Aquatic Vegetation</i>	<i>Substrate Materials</i>	<i>Primary Land Uses</i>	<i>Potential Pollution Sources and Concerns</i>	<i>Recreation</i>	<i>Wildlife</i>
7A Main Street Dam to half-way through the Industrial Complex	10	1.5 ft	Pool-Riffle High gradient slope	Deciduous (A) Small trees/shrubs (C) Artificial (F) Multiflora Rose* (C) Streambank soils mostly exposed	R 25-100 L 25-100	Turbid just downstream of dam, otherwise clear Musky odor	Algae everywhere: hairy, matted, brown, green Large aquatic plants absent	Cobbles (80%) Boulders (20%)	Rural residential Commercial Industrial	Lawns/Gardens Parking Lots Roads Yard Waste	Evidence of use: a lot of litter, discarded fishing equipment Potential parking and access	Cormorant, fish
7B Half-way through the industrial complex to Rte. 30 crossing	15	2 ft	Pool-Riffle High gradient slope	Deciduous (A) Small trees/shrubs (C) Artificial-Concrete (C) Streambank soils mostly exposed	R > 100 L < 25	Clear No odor	Algae in spots: hairy, matted, green Large aquatic plants absent	Cobbles (75%) Boulders (15%) Sand (5%) Concrete/Riprap (4%) Bedrock (1%)	Urban residential Suburban	Commercial dumpsters Parking lots Roads Yard Waste Streambank cleared of vegetation, dumped in river Tributary stream choked with garbage and silt Eroded very steep bank Debris dam	Evidence of use: a lot of litter Potential parking	Adult and juvenile fish, water striders
7C Rte. 30 crossing to confluence with Hockanum	25	1.5 ft	Glide Flat Slope	Deciduous (F) Grasses/Emergent (F) Lawns (A) Artificial-Riprap (C)	R < 25 L < 25	Clear No odor	Algae in spots: hairy, matted, green Large aquatic plants absent	Cobbles (90%) Gravel (5%) Sand (5%)	Recreational (Connecticut Golf Land) Commercial	Lawns/Gardens Commercial dumpsters Golf Courses Parking Lots Roads	Evidence of use: golf balls in stream Potential for parking and access Boating possible	Songbirds, water striders

Attachment C

Stream Walk Photographs



In this upstream segment (#2), the Tankerhoosen River is relatively unspoiled as it makes its way through a forested area.



Run-off and sediment coming from nearby Reservoir Road was noted as a threat to the River's health at the beginning of segment 2.



In segment 3 the River flows through a wet meadow.



Six impounded areas (1 reservoir, 2 small ponds, 2 large ponds and 1 lake) exist along the Tankerhoosen River. Several docks can be seen in this portion of Dobsonville Pond, affording boating access to residents.



Lawns along Dobsonville Pond, though few in number, were noted as a potential concern.



This steep bank, recently cleared of its trees and other vegetation, was noted as a potential source of sediment in the River. Some debris from the cutting was also noted in the River. A house is located at the top of the cleared bank.



Six dams were noted in the seven Tankerhoosen River segments (5+ miles) surveyed, pointing to the need to address obstruction of fish passage in the River.

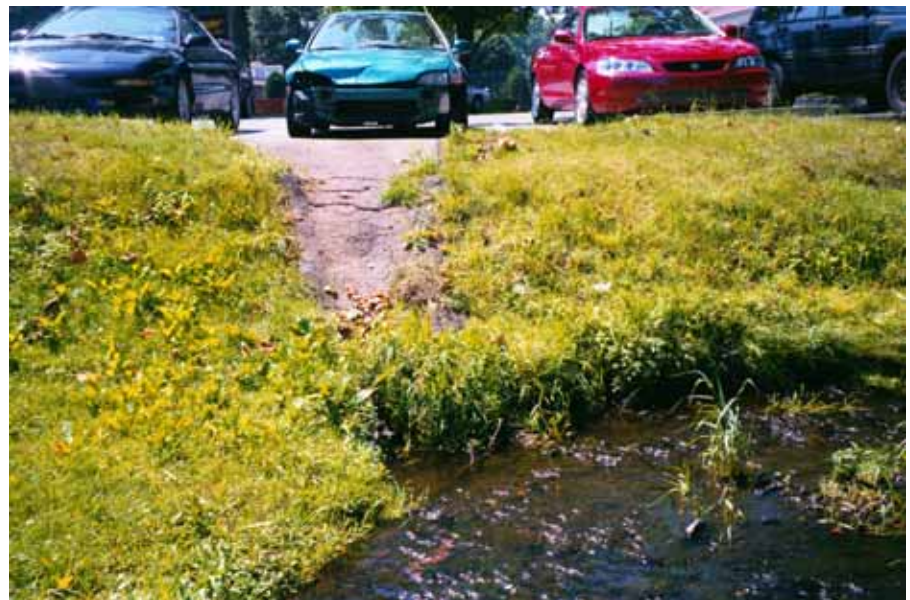
This un-named stream, choked with trash and silt, is a tributary to the Tankerhoosen River. The stream, which does not appear on the topographic map, is located in the downstream segment, upstream of Route 83.



This eroded streambank was found in Segment 7, upstream of Route 83. The bank was 30-35 feet high, and nearly vertical. Surveyors did not note any human (or other) activity that might be causing the slope to erode.



While large trees do provide some shade for the river, there is very little buffering from adjacent commercial activity in the downstream segment.



Parking lots and adjacent lawns were common concerns in the downstream commercial area, near the Tankerhoosen's confluence with the Hockanum



The Tankerhoosen River (upper right) enters the Hockanum in a busy commercial area of Vernon.