U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

WORKING PAPER SERIES

REPORT ON
THE HOUSATONIC IMPOUNDMENTS
(LAKES LILLINONAH, ZOAR, AND HOUSATONIC)
FAIRFIELD, LITCHFIELD,
AND NEW HAVEN COUNTIES
CONNECTICUT
EPA REGION I
WORKING PAPER No. 181

PACIFIC NORTHWEST ENVIRONMENTAL RESEARCH LABORATORY

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and

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WITH THE COOPERATION OF THE

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

AND THE

CONNECTICUT NATIONAL GUARD

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F O R E W O R D

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nation-wide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Connecticut Department of Environmental Protection for professional involvement and to the Connecticut National Guard for conducting the tributary sampling phase of the Survey.

John J. Curry, Director of the former Water Resources Commission; Roy B. Anderson, Principal Sanitary Engineer, and Steven Gerdsmeier, Sanitary Engineer, of the Water Compliance Unit, Department of Environmental Protection; and Sam Suffern, Assistant Director of Water and Related Resources, Department of Environmental Protection, provided invaluable lake documentation and counsel during the course of the Survey.

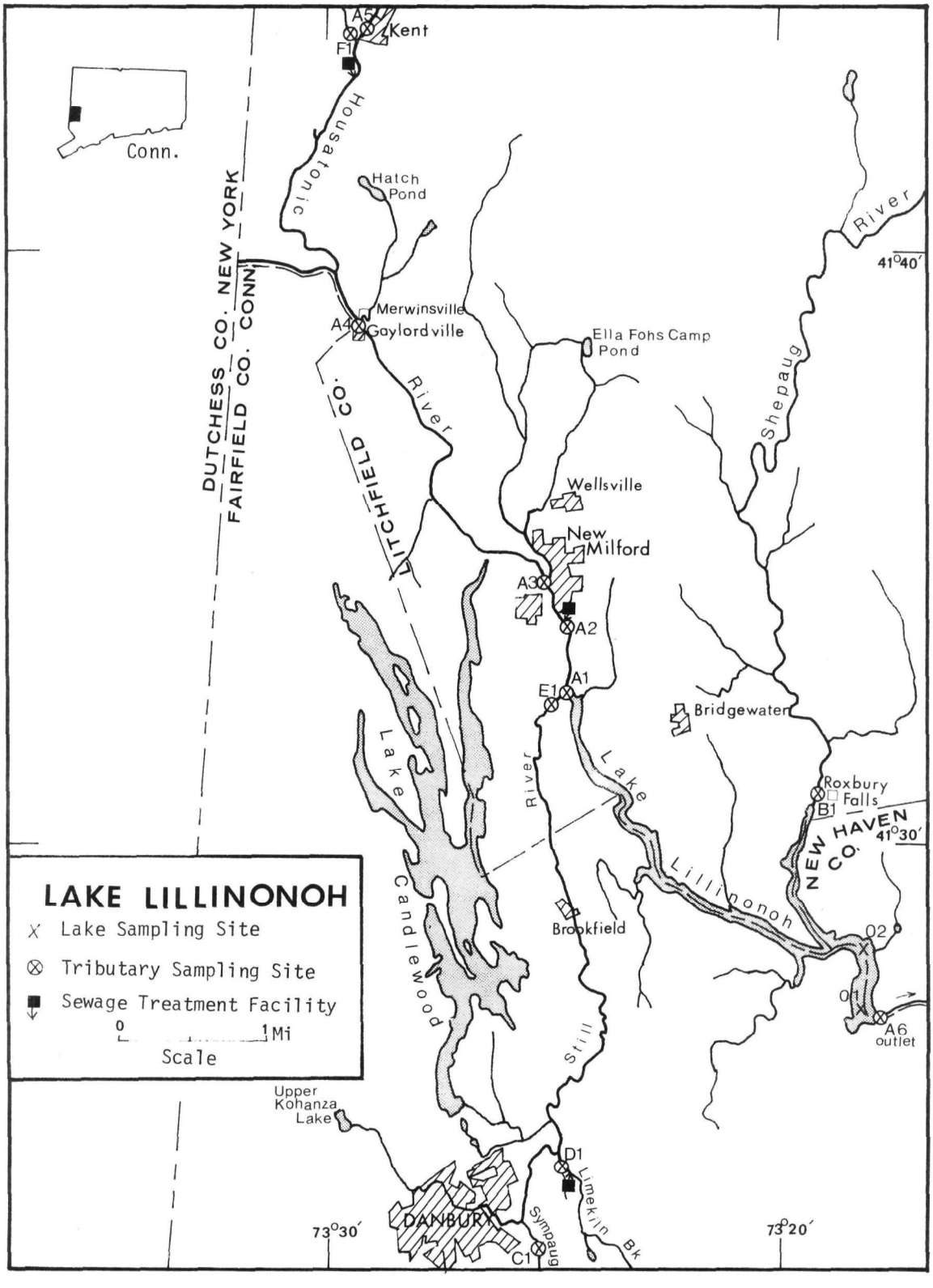
Major General John F. Freund, the Adjutant General of Connecticut, and Project Officer Lieutenant Colonel Daniel M. McGuire, who directed the volunteer efforts of the Connecticut National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

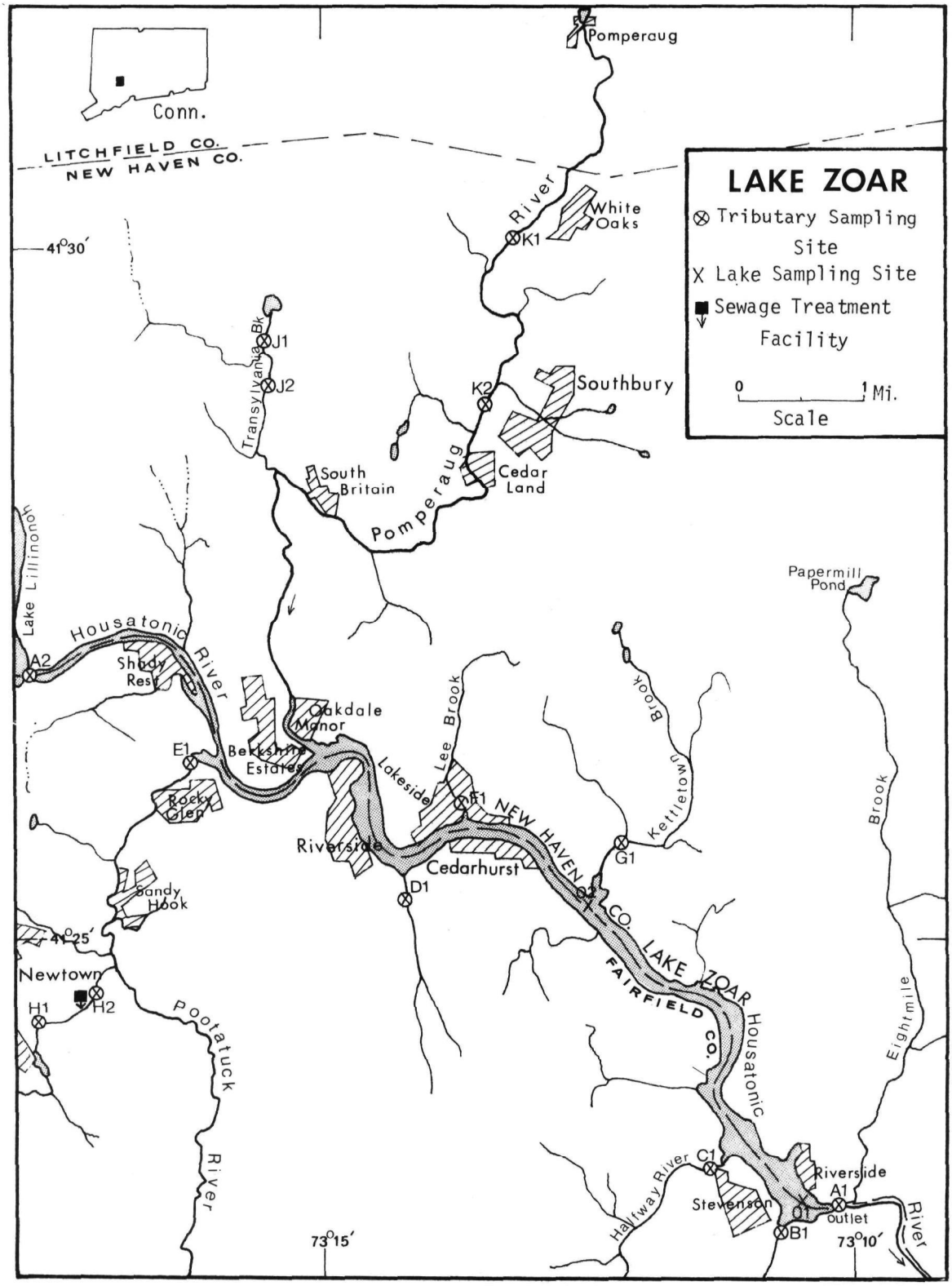
NATIONAL EUTROPHICATION SURVEY

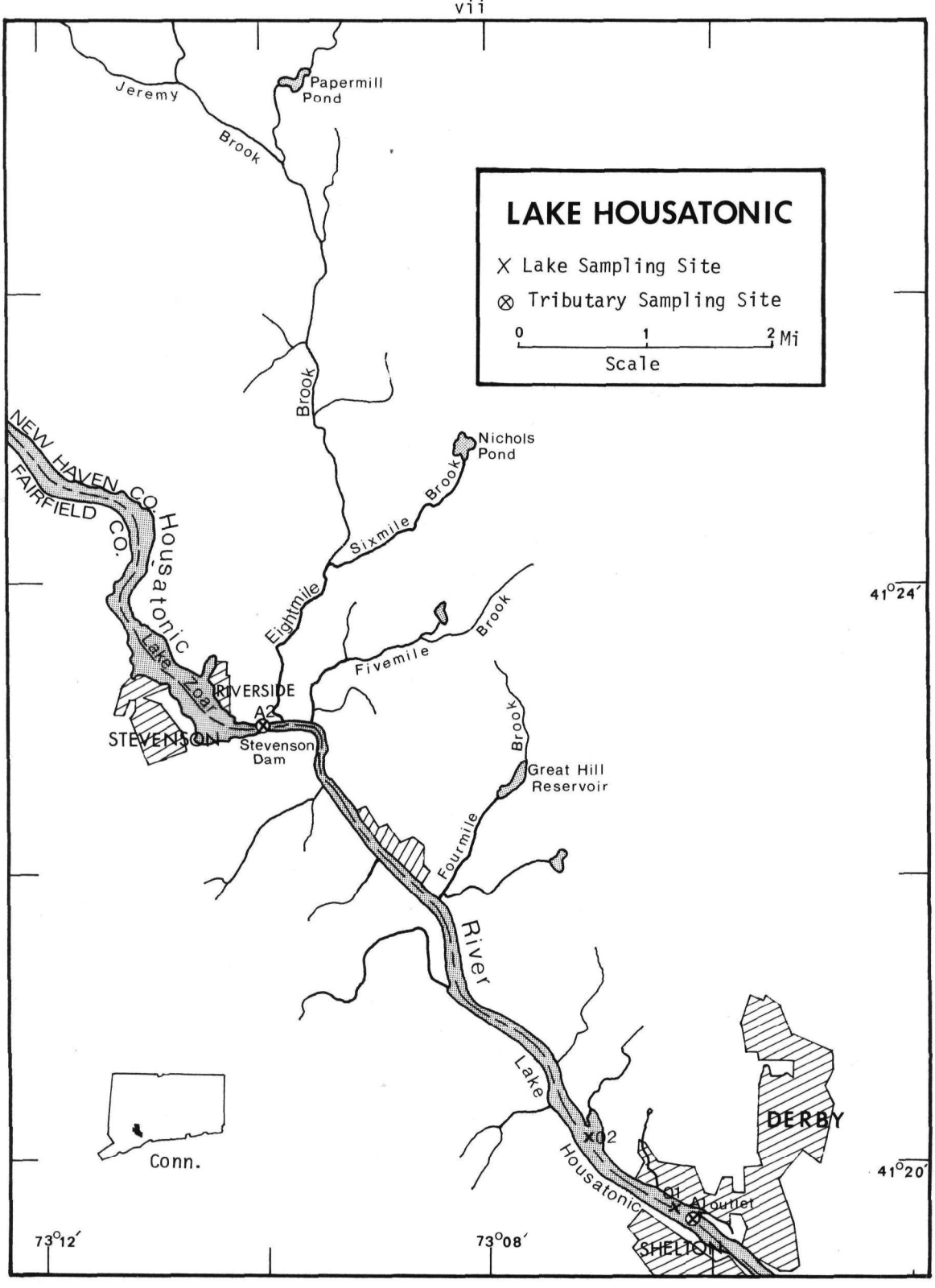
STUDY LAKES

STATE OF CONNECTICUT

LAKE NAME	COUNTY
Aspinook Pond	New London, Windham
Bantam	Litchfield
Community	New Haven
Eagleville	Tolland
Hanover Pond	New Haven
Housatonic Impoundments:	
Housatonic	Fairfield, New Haven
Lillinonah	Fairfield, Litchfield, New Haven
Zoar	Fairfield, New Haven


Conn.
DUTCHESS CO. NEW YORK
FAIRFIELD CO. CONN
LITCHFIELD CO.
Housatonic River
Kent
A5
F1
Hatch Pond
Merwinsville
Gaylordville
A4
Ella Fohs Camp Pond
Shepaug River
41°40′
Wellsville
New Milford
A3
A2
A1
E1
Bridgewater
Lake Lillinonoh
Roxbury Falls
B1
NEW HAVEN CO.
41°30′
Brookfield
Candlewood Lake
Still River
O2
O1
A6
outlet
Upper Kohanza Lake
D1
Limekiln Bk
DANBURY
Sympaug
C1
73°30′
73°20′
LAKE LILLINONOH
Lake Sampling Site
Tributary Sampling Site
Sewage Treatment Facility
0
1 Mi
Scale


LAKE ZOAR
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
0 1 Mi.
Scale
Conn.
LITCHFIELD CO.
NEW HAVEN CO.
FAIRFIELD CO.
NEW HAVEN CO.
Pomperaug
White Oaks
Southbury
Cedar Land
South Britain
Transylvania Bk
Pomperaug River
Housatonic River
Lake Lillinonah
Shady Rest
Oakdale Manor
Berkshire Estates
Rocky Glen
Lakeside
Riverside
Cedarhurst
Lee Brook
Kettletown Brook
Papermill Pond
Eightmile Brook
Sandy Hook
Newtown
Pootatuck River
Halfway River
Stevenson
Housatonic River
Riverside
outlet
41°30′
41°25′
73°15′
73°10′
K1
K2
J1
J2
A2
E1
F1
G1
D1
H1
H2
C1
A1
B1
O1


LAKE HOUSATONIC
X Lake Sampling Site
⊗ Tributary Sampling Site
0 1 2 Mi
Scale
Papermill Pond
Jeremy Brook
Brook
Nichols Pond
Sixmile Brook
Eightmile
Fivemile Brook
Brook
Great Hill Reservoir
Fourmile
NEW HAVEN CO.
FAIRFIELD CO.
Housatonic
Lake Zoar
RIVERSIDE
A2
STEVENSON
Stevenson Dam
River
Lake Housatonic
DERBY
SHELTON
Q2
Q1
A1 outlet
Conn.
41°24′
41°20′
73°12′
73°08′

LAKES LILLINONAH, ZOAR, and HOUSATONIC

STORET NOS. 0911, 0910, and 0912

I. CONCLUSIONS

A. Trophic Condition:

1. Lake Lillinonah -

Lake Lillinonah is a eutrophic impoundment exhibiting high nutrient levels, severely depressed dissolved oxygen levels, and succession to a blue-green alga dominated flora as water conditions deteriorate through the summer. Considering the high light penetration noted and the absence of well-defined stratification, the impact upon dissolved oxygen is indicative of very high oxygen demand in the water and/or sediments.

2. Lake Zoar -

Lake Zoar is also eutrophic with depletion of dissolved oxygen, excessive nutrient levels, and high concentrations of blue-green algae in surface waters.

3. Lake Housatonic -

Lake Housatonic is a eutrophic impoundment with heavy growths of rooted aquatic vegetation in the shallows and high algae concentrations in the surface waters; consistently high nutrient levels and moderately depressed dissolved oxygen levels were noted.

B. Rate-Limiting Nutrient:

The three impoundments of the Housatonic River sampled were phosphorus limited at the time of sampling, as indicated by the results of algal assays performed on water samples from each. Control algae yields were substantial for Lakes Zoar and Lillinonah but relatively low for Lake Housatonic which is not directly impacted by point sources. The inorganic nitrogen: dissolved phosphorus ratios substantiate that the productivity of each impoundment was limited by phosphorus.

C. Nutrient Controllability:

1. Point sources--The phosphorus loading rates to these impoundments were from 9 to 12 times the rate proposed by Vollenweider (in press) as dangerous; i.e., a eutrophic rate (see pages 29 and 30). Point sources within the Survey area* accounted for about 30 percent of this load.

Major sources of phosphorus in Massachusetts result in stream concentrations nearly ten times higher than estimates for unimpacted local streams at the point where the Housatonic River crosses into Connecticut. Control of phosphorus at point sources within Connecticut alone is unlikely to improve the water quality of these three impoundments significantly. A

* See Working Paper No. 1, "Survey Methods".

cooperative effort to effect trophic improvement of these lakes would require essentially total phosphorus removal at the known point sources. In addition, a study of land use practices in the Housatonic River drainage basin might yield additional explanations for the high mean loadings noted for those tributaries sampled that have no known point sources.

Lakes Lillinonah, Zoar, and Housationic share short residence times, the absence of well-developed thermoclines, and phosphorus limitation of algal growth. Lake Lillinonah and Zoar reportedly possess strong phosphorus binding activity in their sediments. All of these factors favor potential trophic improvement. Control of carp populations in Lake Housatonic may aid in reducing resuspension of nutrient-rich sediments.

2. Non-point sources (see page 28)--With the exception of Lee Brook and Boys Halfway River, the phosphorus exports of the tributaries of the Housatonic impoundments were quite high during the sampling year. Particularly in the case of the Housatonic River, the high exports reflect the impact of point sources beyond the 25-mile limit of the Survey.

II. INTRODUCTION

1. Lake Lillinonah was formed in 1955 by the construction of the Shepaug hydroelectric dam approximately two miles downstream from the confluence of the Housatonic and Shepaug rivers. The lake winds scenically through a steep, forested valley. Shoreline development is light; a portion of the east shore is bounded by the George C. Waldo State Park. The Housatonic and Shepaug rivers provide the major water input to the lake. The Sympaug, Limekiln, Macedonia, and Still rivers make small contributions as do a number of minor tributary brooks.

Recreation and power generation are the primary uses of the lake. As a scenic attraction, as well as an excellent smallmouth bass fishery, the recreational potential of the lake appears to be good. However, despite the availability of public access, the lake is not subject to the use pressures that would be anticipated. Periodic massive algal blooms discourage full utilization of the recreational resources of the lake during certain times of the year.

2. Lake Zoar is an impoundment formed in 1919 by Stevenson Dam. The lake lies in an attractive steep-sided valley which is heavily forested. There is little shoreline development except at Cedarhurst, at the northwest end, and along a small strip just north of Stevenson. The land between includes the Paughsett State Forest on the west side and the Kettletown State Park on the east. The Housatonic River provides

the major water input to the lake. The Kettletown, Lee, Deep, and Transylvania brooks; and Halfway, Boys Halfway, Pootatuck, and Pomperaug rivers make lesser contributions to overall flow. Two good references on the nutrient budgets of lakes Lillinonah and Zoar are Frink (1970) and Norvell (1972).

3. Lake Housatonic, located in Fairfield and New Haven counties, is a narrow impoundment of the Housatonic River formed by a concrete dam just above Derby. Considerable silt accumulation covers sand, gravel, and rocks over much of the bottom. Heavy growths of rooted aquatic vegetation were noted in shallow coves, and emergents were present in shallow near-shore areas.

Heavy shoreline development and easy public access are found at Lake Housatonic. State and municipal parks extend along portions of each shore. Boating, fishing, and swimming are the primary recreational activities. Other water usage includes hydroelectric generation and industrial processing.

Carp are abundant, but gamefish and panfish are relatively scarce. Stocking of the waters has included salmon, chain pickerel, yellow perch, calico bass, bullheads, sunfish, and shiners.

All three of these lakes are discussed briefly in a fisheries survey published by the State Board of Fisheries and Game (Anonymous, 1959).

III. LAKE† AND DRAINAGE BASIN CHARACTERISTICS

A. Lake Lillinonah -

1. Lake Morphometry -

   a. Surface area: 1,900 acres.

   b. Mean depth: 38.9 feet.

   c. Maximum depth: 100 feet.

   d. Volume: 74,000 acre-feet.

   e. Mean hydraulic retention time: 17 days.

2. Tributary and Outlet -
   (See Appendix A for flow data)

   a. Tributaries -

Name	Drainage area*	Mean flow*
Housatonic River	1,194.0 mi^2	1,862.7 cfs
Shepaug River	148.0 mi^2	263.3 cfs
Minor tributaries & immediate drainage -	47.3 mi^2	86.8 cfs
Totals	1,389.3 mi^2	2,212.8 cfs

   b. Outlet -

Housatonic River	1,392.0 mi^2**	2,212.8 cfs

3. Precipitation*** -

   a. Year of sampling: 52.7 inches.

   b. Mean annual: 45.4 inches.

† Anonymous, 1972.

* Housatonic River impoundment drainage areas are accurate within ±1%; gaged mean daily and mean monthly flows are accurate within ±10%; ungaged mean daily and mean monthly flows are accurate within ±20%; and normalized mean monthly flows are accurate within ±10% for gaged streams and within ±12% (high flow) to 27% (low flow) for ungaged streams.

** Includes area of lake.

*** See Working Paper No. 1.

B. Lake Zoar -

1. Lake Morphometry -

   a. Surface area: 975 acres.

   b. Mean depth: 24.6 feet.

   c. Maximum depth: 75 feet.

   d. Volume: 23,985 acre-feet.

   e. Mean hydraulic retention time: 5 days.

2. Tributary and Outlet -

   a. Tributaries -

Name	Drainage area	Mean flow
Housatonic River	1,392.0 mi^2	2,212.8 cfs
Pootatuck River	26.1 mi^2	46.0 cfs
Halfway River	10.8 mi^2	19.5 cfs
Kettletown Branch	5.0 mi^2	9.2 cfs
Unnamed Stream (D-1)	1.8 mi^2	3.4 cfs
Lee Brook	1.1 mi^2	2.1 cfs
Boys Halfway River	0.7 mi^2	1.3 cfs
Minor tributaries & immediate drainage -	102.0 mi^2	183.0 cfs
Totals	1,539.5 mi^2	2,477.3 cfs

   b. Outlet -

Housatonic River	1,541.0 mi^2*	2,477.3 cfs*

3. Precipitation:

   a. Year of sampling: 66.5 inches.

   b. Mean annual: 47.6 inches.

* Includes area of lake; inflows adjusted to equal outflow.

C. Lake Housatonic -

1. Lake Morphometry -

   a. Surface area: 328 acres.

   b. Mean depth: 9.4 feet.

   c. Maximum depth: 26 feet.

   d. Volume: 3,083 acre-feet.

   e. Mean hydraulic retention time: 15 hours.

2. Tributary and Outlet -

   a. Tributaries -

Name	Drainage area	Mean flow
Housatonic River	1,541.0 mi^2	2,477.3 cfs
Minor tributaries & immediate drainage -	32.5 mi^2	57.8 cfs
Totals	1,573.5 mi^2	2,535.1 cfs

   b. Outlet -

Housatonic River	1,574.0 mi^2*	2,535.1 cfs

3. Precipitation:

   a. Year of sampling: 60.9 inches.

   b. Mean annual: 45.6 inches.

* Includes area of lake.

IV. LAKE WATER QUALITY SUMMARY

Lakes Lillinonah, Zoar, and Housatonic were sampled three times during the open-water season of 1972 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from one or more depths at each sampling station (see maps; pages v, vi, and vii). During each visit, a single depth-integrated (15 feet or near bottom to surface) sample was composited from each of the stations for phytoplankton identification and enumeration; and during the last visit, a single five-gallon depth-integrated sample was composited from each lake for algal assays. Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 120 feet in Lake Lillinonah, 75 feet in Lake Zoar, and 16 feet in Lake Housatonic.

The results obtained are presented in full in Appendix B, and the data for the fall sampling period, when the lakes essentially were well-mixed, are summarized below. Note, however, the Secchi disc summaries are based on all values.

For differences in the various parameters at the other sampling times, refer to Appendix B.

A. Physical and chemical characteristics:

1. Lake Lillinonah -

Parameter	Minimum	Mean	Median	Maximum
		FALL VALUES (10/04/72)		
Temperature (Cent.)	19.6	20.0	20.1	20.2
Dissolved oxygen (mg/l)	0.6	3.4	3.5	4.2
Conductivity (μmhos)	285	296	290	340
pH (units)	7.3	7.5	7.5	7.6
Alkalinity (mg/l)	97	101	98	113
Total P (mg/l)	0.053	0.058	0.054	0.075
Dissolved P (mg/l)	0.048	0.052	0.048	0.067
NO_2 + NO_3 (mg/l)	0.180	0.198	0.180	0.270
Ammonia (mg/l)	0.540	0.614	0.550	0.880
		ALL VALUES		
Secchi disc (inches)	84	146	138	204

2. Lake Zoar -

		FALL VALUES		
Temperature	18.6	19.3	19.5	19.6
Dissolved oxygen	4.0	4.9	4.9	5.6
Conductivity	275	279	280	280
pH	7.0	7.6	7.6	7.8
Alkalinity	90	91	91	92
Total P	0.042	0.048	0.043	0.060
Dissolved P	0.017	0.029	0.032	0.034
NO_2 + NO_3	0.320	0.334	0.320	0.390
Ammonia	0.080	0.316	0.330	0.510
		ALL VALUES		
Secchi disc	66	74	73	84

3. Lake Housatonic -

Parameter	Minimum	Mean	Median	Maximum
		FALL VALUES (10/04/72)		
Temperature	18.2	18.4	18.5	18.5
Dissolved oxygen	7.1	7.5	7.2	8.1
Conductivity	260	260	260	260
pH	7.8	7.8	7.8	7.9
Alkalinity	90	91	91	92
Total P	0.035	0.038	0.037	0.041
Dissolved P	0.028	0.029	0.029	0.032
$NO_2 + NO_3$	0.390	0.394	0.390	0.400
Ammonia	0.150	0.180	0.190	0.220
		ALL VALUES		
Secchi disc	60	76	73	96

B. Biological characteristics:

1. Lake Lillinonah -

a. Phytoplankton -

Sampling Date	Dominant Genera	Number per ml
05/29/72	1. Cyclotella	4,521
	2. Fragilaria	579
	3. Melosira	452
	4. Synedra	380
	5. Asterionella	289
	Other genera	1,012
	Total	7,233
08/03/72	1. Anabaena	663
	2. Chroococcus	660
	3. Gloeocapsa	280
	4. Dinobryon	262
	5. Schroederia	81
	Other genera	43
	Total	1,989
10/04/72	1. Flagellates	266
	2. Fragilaria	241
	3. Dinobryon	100
	4. Anabaena	65
	5. Navicula	55
	Other genera	348
	Total	1,075

b. Chlorophyll a -
(Because of instrumentation problems during the 1972 sampling, the following values may be in error by ±20 percent.)

Sampling Date	Station Number	Chlorophyll a (µg/l)
05/29/72	01	9.7
	02	27.5
08/03/72	01	1.2
	02	19.0
10/04/72	01	3.9
	02	5.5

2. Lake Zoar -

a. Phytoplankton -
(Because of instrumentation problems during the 1972 sampling, the following values may be in error by ±20 percent.)

Sampling Date	Dominant Genera	Number per ml
05/29/72	1. Cyclotella	5,262
	2. Fragilaria	651
	3. Melosira	579
	4. Asterionella	398
	5. Scenedesmus	181
	Other genera	886
	Total	7,957
08/03/72	1. Dinobryon	251
	2. Gloeocapsa	221
	3. Fragilaria	186
	4. Achnanthes	176
	5. Cryptomonas	141
	Other genera	612
	Total	1,587
10/04/72	1. Melosira	241
	2. Fragilaria	241
	3. Cyclotella	211
	4. Anabaena	211
	5. Cryptomonas	121
	Other genera	361
	Total	1,386

b. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
05/29/72	01	10.4
	02	45.5
08/03/72	01	3.5
	02	16.3
10/04/72	01	13.3
	02	20.6

3. Lake Housatonic -

a. Phytoplankton* -

Sampling Date	Domninant Genera	Number per ml
08/03/72	1. Dinobryon	2,676
	2. Fragilaria	561
	3. Anabaena	325
	4. Gloeocapsa	325
	5. Cryptomonas	217
	Other genera	778
	Total	4,882
10/04/72	1. Dinobryon	1,407
	2. Flagellates	1,181
	3. Melosira	829
	4. Cryptomonas	327
	5. Cyclotella	251
	Other genera	1,231
	Total	5,226

b. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
06/09/72	01	2.3
08/03/72	01	13.2
10/04/72	01	15.5
	02	10.0

* The May sample was lost in shipment.

C. Limiting Nutrient Study:

1. Lake Lillinonah -

a. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.023	0.675	12.2
0.006 P	0.029	0.675	13.8
0.012 P	0.035	0.675	16.2
0.024 P	0.047	0.675	18.4
0.060 P	0.083	0.675	23.7
0.060 P + 10.0 N	0.083	10.675	28.7
10.0 N	0.023	10.675	9.9

b. Discussion -

The control yield of the assay alga, Selenastrum capricornutum, indicates that Lake Lillinonah was phosphorus limited at the time of sampling. The addition of phosphorus spikes stimulated additional growth response, but no growth stimulation was noted with the addition of only nitrogen.

The control yield indicates a relatively high capability for maintaining substantial algal growth.

2. Lake Zoar -

a. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.027	0.666	8.1
0.006 P	0.033	0.666	11.4
0.012 P	0.039	0.666	14.5
0.024 P	0.051	0.666	17.0
0.060 P	0.087	0.666	20.8
0.060 P + 10.0 N	0.087	10.666	44.0
10.0 N	0.027	10.666	7.5

b. Discussion -

Algal assay results indicate that phosphorus was the nutrient limiting algal growth in Lake Zoar at the time of sampling. The addition of phosphorus spikes stimulated additional growth response, but no growth response was noted with the addition of only nitrogen.

The control yield indicates that the lake waters were capable of maintaining substantial algal growth.

3. Lake Housatonic -

a. Autoclaved, filtered, and nutrient spiked -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.016	0.517	2.9
0.006 P	0.022	0.517	5.2
0.012 P	0.028	0.517	7.6
0.024 P	0.040	0.517	9.5
0.060 P	0.076	0.517	8.8
0.060 P + 10.0 N	0.076	10.517	17.5
10.0 N	0.016	10.517	3.3

b. Discussion -

Algal assay results indicate that phosphorus was the nutrient limiting algal growth in Lake Housatonic at the time of sampling. Incremental spikes with phosphorus stimulated further growth response, but the addition of only nitrogen produced no effect.

The control yield was considerably lower than the one obtained with Zoar and Lillinonah waters.

4. Nutrient losses -

Losses in nitrogen and phosphorus from lake water which occurred between the time of collection and the beginning of the assays are significant for Zoar and Lillinonah but unlikely to have altered the limiting nutrient as the N:P ratios at the time of collection were 22:1 and 16:1, respectively, indicating phosphorus limitation in the lakes as well.

These algal assay data suggest that primary production in the three impoundments studied can be controlled by limiting the phosphorus input.

D. Trophic Condition:

1. Lake Lillinonah -

Lake Lillinonah is a eutrophic water body which exhibits high nutrient levels and severely depressed dissolved oxygen levels. Such impact upon the dissolved oxygen levels, considering high light penetration and weakly-developed stratification, is indicative of very high oxygen demand. Water conditions degenerated substantially from late spring through summer, as reflected by increasing nutrients and turbidity, decreasing dissolved oxygen, and successsion from clean-water algae to a blue-green dominated flora. Improvement in water conditions could be expected with reduction of upstream nutrient discharges; the lake sediments

effectively bind much of the phosphorus load entering the lake even at low dissolved oxygen levels (Frink, 1970).

2. Lake Zoar -

Lake Zoar is a eutrophic water body which did not maintain stratification during the summer of 1972. Deeper waters were quite low in dissolved oxygen. High concentrations of blue-green algae were noted in surface waters. Past studies (Frink, op. cit.) confirm the eutrophic nature of the lake and suggest that major nutrient inputs are identifiable and controllable. While Lake Zoar, as well as Lake Lillinonah upstream, effectively ties up a substantial portion of the phosphorus input, that input is high enough to provide excessively high concentrations at the outlet.

3. Lake Housatonic -

Lake Housatonic is a eutrophic impoundment, heavily weeded in the shallow upper portions, which produced high algae concentrations in summer and fall, 1972. Nutrient levels were consistently high, and dissolved oxygen levels remained below saturation despite turbulent mixing and light penetration approaching the bottom over much of the reach. The short hydraulic retention time and absence of stratification favor recovery if nutrient levels are reduced upstream. Carp activity probably results in considerable resuspension of silts and nutrients within the impoundment.

V. NUTRIENT LOADINGS
(See Appendix C for data)

For the determination of nutrient loadings, the Connecticut National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the maps (pages v, vi, and vii), except for the high runoff period in the spring when two or more samples a month were collected. Sampling was begun in August, 1972, and was completed in October, 1973.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Connecticut District Office of the U.S. Geological Survey for the tributary sites nearest the lakes. However, through an oversight, flows were not provided for the Pomperaug River; flows and area of this stream were included in "ZZ" (see below).

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. The Housatonic River background loading (known point sources subtracted) was computed at the inlet to each lake. These background loadings reflect the impact of significant upstream point sources outside of the Survey area; in 1969, nearly ½ million pounds of phosphorus were reported from Massachusetts point sources alone (Cooperman, et al., 1971).

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* See Working Paper No. 1.

The nutrient loads shown are those measured minus point sources, if any.

Nutrient loadings for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated by using the mean "ZZ" flows and mean concentrations in the Shepaug River for Lake Lillinonah and the Halfway River of lakes Zoar and Housatonic.

Operators of the wastewater treatment plants listed provided monthly effluent samples and corresponding flow data.

A. Waste Sources*:

1. Lake Lillinonah -

a. Known muncipal -

Name	Pop. Served	Treatment	Mean Flow (mgd)	Receiving Water
Bethel	7,000	act. sludge	0.563	Shepaug River
Danbury	29,000	trickling filter	8.610	Limekiln Brook
Kent	900	act. sludge	0.042	Housatonic River
New Milford	4,000	act. sludge	0.512	Housatonic River

b. Known industrial - None

* Armet, 1973.

2. Lake Zoar -

a. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (mgd)	Receiving Water
Heritage Village	5,000	act. sludge + pond	0.432	Pomperaug River
Southbury Train. Sch.	500	trickling filter + sand filter	0.261	Transylvania Brook
Fairfield Hills Hosp. (Newtown)	600	trickling filter + sand filter	0.409	Deep Brook to Pootatuck River

b. Known industrial - None

3. Lake Housatonic -

a. Known municipal - No direct input

b. Known industrial - None

B. Annual Total Phosphorus Loading - Average Year:

1. Lake Lillinonah -

a. Inputs -

Source	lbs P/ yr	% of total
1) Tributaries (non-point load) -		
Housatonic River	392,270	66.2
Shepaug River	23,360	3.9
2) Minor tributaries & immediate drainage (non-point load) -	11,620	2.0
3) Known municipal -		
Bethel	9,610	1.6
Danbury	144,690	24.4
Kent	990	0.2
New Milford	10,130	1.7
4) Septic tanks - Unknown	-	-
5) Known industrial - None	-	-
6) Direct precipitation* -	300	<0.1
Total	592,970	100.0

b. Outputs -

Lake outlet - Housatonic R. 294,160

c. Net annual P accumulation - 298,810 pounds

* See Working Paper No. 1.

2. Lake Zoar -

a. Inputs -

Source	lbs P/ yr	% of total
1) Tributaries (non-point load) -		
Housatonic River	294,160	86.2
Pootatuck River	10,860	3.2
Halfway River	1,150	0.3
Kettletown Brook	740	0.2
Unnamed Stream (D-1)	190	0.1
Boys Halfway River	40	<0.1
Lee Brook	60	<0.1
2) Minor tributaries & immediate drainage (non-point load) -	11,530	3.4
3) Known municipal -		
Heritage Village	9,210	2.7
Southbury Training Sch.	6,250	1.8
Fairfield Hills Hospital	6,930	2.0
4) Septic tanks - Unknown	-	-
5) Known industrial - None	-	-
6) Direct precipitation* -	150	<0.1
Total	341,270	100.0

b. Outputs -

Lake outlet - Housatonic R. 257,020

c. Net annual P accumulation - 84,250 pounds

* See Working Paper No. 1.

3. Lake Housatonic -

a. Inputs -

Source	lbs P/ yr	% of total
1) Tributaries (non-point load) -		
Housatonic River	257,020	98.6
2) Minor tributaries & immediate drainage (non-point load) -	3,640	1.4
3) Known municipal - None	-	-
4) Septic tanks - Unknown	-	-
5) Known industrial - None	-	-
6) Direct precipitation* -	50	<0.1
Total	260,710	100.0

b. Outputs -

Lake outlet - Housatonic R. 219,410

c. Net annual P accumulation - 41,300 pounds

* See Working Paper No. 1.

C. Annual Total Nitrogen Loading - Average Year:

1. Lake Lillinonah -

a. Inputs -

Source	lbs N/ yr	% of total
1) Tributaries (non-point load) -		
Housatonic River	5,350,210	80.8
Shepaug River	567,360	8.6
2) Minor tributaries & immediate drainage (non-point load) -	207,620	3.1
3) Known municipal -		
Bethel	39,330	0.6
Danbury	394,940	6.0
Kent	2,780	<0.1
New Milford	36,930	0.6
4) Septic tanks - Unknown	-	-
5) Known industrial - None	-	-
6) Direct precipitation* -	18,300	0.3
Total	6,617,470	100.0

b. Outputs -

Lake outlet - Housatonic R. 5,540,260

c. Net annual N accumulation - 1,077,210 pounds

* See Working Paper No. 1.

2. Lake Zoar -

a. Inputs -

Source	lbs N/ yr	% of total
1) Tributaries (non-point load) -		
Housatonic River	5,540,260	91.0
Pootatuck River	93,180	1.5
Halfway River	35,170	0.6
Kettletown Brook	24,420	0.4
Unnamed Stream (D-1)	6,290	0.1
Boys Halfway River	540	<0.1
Lee Brook	4,340	0.1
2) Minor tributaries & immediate drainage (non-point load) -	344,410	5.7
3) Known municipal -		
Heritage Village	7,940	0.1
Southbury Training Sch.	11,140	0.2
Fairfield Hills Hospital	12,300	0.2
4) Septic tanks - Unknown	-	-
5) Known industrial - None	-	-
6) Direct precipitation* -	9,390	0.2
Total	6,089,380	100.0

b. Outputs -

Lake outlet - Housatonic R. 5,636,820

c. Net annual N accumulation - 452,560 pounds

* See Working Paper No. 1.

3. Lake Housatonic -

a. Inputs -

Source	lbs N/yr	% of total
1) Tributaries (non-point load) -		
Housatonic River	5,636,820	98.1
2) Minor tributaries & immediate drainage (non-point load) -	108,780	1.9
3) Known municipal - None	-	-
4) Septic tanks - Unknown	-	-
5) Known industrial - None	-	-
6) Direct precipitation* -	3,160	<0.1
Total	5,748,760	100.0

b. Outputs -

Lake outlet - Housatonic R. 5,423,280

c. Net annual N accumulation - 325,480 pounds

* See Working Paper No. 1.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

1. Lake Lillinonah -

Tributary	lbs P/mi^2/yr	lbs N/mi^2/yr
Housatonic River	329	4,481
Shepaug River	158	3,834

2. Lake Zoar -

Tributary	lbs P/mi^2/yr	lbs N/mi^2/yr
Housatonic River	211	3,980
Pootatuck River	416	3,570
Halfway River	106	3,256
Kettletown Brook	148	4,884
Unnamed Stream (D-1)	106	3,494
Lee Brook	55	3,945
Boys Halfway River	57	771

3. Lake Housatonic -

Tributary	lbs P/mi^2/yr	lbs N/mi^2/yr
Housatonic River	167	3,658

E. Yearly Loading Rates:

In the following table, the existing phosphorus loading rates are compared to those proposed by Vollenweider (in press). Essentially, his "dangerous" rate is the rate at which the receiving water would become eutrophic or remain eutrophic; his "permissible" rate is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic rate would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with very short detention times.

1. Lake Lillinonah -

	Total Phosphorus		Total Nitrogen	
Units	Total	Accumulated	Total	Accumulated
lbs/acre/yr	312.1	157.3	3,482.9	567.0
grams/m^2/yr	34.98	17.63	390.4	63.5

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Lake Lillinonah:

"Dangerous" (eutrophic rate)	3.00
"Permissible" (oligotrophic rate)	1.50

2. Lake Zoar -

Units	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
lbs/acre/yr	350.0	86.4	6,245.5	464.2
grams/m^2/yr	39.23	9.69	700.0	52.0

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Lake Zoar:

"Dangerous" (eutrophic rate)	4.40
"Permissible" (oligotrophic rate)	2.20

3. Lake Housatonic -

Units	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
lbs/acre/yr	794.8	125.9	17,526.7	992.3
grams/m^2/yr	89.09	14.11	1,964.5	111.2

Vollenweider loading rates for phosphorus ($g/m^2/yr$) based on mean depth and mean hydraulic retention time of Lake Housatonic:

"Dangerous" (eutrophic rate)	7.60
"Permissible" (oligotrophic rate)	3.80

VI. LITERATURE REVIEWED

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VII. APPENDICES

APPENDIX A

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0911 LAKE LILLINONAH

TOTAL DRAINAGE AREA OF LAKE 1392.00

TRIBUTARY	SUB-DRAINAGE AREA	NORMALIZED FLOWS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
0911A1	1194.00	2063.00	2007.00	3534.00	4149.00	2471.00	1539.00	911.00	787.00	676.00	867.00	1613.00	1766.00	1862.67
0911A6	1392.00	2481.00	2414.00	4256.00	4890.00	2890.00	1787.00	1053.00	922.00	811.00	1026.00	1923.00	2138.00	2212.79
0911B1	148.00	314.00	298.00	541.00	566.00	315.00	201.00	109.00	99.00	98.00	115.00	230.00	278.00	263.27
0911ZZ	50.00	104.00	109.00	181.00	175.00	104.00	47.00	33.00	36.00	37.00	44.00	80.00	94.00	86.84

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 1392.00
SUM OF SUB-DRAINAGE AREAS = 1392.00
TOTAL FLOW IN = 26591.00
TOTAL FLOW OUT = 26591.00

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0911A1	8	72	880.00	19	614.00				
	9	72	518.00	16	582.00	21	560.00		
	10	72	1040.00	16	949.00				
	11	72	2930.00	21	4040.00				
	12	72	4540.00	19	2960.00				
	1	73	3860.00	30	2200.00				
	2	73	4110.00	22	2160.00	27	1630.00		
	3	73	4050.00	18	7740.00				
	4	73	4220.00	4	7090.00	16	3380.00	20	2640.00
	5	73	3650.00	23	5760.00	26	3480.00		
	6	73	1660.00	26	1110.00				
	7	73	2740.00	14	1540.00	17	1330.00		
	8	73	1300.00	27	497.00				
	9	73	703.00	6	667.00	24	901.00		
	10	73	511.00	13	595.00				
0911A6	8	72	1010.00	19	710.00				
	9	72	588.00	16	667.00	21	638.00		
	10	72	1180.00	16	1060.00				
	11	72	3450.00	21	4770.00				
	12	72	5440.00	19	3460.00				
	1	73	4500.00	30	2660.00				
	2	73	4793.00	22	2518.00	27	1901.00		
	3	73	4723.00	18	9026.00				
	4	73	4922.00	4	8268.00	16	3942.00	20	3078.00
	5	73	4170.00	23	6290.00	26	3900.00		
	6	73	2020.00	26	1200.00				
	7	73	3170.00	14	1770.00	17	1560.00		
	8	73	1400.00	27	539.00				
	9	73	781.00	6	805.00	24	1010.00		
	10	73	587.00	13	634.00				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0911 LAKE LILLINONAH

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0911B1	8	72	90.00	19	68.00				
	9	72	42.00	16	53.00	21	47.00		
	10	72	83.00	16	65.00				
	11	72	377.00	21	526.00				
	12	72	661.00	19	347.00				
	1	73	448.00	30	347.00				
	2	73	477.00	22	250.00	27	189.00		
	3	73	470.00	18	898.00				
	4	73	490.00	4	822.00	16	392.00	20	306.00
	5	73	390.00	23	399.00	26	316.00		
	6	73	272.00	26	71.00				
	7	73	319.00	14	174.00	17	174.00		
	8	73	73.00	27	31.00				
	9	73	58.00	6	103.00	24	78.00		
	10	73	57.00	13	29.00				
0911ZZ	8	72	40.00	19	28.00				
	9	72	28.00	16	32.00	21	31.00		
	10	72	53.00	16	48.00				
	11	72	145.00	21	200.00				
	12	72	242.00	19	158.00				
	1	73	194.00	30	111.00				
	2	73	206.00	22	108.00	27	82.00		
	3	73	203.00	18	388.00				
	4	73	212.00	4	356.00	16	170.00	20	132.00
	5	73	132.00	23	135.00	26	107.00		
	6	73	92.00	26	24.00				
	7	73	108.00	14	59.00	17	59.00		
	8	73	25.00	27	11.00				
	9	73	20.00	6	35.00	24	27.00		
	10	73	19.00	13	10.00				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0910 LAKE ZOAR

TOTAL DRAINAGE AREA OF LAKE 1541.00

TRIBUTARY	SUB-DRAINAGE AREA	NORMALIZED FLOWS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
0910A1	1541.00	2795.00	2746.00	4892.00	5434.00	3103.00	1951.00	1147.00	1003.00	1078.00	1174.00	2089.00	2362.00	2477.27
0910A2	1392.00	2481.00	2414.00	4256.00	4890.00	2890.00	1787.00	1053.00	922.00	811.00	1026.00	1923.00	2138.00	2212.79
0910B1	0.66	1.60	1.70	2.80	2.40	1.40	0.65	0.27	0.48	0.36	0.68	1.50	1.50	1.28
0910C1	10.80	24.00	25.00	42.00	38.00	23.00	10.00	6.00	7.90	7.10	10.00	19.00	22.00	19.47
0910D1	1.82	4.20	4.50	7.50	6.60	3.90	1.80	0.84	1.30	1.10	1.80	3.80	4.00	3.44
0910E1	26.10	55.00	58.00	97.00	92.00	55.00	25.00	16.00	19.00	18.00	23.00	44.00	51.00	46.00
0910F1	1.10	2.60	2.80	4.60	4.00	2.40	1.10	0.48	0.80	0.62	1.10	2.40	2.50	2.11
0910G1	4.96	11.00	12.00	20.00	18.00	11.00	4.80	2.50	3.60	3.10	4.70	9.50	10.00	9.16
0910ZZ	104.00	212.00	219.00	365.00	361.00	214.00	97.00	75.00	76.00	81.00	88.00	156.00	188.00	177.37

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 1541.00
SUM OF SUB-DRAINAGE AREAS = 1541.44
TOTAL FLOW IN = 29702.21
TOTAL FLOW OUT = 29774.00

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0910A1	8	72	1040.00	19	775.00				
	9	72	548.00	9	966.00	15	585.00	16	78.00
	10	72	1180.00	14	394.00	16	1720.00		
	11	72	3820.00	21	6380.00				
	12	72	6370.00	19	4390.00				
	1	73	4870.00	30	4360.00				
	2	73	6040.00	20	848.00	23	2940.00		
	3	73	4950.00	7	5330.00	18	8330.00	28	4640.00
	4	73	5530.00	10	7910.00	14	4500.00	28	4660.00
	5	73	4560.00	10	3560.00	12	6100.00	16	4850.00
	6	73	2310.00	2	1800.00	3	656.00	19	1430.00
	7	73	3410.00	9	3730.00				
	8	73	1370.00	23	1170.00				
	9	73	699.00	10	945.00	11	736.00	15	489.00
	10	73	426.00	13	496.00				
0910A2	8	72	1010.00	19	710.00				
	9	72	588.00	9	506.00	15	649.00	16	667.00
	10	72	1180.00	14	870.00	16	1060.00		
	11	72	3450.00	21	4770.00				
	12	72	5440.00	19	3460.00				
	1	73	4500.00	30	2660.00				
	2	73	4793.00	20	2560.00	23	2490.00		
	3	73	4723.00	7	3680.00	18	9026.00	28	4750.00
	4	73	4922.00	14	4770.00	16	3942.00	28	3360.00
	5	73	4170.00	10	2960.00	12	5790.00	16	4410.00
	6	73	2020.00	2	3680.00	3	3260.00	19	1290.00
	7	73	3170.00	9	3370.00				
	8	73	1400.00	23	896.00				
	9	73	781.00	10	687.00	11	667.00	15	999.00
	10	73	587.00	13	634.00				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0910 LAKE ZOAR

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0910B1	8	72	0.36	19	0.27				
	9	72	0.17	9	0.13	15	0.23	16	0.21
	10	72	0.33	14	0.26	16	0.26		
	11	72	1.50	21	2.10				
	12	72	2.60	19	1.40				
	1	73	1.80	30	1.40				
	2	73	2.50	20	1.10	23	1.20		
	3	73	1.90	7	1.30	18	3.20	28	1.70
	4	73	2.60	10	5.20	14	2.00	28	3.70
	5	73	1.70	10	1.80	12	2.10	16	1.90
	6	73	1.20	2	1.10	3	0.90	19	0.30
	7	73	1.40	9	1.40				
	8	73	0.30	23	0.20				
	9	73	0.30	10	0.20	11	0.20	15	0.60
	10	73	0.20	13	0.10				
0910C1	8	72	5.80	19	4.50				
	9	72	2.80	9	2.20	15	3.80	16	3.40
	10	72	5.40	14	4.30	16	4.20		
	11	72	25.00	21	34.00				
	12	72	43.00	19	23.00				
	1	73	29.00	30	23.00				
	2	73	41.00	20	18.00	23	20.00		
	3	73	31.00	7	22.00	18	53.00	28	28.00
	4	73	42.00	10	85.00	14	33.00	28	61.00
	5	73	28.00	10	30.00	12	35.00	16	31.00
	6	73	20.00	2	17.00	3	14.00	19	5.50
	7	73	23.00	9	23.00				
	8	73	5.30	23	3.00				
	9	73	4.30	10	3.00	11	2.70	15	9.20
	10	73	4.20	13	2.10				
0910D1	8	72	0.98	19	0.75				
	9	72	0.47	9	0.37	15	0.64	16	0.58
	10	72	0.91	14	0.73	16	0.71		
	11	72	4.10	21	5.80				
	12	72	7.30	19	3.80				
	1	73	4.90	30	3.80				
	2	73	6.90	20	3.10	23	3.40		
	3	73	5.20	7	3.60	18	8.80	28	4.60
	4	73	7.20	10	14.00	14	5.50	28	10.00
	5	73	4.80	10	5.10	12	5.80	16	5.20
	6	73	3.40	2	2.90	3	2.40	19	0.90
	7	73	3.90	9	3.80				
	8	73	0.90	23	0.50				
	9	73	0.70	10	0.50	11	0.50	15	1.60
	10	73	0.70	13	0.40				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0910 LAKE ZOAR

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0910E1	8	72	14.00	19	11.00				
	9	72	6.70	9	5.30	15	9.20	16	8.30
	10	72	13.00	14	10.00	16	10.00		
	11	72	59.00	21	83.00				
	12	72	104.00	19	55.00				
	1	73	70.00	30	55.00				
	2	73	74.00	20	40.00	23	39.00		
	3	73	73.00	7	52.00	18	140.00	28	74.00
	4	73	76.00	10	206.00	14	74.00	28	52.00
	5	73	41.00	10	73.00	12	40.00	16	39.00
	6	73	43.00	2	42.00	3	34.00	19	13.00
	7	73	56.00	9	55.00				
	8	73	13.00	23	7.30				
	9	73	10.00	10	7.30				
	9	73	10.00	10	7.30	11	6.50	15	22.00
	10	73	11.00	13	12.00				
0910F1	8	72	0.59	19	0.45				
	9	72	0.28	9	0.22	15	0.38	16	0.34
	10	72	0.54	14	0.43	16	0.42		
	11	72	2.50	21	3.40				
	12	72	4.30	19	2.30				
	1	73	2.90	30	2.30				
	2	73	4.20	20	1.80	23	2.00		
	3	73	3.10	7	2.20	18	5.30	28	2.80
	4	73	4.30	10	8.50	14	3.30	28	6.10
	5	73	2.90	10	3.10	12	3.50	16	3.10
	6	73	2.00	2	1.70	3	1.50	19	0.60
	7	73	2.40	9	2.30				
	8	73	0.50	23	0.30				
	9	73	0.40	10	0.30	11	0.30	15	0.90
	10	73	0.40	13	0.20				
0910G1	8	72	2.90	19	2.20				
	9	72	1.40	9	1.10	15	1.90	16	1.70
	10	72	2.70	14	2.10	16	2.10		
	11	72	12.00	21	17.00				
	12	72	21.00	19	11.00				
	1	73	14.00	30	11.00				
	2	73	15.00	20	8.00	23	7.80		
	3	73	14.00	7	11.00	18	28.00	28	15.00
	4	73	15.00	14	15.00	16	12.00	28	10.00
	5	73	8.20	10	14.00	12	8.00	16	7.80
	6	73	9.10	2	7.90	3	6.60	19	2.50
	7	73	11.00	9	10.00				
	8	73	2.40	23	1.40				
	9	73	2.00	10	1.40	11	1.20	15	4.20
	10	73	1.90	13	1.00				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0910 LAKE ZOAR

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0910ZZ	8	72	58.00	19	450.00				
	9	72	28.00	9	22.00	15	38.00	16	34.00
	10	72	54.00	14	43.00	16	42.00		
	11	72	250.00	21	340.00				
	12	72	430.00	19	230.00				
	1	73	290.00	30	230.00				
	2	73	309.00	20	164.00	23	160.00		
	3	73	304.00	18	581.00	28	306.00		
	4	73	317.00	14	307.00	16	254.00	28	216.00
	5	73	171.00	12	167.00	16	162.00		
	6	73	191.00	3	139.00				
	7	73	225.00	9	219.00				
	8	73	51.00	23	29.00				
	9	73	41.00	15	89.00				
	10	73	40.00	13	20.00				

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0912 LAKE HOUSATONIC

TOTAL DRAINAGE AREA OF LAKE 1574.00

TRIBUTARY	SUB-DRAINAGE AREA	NORMALIZED FLOWS JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
0912A1	1574.00	2865.00	2819.00	5013.00	5550.00	3172.00	1982.00	1168.00	1027.00	1102.00	1203.00	2143.00	2425.00	2535.08
0912A2	1541.00	2795.00	2746.00	4892.00	5434.00	3103.00	1951.00	1147.00	1003.00	1078.00	1174.00	2089.00	2362.00	2477.27
0912ZZ	33.00	70.00	73.00	121.00	116.00	69.00	31.00	21.00	24.00	24.00	29.00	54.00	63.00	57.81

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 1574.00
SUM OF SUB-DRAINAGE AREAS = 1574.00
TOTAL FLOW IN = 30469.00
TOTAL FLOW OUT = 30469.00

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0912A1	8	72	1058.00	19	789.00				
	9	72	556.00	21	1129.00				
	10	72	1190.00						
	11	72	3870.00						
	12	72	6460.00						
	1	73	4930.00						
	2	73	6170.00						
	3	73	5040.00						
	4	73	5660.00						
	5	73	4650.00						
	6	73	2370.00	3	700.00				
	7	73	3480.00						
	8	73	1390.00	23	1180.00				
	9	73	712.00	15	517.00				
	10	73	439.00						
0912A2	8	72	1040.00	19	775.00				
	9	72	548.00	21	1120.00				
	10	72	1180.00						
	11	72	3820.00						
	12	72	6370.00						
	1	73	4870.00						
	2	73	6040.00						
	3	73	4950.00						
	4	73	5530.00						
	5	73	4560.00						
	6	73	2310.00	3	656.00				
	7	73	3410.00						
	8	73	1370.00	23	1170.00				
	9	73	699.00	15	489.00				
	10	73	426.00						

TRIBUTARY FLOW INFORMATION FOR CONNECTICUT 11/26/74

LAKE CODE 0912 LAKE HOUSATONIC

MEAN MONTHLY FLOWS AND DAILY FLOWS

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0912ZZ	8	72	18.00	19	14.00				
	9	72	8.50	21	9.40				
	10	72	10.00						
	11	72	50.00						
	12	72	86.00						
	1	73	58.00						
	2	73	126.00						
	3	73	94.00						
	4	73	130.00						
	5	73	87.00						
	6	73	60.00	3	44.00				
	7	73	71.00						
	8	73	16.00	23	10.00				
	9	73	13.00	15	28.00				
	10	73	13.00						

APPENDIX B

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 74/11/26

091101
41 27 03.0 073 18 04.0
LILLINOAH LAKE
09 CONNECTICUT

11EPALES 2111202
3 0120 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/29	09 35	0000	18.5	12.4	132	290	8.60	75	0.040	0.040	0.052	0.014
	09 35	0015	17.0	8.0		200	7.50	77	0.250	0.120	0.049	0.026
	09 35	0050	16.0	7.0		210	7.30	76	0.380	0.140	0.076	0.056
72/08/03	14 45	0000			144	210	7.60	70	0.220	0.350	0.026	0.024
	14 45	0004	25.5	3.8		210	7.50	83	0.250	0.360	0.029	0.021
	14 45	0015	24.2	3.0		250	7.20	97	0.340	0.350	0.054	0.049
	14 45	0030	23.6	4.0		240	7.10	95	0.450	0.210	0.064	0.057
	14 45	0045	22.9	2.2		260	7.10	96	0.370	0.420	0.073	0.068
	14 45	0060	22.6	3.0		285	7.20	107	0.300	0.460	0.075	0.067
	14 45	0076	21.7	0.8		215	7.00	79	0.410	0.500	0.071	0.065
72/10/04	11 30	0000			204	295	7.35	98	0.180	0.550	0.054	0.048
	11 30	0004	20.1	3.5		290	7.55	98	0.180	0.560	0.054	0.050
	11 30	0015	20.1	3.5		285	7.55	98	0.180	0.540	0.054	0.048
	11 30	0040	20.0	3.4		290	7.55	97	0.180	0.540	0.053	0.048
	11 30	0064	19.6	0.6		340	7.30	113	0.270	0.880	0.075	0.067

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/29	09 35	0000	9.7J
72/08/03	14 45	0000	1.2J
72/10/04	11 30	0000	3.9J

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 74/11/26

091102
41 28 06.0 073 17 59.0
LILLINOAH LAKE
09 CONNECTICUT

11EPALES 2111202
3 0120 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/29	20 00	0000	20.1	14.2	132	200	8.70	71	0.030	0.040	0.066	0.017
	20 00	0015	17.6	11.6		200	8.50	76	0.080	0.050	0.050	0.013
	20 00	0050	15.8	7.2		150	7.20	64	0.290	0.120	0.045	0.032
72/08/03	14 15	0000			84	190	8.80	63	0.130	0.160	0.034	0.021
	14 15	0004	26.0	9.0		190	8.80	69	0.130	0.170	0.027	0.015
	14 15	0015	25.8	8.2		190	8.70	63	0.130	0.170	0.039	0.018
	14 15	0025	24.0	2.0		235	7.20	80	0.280	0.480	0.066	0.060
	14 15	0036	23.5	3.6		240	7.20	83	0.300	0.470	0.065	0.059
72/10/04	12 00	0000			180	290	7.65					
	12 00	0004	20.2	4.2		290	7.60					
	12 00	0015	20.1	4.2		290	7.65					
	12 00	0040	20.1	4.2		290	7.65					

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL a UG/L
72/05/29	20 00	0000	27.5J
72/08/03	14 15	0000	19.0J
72/10/04	12 00	0000	5.5J

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 74/11/26

091001
41 23 00.0 073 10 30.0
ZOAR LAKE
09 CONNECTICUT

11EPALES 2111202
4 0075 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/29	17 05	0000	17.7	14.0	68	195	8.70	62	0.230	0.050	0.062	0.019
	17 05	0015	16.2	7.8		200	7.50	63	0.310	0.070	0.049	0.021
	17 05	0050	15.3	6.6		200	7.30	63	0.320	0.160	0.059	0.034
72/08/03	17 00	0000			84	210	7.30	71	0.390	0.170	0.046	0.025
	17 00	0004	24.1	7.2		210	7.30	71	0.390	0.170	0.035	0.025
	17 00	0015	23.3	5.7		210	7.10	77	0.410	0.220	0.034	0.025
	17 00	0025	23.2	5.4		210	7.10	72	0.400	0.230	0.037	0.032
	17 00	0040	22.7	2.8		205	6.80	71	0.420	0.370	0.046	0.038
	17 00	0055	21.0	2.2		205	6.80	72	0.400	0.170	0.032	0.026
72/10/04	10 50	0000			78	280	7.65	91	0.320	0.340	0.043	0.034
	10 50	0004	19.6	4.9		275	7.60	90	0.320	0.320	0.042	0.034
	10 50	0015	19.6	4.8		275	7.60	91	0.320	0.330	0.043	0.032
	10 50	0030	19.5	4.9		280	7.05	92	0.320	0.080	0.050	0.017
	10 50	0042	19.3	4.0		280	7.50	92	0.390	0.510	0.060	0.030

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/29	17 05	0000	10.4J
72/08/03	17 00	0000	3.5J
72/10/04	10 50	0000	13.3J

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 74/11/26

091002
41 25 00.0 073 12 30.0
ZOAR LAKE
09 CONNECTICUT

11EPALES 2111202
4 0030 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/05/29	19	09 0000	19.0	13.6	66	160	8.90	65	0.100	0.040	0.085	0.020
	19	09 0015	18.1	7.5		200	8.50	62	0.170	0.050	0.081	0.016
	19	09 0030	15.6	7.6		205	7.40	64	0.320	0.150	0.076	0.040
72/08/03	16	35 0000			66	220	7.50	73	0.410	0.120	0.043	0.034
	16	35 0004	24.9	9.0		220	7.50	73	0.400	0.100	0.030	0.031
	16	35 0015	24.2	8.2		220	7.40	73	0.420	0.150	0.034	0.028
	16	35 0020	24.0	7.8		220	7.30	74	0.400	0.180	0.034	0.029
72/10/04	11	15 0000			84	280	7.75					
	11	15 0004	19.5	5.6		280	7.75					
	11	15 0015	19.3	5.6		280	7.70					
	11	15 0030	18.6	4.3		280	7.75					

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/05/29	19	09 0000	45.5J
72/08/03	16	35 0000	16.3J
72/10/04	11	15 0000	20.6J

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 74/11/26

091201
41 19 40.0 073 06 23.0
SHELTON LAKE
09 CONNECTICUT

11EPALFS 2111202
3 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/06/09	09 55	0000	18.2	7.4	62	220	7.70	71	0.300	0.170	0.050	0.032
	09 55	0010	18.1	7.4		190	7.70	70	0.310	0.170	0.046	0.036
72/08/03	17 45	0000			96	210	7.20	77	0.440	0.130	0.045	0.027
	17 45	0004	23.8	7.8		210	7.20	78	0.440	0.130	0.042	0.025
	17 45	0012	23.7			210	7.10	78	0.400	0.170	0.035	0.031
72/10/04	09 15	0000			60	260	7.80	92	0.400	0.150	0.037	0.030
	09 15	0004	18.2	8.1		260	7.90	90	0.400	0.150	0.038	0.032

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/06/09	09 55	0000	2.3J
72/08/03	17 45	0000	13.2J
72/10/04	09 15	0000	15.5J

J VALUE KNOWN TO BE IN ERROR

STORET RETRIEVAL DATE 74/11/26

091202
41 20 10.0 073 07 07.0
SHELTON LAKE
09 CONNECTICUT

11EPALES 2111202
3 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00630 NO2&NO3 N-TOTAL MG/L	00610 NH3-N TOTAL MG/L	00665 PHOS-TOT MG/L P	00666 PHOS-DIS MG/L P
72/10/04	09 30	0000			84	260	7.80	92	0.390	0.190	0.037	0.028
	09 30	0004	18.5	7.2		260	7.75	91	0.390	0.190	0.041	0.028
	09 30	0008	18.5	7.1		260	7.75	91	0.390	0.220	0.035	0.029

DATE FROM TO	TIME OF DAY	DEPTH FEET	32217 CHLRPHYL A UG/L
72/10/04	09 30	0000	10.0J

J VALUE KNOWN TO BE IN ERROR

APPENDIX C

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 74/11/26

0911A1 LS0911A1
41 32 30.0 073 24 30.0
HOUSATONIC RIVER
09 7.5 NEW MILFORD
I/LAKE LILLINOAH
BRDG S EDGE NEW MILFORD
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	10 20		0.300	4.700	0.231	0.154	0.380
72/09/21	10 00		0.299	1.300	0.230	0.100	0.160
72/10/19	16 00		0.354	0.567	0.099	0.087	0.120
72/12/14	12 00		0.440		0.078	0.029	
73/02/27	10 40		1.100	1.150	0.770	0.310	0.345
	18 30		0.315	0.380	0.015	0.028	0.060
73/04/04	12 00		0.400	0.500	0.056	0.040	0.090
73/04/20	14 40		0.290	0.630	0.034	0.022	0.050
73/07/17	14 07		0.220	1.200	0.093	0.019	0.075
73/08/27	14 29		0.061	0.860	0.018	0.030	0.105
73/09/24	12 45		0.590	0.670	0.140	0.084	0.140

STORET RETRIEVAL DATE 74/11/26

0911A2 LS0911A2
41 33 30.0 073 24 30.0
HOUSATONIC RIVER
09 7.5 NEW MILFORD
I/LAKE LILLINOAH
NEAR PENN CENTRAL RR BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	10 40		0.299	1.400	0.152	0.037	0.095
72/09/21	10 00		0.272	1.770	0.128	0.093	0.173
72/10/19	16 10		0.360	0.645	0.138	0.050	0.147
72/12/04	12 00		0.430		0.065	0.029	
73/04/04	12 00		0.390	0.500	0.032	0.025	0.065
73/04/20	14 50		0.300	0.540	0.039	0.025	0.055
73/05/29	15 15		0.340	1.600	0.073	0.044	0.085
73/07/17	14 10		0.315	1.050	0.014	0.019	0.075
73/08/27	09 32		0.160	0.860	0.168	0.078	0.208
73/09/24	12 40		0.530	0.720	0.096	0.040	0.095

STORET RETRIEVAL DATE 74/11/26

0911A3 LS0911A3
41 34 30.0 073 25 00.0
HOUSATONIC RIVER
09 7.5 NEW MILFORD
I/LAKE LILLINOAH
ST HWY 67 BRDG ABOVE NEW MILFORD STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	11 00		0.450	0.900	0.370	0.056	0.115
72/10/19	16 20		0.320	0.540	0.078	0.046	0.081
72/12/04	12 00		0.470		0.054	0.030	
73/02/27	10 55		0.530	0.340	0.105	0.035	0.045
73/04/04	12 00		0.390	0.880	0.038	0.025	0.067
73/04/20	15 00		0.300	0.720	0.058	0.028	0.060
73/05/29	16 00		0.360	1.600	0.088	0.044	0.085
73/07/17	14 11		0.330	1.150	0.019	0.016	0.065
73/08/27	15 41		0.200	0.840	0.105	0.048	0.125
73/09/24	12 30		0.570	0.520	0.105	0.037	0.065

STORET RETRIEVAL DATE 74/11/26

0911A4 L5091144
41 39 00.0 073 29 00.0
HOUSATONIC RIVER
09 7.5 KENT
I/LAKE LILLINOAH
US 7 BRDG BELOW KENT STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	11	15	0.340	0.760	0.040	0.046	0.100
72/09/21	17	30	0.505	1.190	0.047	0.044	0.132
72/10/19	17	20	0.480	0.427	0.009	0.066	0.090
72/11/22	16	25	0.273			0.040	
73/02/27	18	15	0.460	0.360	0.031	0.029	0.070
73/06/09	10	45	0.930	0.440	0.088	0.050	0.070
73/09/09	12	55	0.010K	0.630	0.011	0.023	0.095

K VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0911A5 LS0911A5
41 43 30.0 073 29 00.0
HOUSATONIC RIVER
09 7.5 KENT
I/LAKE LILLINOAH
ST HWY 341 BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.250	0.820	0.048	0.038	0.066
72/09/21	17 25		0.227	1.130	0.085	0.024	0.060
72/10/19	17 10		0.450	0.425	0.024	0.060	0.072
72/11/22	16 10		0.430			0.036	
73/02/27	18 45		0.315	0.340	0.031	0.027	0.050
73/06/09	11 00		0.430	0.220	0.005K	0.023	0.045
73/09/09	12 45		0.010K	0.980	0.024	0.015	0.060

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0911B1 LS0911B1
41 31 00.0 073 19 00.0
SHEPAUG RIVER
09 7.5 ROXBURY
0/LAKE LILLINOAH
AT MINOR BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	12	35	0.402	0.300	0.046	0.026	0.044
72/09/21	09	00	0.195	1.480	0.168	0.025	0.066
72/10/19	18	10	0.104	0.845	0.030	0.038	0.126
72/11/22	10	30	0.250		0.017	0.007	
73/02/22	06	50	0.470	0.480	0.110	0.015	0.050
73/04/16	18	00	0.230	1.400	0.094	0.015	0.210
73/04/29	19	10	0.100	0.750	0.105	0.007	0.035
73/06/26	19	40	0.154	2.200	0.067	0.032	0.045
73/07/14	19	50	0.147	1.540	0.100	0.020	0.040
73/09/06	06	30	0.168	0.560	0.062	0.014	0.045
73/09/24	10	45	0.336	0.290	0.056	0.010	0.020

STORET RETRIEVAL DATE 74/11/26

0911C1 LS0911C1
41 23 00.0 073 25 30.0
SYMPAUG BROOK
09 7.5 DANBURY
T/LAKE LILLINOAH
WOOSTER ST BRDG BELOW BETHEL STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			3.700	3.300	2.200	1.100	1.580
72/10/19	17 03		0.578	6.100			2.700
72/11/22	11 30		0.510		0.360	0.490	
73/02/27	07 00		0.560	3.300	1.890	0.850	1.000
73/04/16	18 30		0.252	3.900	0.180	0.440	0.860
73/04/29	20 15		1.020	0.600	0.005K	0.450	0.530
73/05/13	20 45		2.750	1.260	0.031	0.670	0.830
73/06/26	19 00		4.200	1.600	0.099	0.960	1.100
73/07/14	15 30		0.430	6.000	2.500	0.860	1.100
73/09/06	06 45		0.330	12.600	9.700	2.100	2.620
73/09/24	09 30		0.450	4.450	1.700	0.670	1.150

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

091101 LS0911D1
41 24 30.0 073 25 00.0
LIMEKILN BROOK
09 7.5 DANBURY
T/LAKE LILLINOAH
NEWTON RD BRDG BELOW DANBURY STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/21				7.450			0.680
72/10/19	17 30		1.890	4.300	3.200	2.950	3.900
72/11/22	11 00		1.600		1.800	1.160	
73/02/27	07 20		1.400	4.200	2.700	1.200	1.570
73/04/16	18 45		0.900	3.990	2.600	1.020	1.480
73/04/29	20 05		0.970	0.520	0.231	0.176	0.210
73/06/23			2.400	0.950	0.024	0.560	0.975
73/06/26	20 00		1.380	5.400	3.100	1.200	2.000
73/07/14	20 05		1.260	6.200	3.300	1.500	2.000
73/09/06	07 00		2.120	11.500	7.560	4.200	5.300
73/09/16	09 30		1.360	8.300	4.300	2.000	2.800

STORET RETRIEVAL DATE 74/11/26

0911E1 LS0911E1
41 32 30.0 073 25 00.0
STILL RIVER
09 7.5 NEW MILFORD
T/LAKE LILLINOAH
BRDG IN TOWN OF STILL RIVER
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/21			0.750	1.300	0.176	0.372	0.525
72/10/19	15 30		0.338	2.100	0.280	0.215	1.370
72/12/04	12 00		0.900		0.410	0.176	
73/02/27	10 30		0.840	0.480	0.198	0.083	0.105
73/04/04	12 00		0.600	1.130	0.360	0.190	0.290
73/04/20	14 30		0.880	1.470	0.670	0.320	0.410
73/05/29	15 30		0.740	1.980	0.560	0.220	0.970
73/07/17	14 05		1.640	1.390	0.210	0.356	0.440
73/08/27	14 20		3.300	0.960	0.190	1.100	1.200
73/09/24	12 50		1.900	1.800	0.570	0.510	0.710

STORET RETRIEVAL DATE 74/11/26

0911F1 LS0911F1
41 43 30.0 073 29 00.0
MACEDONIA BROOK
09 7.5 KENT
T/LAKE LILLINOAH
ST HWY BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.286	1.100	0.151	0.034	0.086
72/09/21	17 10		0.503	0.820	0.057	0.052	0.086
72/10/19	17 00		0.500	0.770	0.014	0.070	0.113
72/11/22	15 45		0.300		0.755	0.042	
73/09/09	12 30		0.010K	0.540	0.011	0.019	0.070

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/27

091150 AS091150 P007000
41 23 30.0 073 25 30.0
BETHAL
09 7.5 DANBURY
T/LAKE LILLINONAH
STILL RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/05	08 00								
CP(T)-			0.140	14.000	0.310	2.125		0.600	0.600
73/01/05	16 00								
73/02/09	08 00								
CP(T)-			0.020	28.000	2.100	3.600	9.800	0.650	0.600
73/02/09	16 00								
73/03/09	08 00								
CP(T)-			0.060	29.000	4.500	3.800	8.200	0.625	0.600
73/03/09	16 00								
73/04/06	08 00								
CP(T)-			0.075	18.000	3.700	3.800	6.300	0.662	0.580
73/04/06	16 00								
73/05/04	08 00								
CP(T)-			0.150	25.200	3.400	2.700	5.750	0.659	0.650
73/05/04	16 00								
73/06/08	08 00								
CP(T)-			0.031	26.000	6.200	3.600	5.900	0.640	0.600
73/06/08	16 00								
73/07/13	08 00								
CP(T)-			0.043	24.000	6.900	2.900	4.000	0.550	0.600
73/07/13	16 00								
73/08/03	08 00								
CP(T)-								0.560	0.550
73/08/03	16 00								
73/09/07	08 00								
CP(T)-			0.018	23.100	6.600	4.180	4.900	0.510	0.530
73/09/07	16 00								
73/10/05	08 00								
CP(T)-			0.090	41.000	8.000	4.100	7.100	0.450	0.450
73/10/05	16 00								
73/12/07	08 00								
CP(T)-			0.120	11.500	0.380	0.810	2.600	0.440	0.450
73/12/07	16 00								
74/01/04	08 00								
CP(T)-			0.640	19.500	5.700	2.520	3.700	0.550	0.500
74/01/04	16 00								

STORET RETRIEVAL DATE 74/11/27

091150 AS091150 P007000
41 23 30.0 073 25 30.0
BETHAL
09 7.5 DANBURY
T/LAKE LILLINONAH
STILL RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/02/01	08 00								
CP(T)-			0.280	15.000	4.300	0.950	2.400	0.620	0.600
74/02/01	16 00								

STORET RETRIEVAL DATE 74/11/27

091151 TF091151 P029000
41 24 00.0 073 25 00.0
DANBURY
09 7.5 DANBURY
T/LAKE LILLINONAH
UNNAMED STREAM
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/03	07 00								
CP(T)-			2.100	7.900	0.240	2.300	3.600	8.340	
73/01/03	16 00								
73/02/28	07 00								
CP(T)-			0.840	14.000	4.100	4.900		7.660	8.640
73/02/28	16 00								
73/03/30	07 00								
CP(T)-			0.670	13.000	3.800	5.000	6.300	8.500	8.750
73/03/30	16 00								
73/04/30	07 00								
CP(T)-			1.790	11.300	0.910	3.200	4.600	8.500	8.250
73/04/30	16 00								
73/05/31	07 00								
CP(T)-			2.500	11.000	2.850	3.000	4.950	7.750	8.300
73/05/31	16 00								
73/06/29	07 00								
CP(T)-			1.500	13.000	2.900	3.200	5.500	7.760	7.390
73/06/29	16 00								
73/07/31	07 00								
CP(T)-			0.400	15.000	5.300	5.300	6.400	6.800	8.250
73/07/31	16 00								
73/08/31	07 00								
CP(T)-				12.600	3.700	4.180	5.300	8.500	8.650
73/08/31	16 00								
73/09/28	07 00								
CP(T)-			2.800	17.000	7.600	5.300	6.600	8.250	8.400
73/09/28	16 00								
73/10/31	07 00								
CP(T)-			1.400	14.000	2.700	3.990	5.900	8.870	8.170
73/10/31	16 00								
73/11/30	07 00								
CP(T)-			1.150	24.000	7.300	4.250	6.200	8.300	8.750
73/11/30	16 00								
73/12/28	07 00								
CP(T)-			1.760	9.600	0.755	2.200	4.000	9.250	9.800
73/12/28	16 00								

STORET RETRIEVAL DATE 74/11/27

091151 TF091151 P029000
41 24 00.0 073 25 00.0
DANBURY
09 7.5 DANBURY
T/LAKE LILLINONAH
UNNAMED STREAM
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/01/31	07 00								
CP(T)-			1.200	9.200	0.430	1.700	5.250	10.300	10.000
74/01/31	16 00								

STORET RETRIEVAL DATE 74/11/27

091152 AS091152 P000900
41 43 00.0 073 29 00.0
KENT
09 7.5 KENT
T/LAKE LILLINONAH
HOUSATONIC RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/01	08 00								
CP(T)-			16.000	3.600	0.230	6.600	7.780	0.042	0.044
73/01/01	16 00								
73/02/01	07 00								
CP(T)-			24.400	0.680	0.240	7.853	8.300	0.047	0.044
73/02/01	14 00								
73/03/01	08 00								
CP(T)-			19.600	1.470	0.270	7.200	7.200	0.047	0.045
73/03/01	15 00								
73/04/02	07 45								
CP(T)-			13.000	0.700	0.005K	4.800	6.000	0.043	0.044
73/04/02	13 30								
73/05/03	08 00								
CP(T)-			12.300	0.560	0.430	9.050	9.300	0.042	0.044
73/05/03	15 00								
73/06/04	07 00								
CP(T)-			19.600		0.019	9.310	9.310	0.040	0.044
73/06/04	14 30								
73/07/10	07 00								
CP(T)-			19.400	0.810	0.105	8.000	8.000	0.032	0.034
73/07/10	15 00								
73/08/02	07 30								
CP(T)-			22.000			10.900	11.000	0.025	0.030
73/08/02	14 00								
73/09/05	08 00								
CP(T)-							9.100	0.031	0.029
73/09/05	15 00								
73/11/03	07 15								
CP(T)-			26.000	0.500K	0.160	6.600	7.100	0.052	0.050
73/11/03	10 30								
73/12/03	06 30								
CP(T)-			25.000	1.000K	0.053	6.000	6.400	0.050	0.047
73/12/03	24 30								
74/01/02	07 30								
CP(T)-			8.500	1.400	0.120	2.160	2.500	0.037	0.042
74/01/02	13 30								

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/27

091152 AS091152 P000900
41 43 00.0 073 29 00.0
KENT
09 7.5 KENT
T/LAKE LILLINONAH
HOUSATONIC RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/02/01	07 00								
CP(T)-			20.900	3.700	0.085	6.130	9.000	0.050	0.052
74/02/01	13 30								

STORET RETRIEVAL DATE 74/11/27

091153 AS091153 P004000
41 34 00.0 073 24 30.0
NEW MILFORD
09 7.5 NEW MILFORD
T/LAKE LILLINONAH
HOUSATONIC RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/04	08	00							
CP(T)-			0.270	17.000	5.300	3.950	5.600	0.680	0.529
73/01/04	16	00							
73/02/06	08	00							
CP(T)-			1.160	14.000	3.900	2.900	4.200	0.587	0.509
73/02/06	16	00							
73/03/05	08	00							
CP(T)-			0.065	25.200	13.200	4.900	6.600	0.511	0.548
73/03/05	16	00							
73/04/03	08	00							
CP(T)-			0.095	20.000	7.800	4.350	5.230	0.650	0.522
73/04/03	16	00							
73/05/03	08	00							
CP(T)-			0.100	22.200	12.500	6.050	7.200	0.577	0.528
73/05/03	16	00							
73/06/04	08	00							
CP(T)-			0.072	29.000	15.600	3.800	6.800	0.400	0.497
73/06/04	16	00							
73/07/05	08	00							
CP(T)-			12.000	6.300	1.540	3.990	4.600	0.625	0.500
73/07/05	16	00							
73/08/07	08	00							
CP(T)-			0.240	20.000	6.900	6.900	7.900	0.522	0.512
73/08/07	16	00							
73/09/10	08	00							
CP(T)-			0.320	26.000	13.300	7.400	8.125	0.491	0.504
73/09/10	16	00							
73/10/10	08	00							
CP(T)-			0.950	30.000	20.000	6.100	8.000	0.538	0.510
73/10/10	16	00							
73/11/06	08	00							
CP(T)-			0.070	35.000	20.000	6.400	8.200	0.500	0.492
73/11/06	16	00							
73/12/04	08	00							
CP(T)-			0.290	31.500	19.000	5.400	6.800	0.450	0.495
73/12/04	16	00							

STORET RETRIEVAL DATE 74/11/26

0910A1 0912A2
41 23 00.0 073 10 00.0
HOUSATONIC RIVER
09 7.5 SOUTHBURY
O/LAKE ZOAR
AT GAGING STA JUST BELOW STEVENSON DAM
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.420	0.840	0.080	0.042	0.042
72/10/14	08 00		0.430	0.782	0.200	0.064	0.110
73/01/30	13 45		0.880	0.380	0.052	0.006	0.020
73/06/03	09 00		0.310	1.890	0.170	0.026	0.060
73/08/23	12 15		0.200	0.130	0.014	0.009	0.015
73/09/15	15 00		0.378	0.540	0.147	0.025	0.090

STORET RETRIEVAL DATE 74/11/26

0910A2 0911A6
41 27 00.0 073 18 00.0
HOUSATONIC RIVER
09 7.5 NEWTON
I/LAKE ZOAR
SHEPAUG DAM
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	15 40		0.600	0.800	0.160	0.050	0.063
72/09/16	10 50		0.064	1.450	0.562	0.058	0.115
72/10/16	11 15		0.380	0.980	0.240	0.080	0.097,
72/11/21	12 05		0.365	0.660	0.140	0.052	0.081
72/12/19	14 00		0.540	1.260	0.130	0.029	0.054
73/01/30	14 00		0.560	0.600	0.126	0.042	0.085
73/02/20	11 00		0.600	0.220	0.084	0.027	0.045
73/02/23	11 15		0.440	0.460	0.092	0.021	0.050
73/03/18	12 31		0.260	0.690	0.037	0.005K	0.030
73/04/16	10 30		0.430	0.250	0.046	0.023	0.050
73/05/16	10 20		0.220	0.630	0.110	0.028	0.070
73/06/19	13 35		0.800	0.750	0.220	0.033	0.051
73/08/23	12 45		0.340	1.470	0.300	0.052	0.087
73/09/11	12 15		0.350	1.800	0.350	0.058	0.090
73/10/13	12 40		0.440	0.750	0.147	0.037	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

091081 LS091081
41 23 00.0 073 11 00.0
BOYS HALFWAY RIVER
09 7.5 SOUTHBURY
T/LAKE ZOAR
ST HWY 34 BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/09	14 10		0.247	0.300	0.069	0.010	0.012
72/10/14	11 00		0.270	0.480	0.092	0.008	0.026
73/04/10	10 00		0.370			0.017	0.025
73/08/23	11 46		0.200	0.200	0.012	0.012	0.015
73/09/15	13 00		0.270	0.160	0.020	0.007	0.025

STORET RETRIEVAL DATE 74/11/26

0910C1 LS0910C1
41 23 30.0 073 11 30.0
HALFWAY RIVER
09 7.5 SOUTHBURY
T/LAKE ZOAR
ST HWY 34 BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.190	0.840	0.052	0.008	0.024
72/10/14	14 00		0.135	1.030	0.093	0.013	0.031
72/11/05	13 30		0.560	0.480	0.013	0.005K	0.025
73/03/07	08 00		0.150	0.200	0.095	0.007	0.040
73/04/10	13 00		0.147	1.420	0.060	0.010	0.030
73/08/23	10 39		0.200	0.540	0.028	0.008	0.030
73/09/15	12 00		0.198	0.600	0.031	0.010	0.047

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0910D1 LS0910D1
41 25 30.0 073 14 30.0
NO NAME
09 7.5 SOUTHBURY
T/LAKE ZOAR
BENNETTS BRIDGE RD BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	17 30		0.370	1.150	0.073	0.010	0.056
72/09/09			0.347	0.450	0.110	0.006	0.042
72/11/05	15 00		0.227	0.520	0.160	0.009	0.017
73/03/07	13 00		0.300	1.260	0.086	0.007	0.025
73/04/10	09 00		0.310	0.350	0.126	0.009	0.020
73/08/23	10 55		0.290	0.300	0.034	0.008	0.020
73/09/15	12 00		0.450	0.520	0.031	0.008	0.040

STORET RETRIEVAL DATE 74/11/26

0910E1 LS0910E1
41 26 30.0 073 16 00.0
POCTATUCK RIVER
09 7.5 NEWTON
T/LAKE ZOAR
WALNUT TREE HILL RD BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/16	10 35		0.450	0.750	0.125	0.320	0.390
72/10/14	10 50		0.742	0.400	0.110	0.160	0.190
72/11/21	12 20		0.480	0.610	0.066	0.052	0.078
73/01/30	14 15		0.850	0.480	0.061	0.075	0.110
73/03/18	11 00		0.340	0.520	0.044	0.008	0.070
73/03/28	11 05		0.570	0.400	0.038	0.038	0.055
73/04/14	10 15		0.550	0.325	0.024	0.035	0.045
73/04/28	14 45		0.350	0.420	0.046	0.026	0.230
73/05/12	13 30		0.378	0.480	0.120	0.044	0.080
73/06/19	12 40		0.270	1.000	0.157	0.037	0.170
73/07/09	20 15		0.550	0.630	0.060	0.082	0.120
73/08/23	12 55		0.810	0.740	0.095	0.170	0.230
73/09/10	11 05		1.000	1.050	0.070	0.176	0.230
73/09/15	10 00		0.550	1.200	0.198	0.150	0.260
73/10/13	12 30		0.860	0.285	0.038	0.336	0.340

STORET RETRIEVAL DATE 74/11/26

0910F1 LS0910F1
41 26 00.0 073 14 00.0
LEE BROOK
09 7.5 SOUTHBURY
T/LAKE ZOAR
LAKESIDE RD BRDG
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			0.945	0.380	0.170	0.012	0.017
72/09/09	11 20		0.560	0.300	0.048	0.009	0.012
72/10/14	16 00		0.575	0.490	0.029	0.010	0.016
72/11/05	16 10		0.200	0.400	0.050	0.011	0.019
73/06/03	17 00		0.510	1.320	0.189	0.010	0.020
73/08/23	11 20		1.060	0.250	0.021	0.007	0.015
73/09/15	11 00		0.680	0.210	0.013	0.008	0.025

STORET RETRIEVAL DATE 74/11/26

0910G1 LS0910G1
41 26 00.0 073 12 30.0
KETTLETOWN BROOK
09 7.5 SOUTHBURY
T/LAKE ZOAR
BRDG IN KETTLETOWN ST PARK
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19			1.260		0.600	0.430	
72/09/09	10 45		0.600	0.650	0.065	0.011	0.017
72/10/19	15 30		0.460	0.600	0.100	0.022	0.060
72/11/05	17 00		0.470	0.540	0.025	0.020	0.054
73/02/20	11 15		0.850	0.100K	0.026	0.044	0.060
73/06/03	15 00		0.340	2.800	0.080	0.013	0.055
73/08/23	11 40		0.399	0.685	0.032	0.010	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0910H1 LS0910H1
41 24 30.0 073 19 30.0
DEEP BROOK
09 7.5 NEWTON
T/LAKE ZOAR
CROSSING OFF QUEEN ST ABOVENEWTON STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/16	11 35		0.647	0.550	0.089	0.006	0.023
72/10/14	11 40		0.620	0.300	0.068	0.006	0.023
72/11/21	12 30		0.585	0.260	0.042	0.011	0.026
72/12/19	14 20		0.800	0.420	0.058	0.010	0.040
73/01/30	14 25		0.965	0.460	0.054	0.009	0.025
73/02/20	11 30		0.880	0.100K	0.048	0.007	0.015
73/03/18	12 30		0.540	0.330	0.024	0.006	0.030
73/03/28	11 25		0.610	0.360	0.016	0.005K	0.015
73/04/14	10 45		0.560	0.210	0.022	0.008	0.015
73/04/28	14 50		0.320	0.600	0.029	0.015	0.125
73/05/12	13 15		0.280	1.150	0.140	0.008	0.030
73/06/19	12 50		0.540	0.625	0.140	0.021	0.040
73/07/09	20 45		0.450	0.500	0.034	0.015	0.035
73/08/23	13 15		0.540	0.410	0.063	0.028	0.040
73/09/09	12 15		0.550	0.880	0.088	0.025	0.035

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0910H2 LS0910H2
41 24 30.0 073 17 00.0
DEEP BROOK
09 7.5 NEWTON
T/LAKE ZOAR
DIRT RD XING BELOW NEWTON STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/16	11 45		0.590	0.850	0.063	0.640	1.100
72/10/14	12 00		0.995	0.275	0.052	1.800	1.880
72/11/21	12 35		2.100	0.750	0.072	1.070	5.700
73/01/30	14 40		0.990	0.970	0.074	0.065	0.110
73/02/20	11 45		0.950	0.100K	0.032	0.036	0.070
73/03/18	12 45		0.580	0.610	0.008	0.008	0.035
73/03/28	11 35		0.630	0.250	0.007	0.028	0.070
73/04/14	10 55		1.360	1.150	0.060	0.720	0.790
73/04/28	14 20		0.980	0.840	0.220	0.450	0.550
73/05/12	13 00		1.520	1.150	0.160	0.770	1.350
73/06/19	12 55		4.000	1.470	0.078	3.200	3.400
73/07/09	20 30		4.500	0.820	0.030	2.100	2.200
73/08/23	13 10		4.800	0.880	0.100		3.918
73/09/09	12 05		3.100	0.800	0.072	3.300	3.700
73/10/13	11 55		3.700	0.880	0.036	3.100	3.400

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0910J1 LS0910J1
41 29 30.0 073 15 30.0
TRANSYLVANIA BROOK
09 7.5 NEWTON
T/LAKE ZOAR
ST HWY 172 BRDG ABOVE TRNG SCH STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	14	14	0.311	0.270	0.052	0.007	0.021
72/09/16	10	00	0.329	0.150	0.060	0.005K	0.009
72/10/14	10	05	0.280	0.100K	0.055	0.005K	0.005K
72/11/21	11	45	0.307	1.150	0.270	0.006	0.011
72/12/19	13	40	0.357	0.850	0.100	0.008	0.038
73/01/30	13	25	0.410	0.390	0.025	0.005K	0.020
73/02/20	10	25	0.336	0.100K	0.011	0.005K	0.010
73/03/18	10	00	0.294	0.170	0.005K	0.005K	0.010
73/03/28	10	40	0.260	0.200	0.021	0.006	0.010
73/04/14	09	30	0.252	0.100K	0.013	0.005K	0.005K
73/04/28	15	05	0.180	0.210	0.046	0.006	0.010
73/05/12	14	15	0.160	1.760	0.330	0.010	0.035
73/06/19	12	15	0.270	0.900	0.068	0.011	0.015
73/07/09	19	45	0.176	0.170	0.032	0.011	0.015
73/08/23	12	24	0.370	0.100K	0.060	0.009	0.015
73/09/09	10	40	0.320	0.580	0.039	0.007	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0910J2 LS0910J2
41 29 00.0 073 15 30.0
TRANSYLVANIA BROOK
09 7.5 NEWTON
1/LAKE ZOAR
SPRUCE BRK RD BRDG BELO SOUTHBURY SC STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	15 00		3.300	1.000	0.042	0.005K	1.320
72/09/16	10 10		0.860	0.600	0.048	0.315	0.560
72/11/21	11 50		0.890	0.290	0.056	0.240	0.294
72/12/19	13 50		0.870	1.760	0.730	0.320	0.470
73/01/30	13 40		0.840	1.000	0.540	0.252	0.400
73/02/20	10 45		0.960	1.050	0.770	0.470	0.540
73/03/18	10 05		0.700	0.580	0.198	0.099	0.168
73/03/28	10 45		0.950	0.200	0.022	0.350	0.380
73/04/14	10 00		0.610	0.150	0.023	0.120	0.145
73/04/28	15 00		0.600	0.300	0.018	0.157	0.230
73/05/12	14 00		0.880	0.560	0.230	0.170	0.210
73/06/19	12 25		5.100	0.400	0.056	1.680	1.800
73/07/09	19 55		1.440	0.240	0.020	0.294	0.390
73/08/23	12 30		1.340	1.050	0.085	0.780	0.850
73/09/09	10 50		1.900	0.380	0.034	1.580	1.800
73/10/13	12 55		3.000	0.520	0.032	2.400	2.700

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0910K1 LS0910K1
41 30 00.0 071 13 30.0
POMERANG RIVER
09 7.5 WOODBURY
T/LAKE ZOAR
ST HWY 6M BRDG ABOVE HERITAGE VLG STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/09/16	09 50		0.885	0.300	0.044	0.006	0.015
72/10/14	09 45		0.700	0.300	0.047	0.005K	0.013
72/11/21	11 35		0.595	0.380	0.046	0.013	0.034
72/12/19	13 30		0.950	0.500	0.029	0.009	0.014
73/02/20	10 25		0.940	0.100K	0.020	0.007	0.015
73/03/18	09 45		0.580	0.860	0.065	0.013	0.075
73/03/28	10 30		0.640	0.380	0.018	0.005K	0.015
73/04/14	09 35		0.630	0.190	0.016	0.008	0.015
73/04/28	15 45		0.380	0.520	0.132	0.015	0.065
73/05/16	10 30		0.390	0.420	0.040	0.007	0.035
73/06/19	12 05		0.770	0.210	0.023	0.019	0.020
73/07/09	19 30		0.530	0.560	0.015	0.009	0.022
73/08/23	12 12		0.860	1.100	0.078	0.010	0.015
73/09/09	10 25		0.670	1.260	0.126	0.011	0.045
73/10/13	13 15		0.690	0.160	0.014	0.008	0.015

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/26

0910K2 LS0910K2
41 49 00.0 073 13 30.0
POMERANG RIVER
09 7.5 SOUTHBURY
1/LAKE ZOAR
BELO GAGING STA BELOW HERITAGE VLG STP
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	10 00		0.787	0.500	0.231	0.110	0.140
72/09/16	09 30		0.972	0.650	0.333	0.099	0.126
72/11/21	11 30		0.575	0.610	0.110	0.022	0.048
72/12/19	13 20		0.910	0.420	0.042	0.018	0.040
73/01/30	13 10		0.850	0.660	0.054	0.019	0.040
73/02/20	10 00		0.940	0.190	0.048	0.022	0.065
73/03/18	09 50		0.580	0.440	0.050	0.007	0.060
73/03/28	10 25		0.640	0.250	0.029	0.010	0.030
73/04/14	09 20		0.630	0.360	0.050	0.017	0.025
73/04/28	15 30		0.390	0.600	0.099	0.024	0.085
73/05/16	10 15		0.410	0.440	0.035	0.017	0.050
73/06/19	11 55		0.780	0.540	0.105	0.071	0.100
73/07/09	19 25		0.550	0.310	0.037	0.028	0.060
73/08/23	12 05		0.780	0.610	0.200	0.240	0.280
73/09/09	10 20		0.640	0.480	0.168	0.150	0.175
73/10/13	13 25		0.680	0.800	0.140	0.077	0.095

STORET RETRIEVAL DATE 74/11/27

091050 SF091050 P000600
41 24 30.0 073 17 00.0
NEWTON
09 7.5 NEWTON
T/LAKE ZOAR
DEEP BROOK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/10	11 00								
CP(T)-			4.600	1.700	0.052	4.100		0.450	0.440
73/01/10	15 30								
73/02/13	11 00								
CP(T)-			6.400	0.340	0.088	3.900	4.000	0.460	0.450
73/02/13	15 30								
73/03/12	11 00								
CP(T)-			6.300	4.600	0.060	5.425	5.491	0.391	0.430
73/03/12	15 00								
73/04/13	11 00								
CP(T)-			0.025	33.000	0.050	0.050	4.700	0.412	0.451
73/04/13	15 00								
73/05/11	11 00								
CP(T)-			7.400	0.300	0.150	6.200	6.300	0.430	0.452
73/05/11	15 00								
73/06/12	11 00								
CP(T)-			6.200	1.000	0.094	5.775	6.800	0.380	0.410
73/06/12	15 00								
73/07/11	11 00								
CP(T)-			4.400	0.640	0.280	4.900	5.300	0.325	0.400
73/07/11	15 00								
73/08/13	11 00								
CP(T)-			5.300	0.340	0.040	5.400		0.380	0.390
73/08/13	15 00								
73/09/11			5.700	1.200	0.095	4.946	5.219	0.316	0.387
73/10/23	11 00								
CP(T)-			6.100	6.830	0.180	6.825	6.830	0.373	0.373
73/10/23	15 00								
73/11/13	11 00								
CP(T)-			6.900	1.600	0.360	6.100	6.650	0.350	0.365
73/11/13	15 00								
73/12/18	11 00								
CP(T)-			5.600	0.810	0.043	4.800	4.900	0.427	0.356
73/12/18	15 00								

STORET RETRIEVAL DATE 74/11/27

091051 SF091051 P000500
41 29 00.0 073 15 30.0
SOUTHBURY
09 7.5 NEWTON
T/LAKE ZOAR
TRANSYLVANIA BROOK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/01/15	11 00								
CP(T)-			3.100	23.000	8.650	7.400		0.362	0.325
73/01/15	16 00								
73/02/13	11 00								
CP(T)-			2.300	16.000	5.800	6.000	7.500	0.407	0.400
73/02/13	16 00								
73/03/12	11 00								
CP(T)-			2.900	16.800	6.100	6.800	7.350	0.260	0.250
73/03/12	16 00								
73/04/16	11 00								
CP(T)-			11.000	0.320	0.155	5.200	5.200	0.352	0.350
73/04/16	16 00								
73/05/17			9.000	0.125	0.125	6.900	7.100		
73/06/11	11 00								
CP(T)-			13.500	0.100K	0.063	5.400	7.575	0.189	0.220
73/06/11	16 00								
73/08/13	11 00								
CP(T)-			3.400	0.800	0.045	2.940	22.000	0.191	0.200
73/08/13	16 00								
73/09/17	11 00								
CP(T)-			7.600	0.580	0.015	7.420	7.600	0.227	0.220
73/09/17	16 00								
73/10/16	11 00								
CP(T)-			15.600	0.500K	0.038	8.700	9.100	0.221	0.215
73/10/16	16 00								
73/11/14	11 00								
CP(T)-			7.200	0.500K	0.110	7.400	7.650	0.200	0.210
73/11/14	16 00								
73/12/17	11 00								
CP(T)-			4.100	2.750	0.340	5.200	5.900	0.243	0.230
73/12/17	16 00								
74/01/15	11 00								
CP(T)-			6.100	4.800	0.830	5.200	5.600	0.271	0.250
74/01/15	16 00								

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 74/11/27

091052 AS091052 P005000
41 29 00.0 073 13 30.0
SOUTHBURY (HERITAGE VLG)
09 7.5 SOUTHBURY
T/LAKE ZOAR
POMERAUG RIVER
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/02/19	11 00		6.800	2.000	0.210	7.400	7.400	0.397	0.405
73/07/24	13 00		2.100	1.300	0.655	6.100	6.600	0.421	0.460

STORET RETRIEVAL DATE 74/11/26

0912A1 LS0912A1
41 23 00.0 073 10 00.0
HOUSATONIC RIVER
09 7.5 ANSONIA
O/LAKE HOUSATONIC
AC DAM BETWEEN SHELTON AND DERBY
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
72/08/19	18	15	0.450	0.630	0.110	0.031	0.057
72/10/14	07	00	0.425	0.600	0.178	0.056	0.092
72/11/05	07	00	0.430	0.720	0.189	0.054	0.097
73/08/23	13	15	0.210	1.200	0.046	0.008	0.015
73/09/15	17	00	0.410	0.600	0.068	0.019	0.055