

"The River is the Report Card  
of the Watershed"



# Al Gore 9/25/96

- Environmental report card
  - Coordinate monitoring efforts
  - Guide decision-making
  - Account to the public



# Report Card Goals

Environmental Baseline	Status
Decision-making Guide	ID problems Prioritize problems Geo-target problems ID threats ID remedial action groups
Public Accounting	Trends
Coordinate Monitoring	Information Inventory ID information gaps



# Report Card Information

- Entire basin
  - Water Uses- Status
  - Segments- Geotargeting
  - Causes (indicators)- Diagnosing
  - Sources (regulated entities)-Fixing
  - Metadata- Confidence



# Indicator Groups

Group	Water Use
1. Biology	Aquatic Life
2. Bacteria	Recreation
3. Aesthetics	Recreation
4. Fish Tissue	Fish Consumption
	Program
5. Chemistry	Wastewater
6. Sediments	Hazardous Waste
7. Habitat	Wetlands
8. Flow	Water Management





# Index Color Codes

- Blue - excellent, comparable to reference
- Green - good, meets criteria
- Yellow - threatened, may not meet in future
- Orange - fair, marginally meets
- Red - poor, does not meet criteria
- Grey - not assessed



Millers River

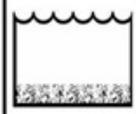
WATER QUALITY REPORT CARD

2000 Assessment

SEGMENT	AQUATIC LIFE						RECREATION		FISH EDIBILITY	
	BIOLOGY	CHEMISTRY	NUTRIENTS	TOXICS	SEDIMENTS	FLOW	HABITAT	BACTERIA	AESTHETICS	FISH TISSUE
MILLERS RIVER										
to Whitney pond	F					Q				Hg
to Winchendon WWTF		pH		U		Q		B	C	Hg,PCB
to Otter River		pH	P	U		Q				Hg, PCB
to South Royalston			P		PCB					Hg,PCB
to Orange Center	A,F	pH	P		PCB	Q				Hg, PCB
to Erving WWTF	A,F	pH	P		PCB	Q				Hg, PCB
to Connecticut River		pH	P	U	PCB	Q			C	Hg, PCB
OTTER RIVER										
to Gardner WWTF	I,F	DO,pH,T	P						C	Hg, PCB
to Seaman Paper Co.	I,F	DO,pH, T	P	U	Me	Q	S		C,D	Hg, PCB
to Millers River	I,F	pH	P		PCB	Q			O,C,D	Hg, PCB
TULLY RIVER										
East Branch	F	pH					S		G	Hg, PCB
Boyce Brook		pH								Hg, PCB
West Branch										Hg, PCB
Lawrence Brook		pH								Hg,PCB
Main Stem	F									Hg, PCB

COLOR KEY:

GOOD
CONCERN
FAIR
POOR
N/A





Millers River

WATER QUALITY REPORT CARD

2000

SEGMENT	POINT SOURCES		NON-POINT SOURCES						
	MUNICIPAL	INDUSTRIAL	STORM WATER	RESOURCE EXTRACT.	LAND DISPOSAL	SEDIMENT	HYDRO MODIFICA.	OTHER	UNKNOWN
MILLERS RIVER									
to Whitney Pond							WDL,IMP	ATM	
to Winchendon WWTF	CSO					SED*		ATM	
to Otter River	MTF				LDF	SED*		ATM	
to South Royalston						SED		ATM	
to Orange Center						SED	IMP,FLW	ATM	
to Erving WWTF						SED	IMP,FLW	ATM	
to Connecticut River					LDF	SED	FLW	ATM	
OTTER RIVER									
to Gardner WWTF			URB			SED*		ATM	
to Seaman Paper Co.	MTF,MS4		HWY	S&G		SED*		ATM	
to Millers River	MTF		HWY	S&G		SED		ATM	
TULLY RIVER									
East Branch					LDF	SED*	FLW	ATM	
Boyce Brook						SED*		ATM	
West Branch						SED*		ATM	
Lawrence Brook						SED*		ATM	
Main Stem						SED*		ATM	



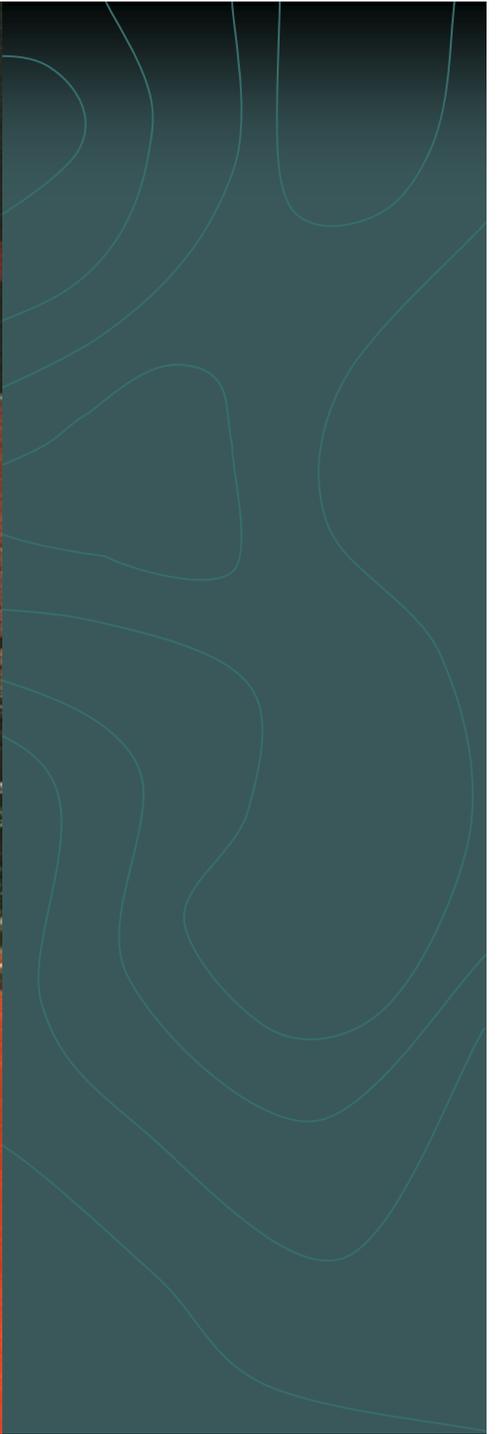
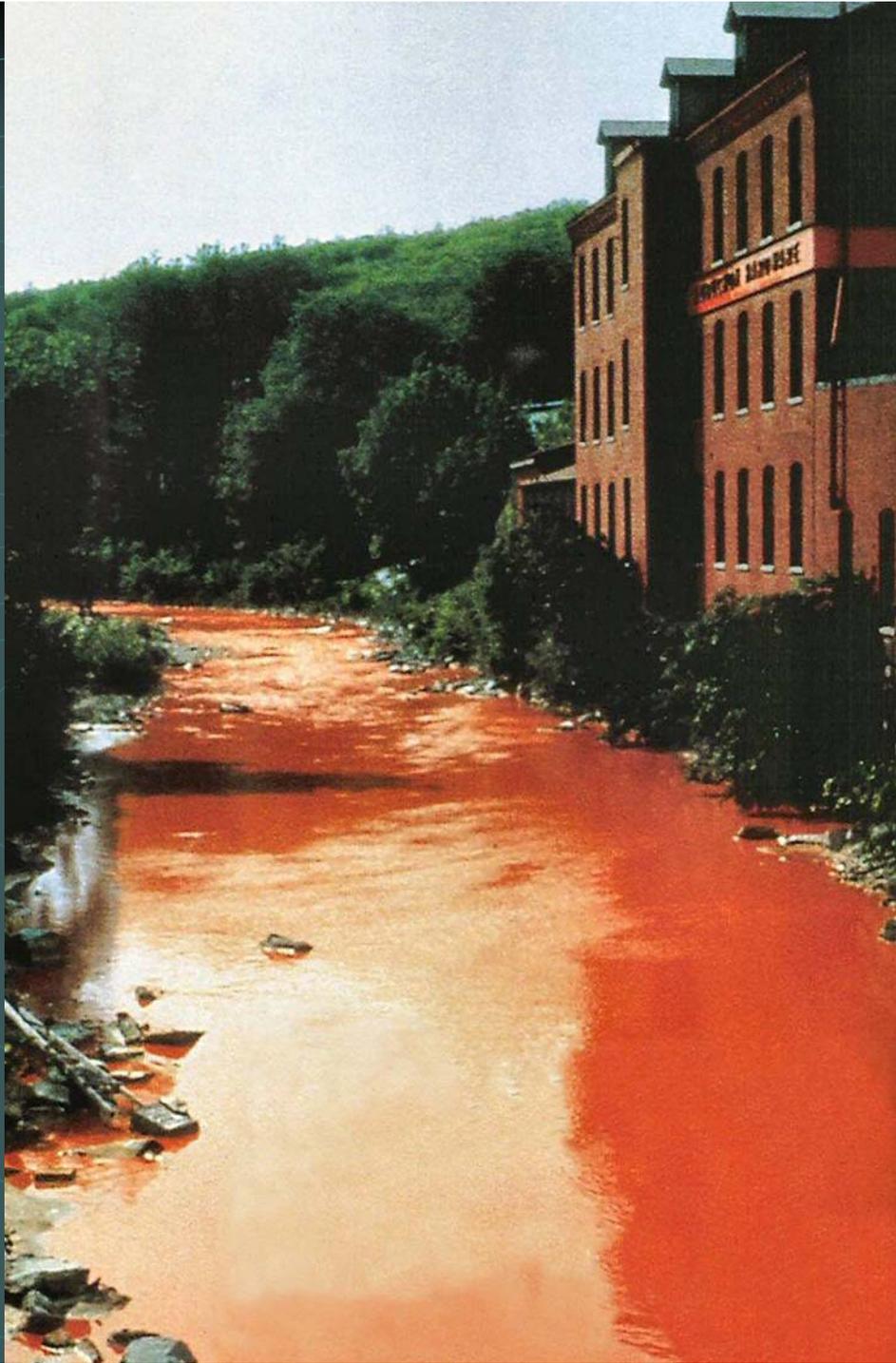


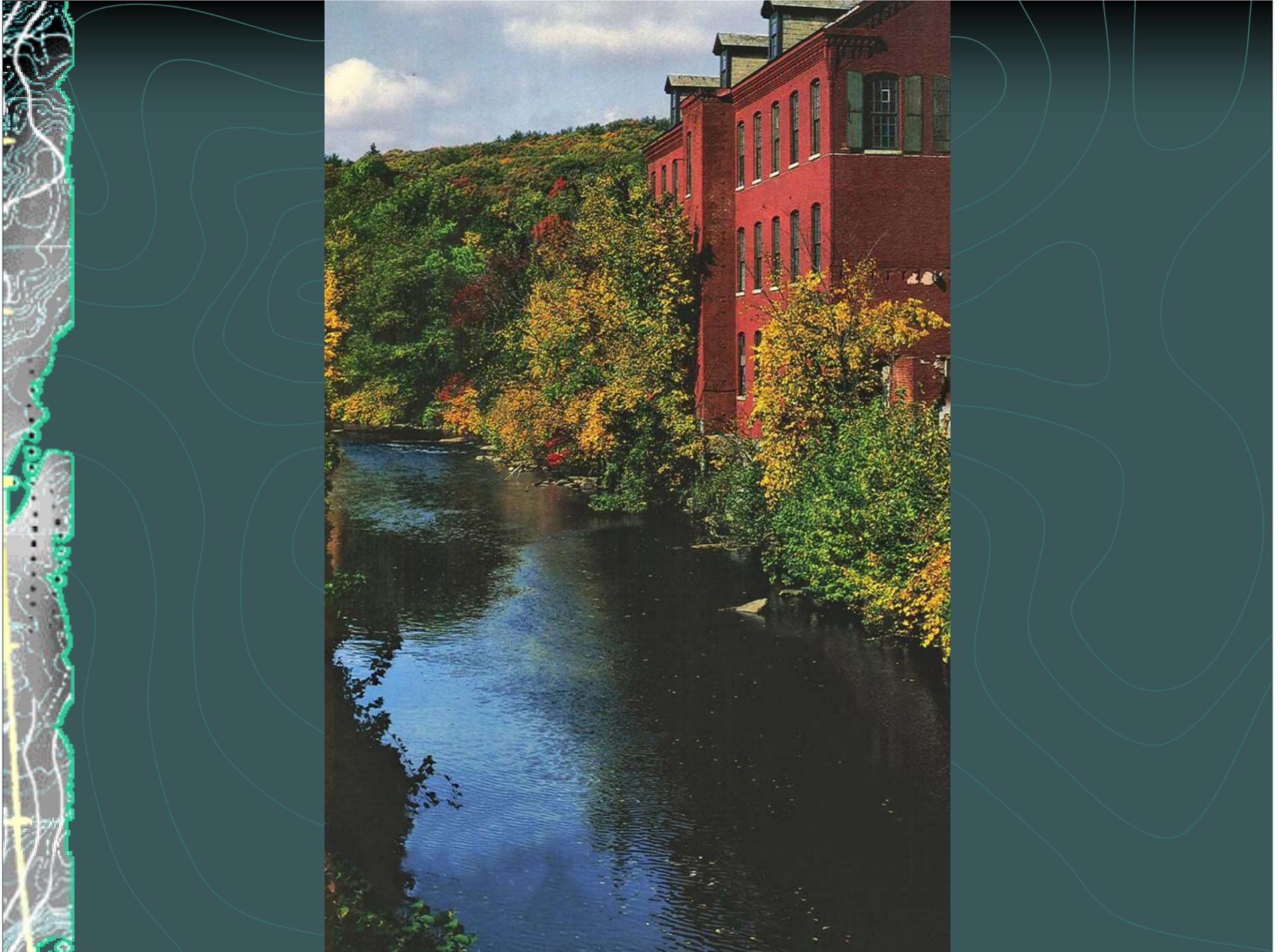
# Historical Trends

## ● Chemistry

- 70's Conventional - DO, pH, temperature
- 80's Non-conventional - nutrients
- 90's Priority pollutants - toxics
  
- 00's Sediments
- 10's Streamflow







## Nashua River Watershed Water Quality 1973

	Above Clinton WWTP	Below Clinton WWTP	Above Leominster WWTP	Below Leominster WWTP	Above Pepperell Pond	Below Pepperell Pond	Pepperell Pond	Nissitissit and Squannacook
<b>I. Ecological Health</b>	35	35	20	35	30	35	35	90
A. Biology	NS	NS	NS	NS	NS	NS	NS	S
B. Chemistry	NS	NS	NS	NS	NS	NS	NS	S
Baseline	NS	NS	NS	NS	NS	NS	NS	S
Nutrients	NS	NS	NS	NS	NS	NS	NS	S
Toxics	NS	NS	NS	NS	NS	NS	NS	S
C. Sediments	NA	NA	NA	NA	NA	NA	NS	NA
D. Hydrology	S	S	S	S	S	S	S	S
E. Habitat	NS	NS	NS	NS	NS	NS	NS	S
<b>II. Public Health</b>	65	65	30	30	30	50	40	80
A. Bacteria	NS	NS	NS	NS	NS	NS	NS	P
Swimming	NS	NS	NS	NS	NS	NS	NS	P
Boating	NS	NS	NS	NS	NS	NS	NS	S
B. Aesthetics	S	S	NS	NS	NS	P	NS	S
C. Toxics in Fish	NA	NA	NA	NA	NA	NA	NA	NA

## Water Quality 1993

	Above Clinton WWTP	Below Clinton WWTP	Above Leominster WWTP	Below Leominster WWTP	Above Pepperell Pond	Below Pepperell Pond	Pepperell Pond	Nissitissit and Squannacook
<b>I. Ecological Health</b>	90	75	65	70	70	90	90	85
A. Biology	S	P	NS	NA	NS	S	NA	S
B. Chemistry	S	P	NS	NA	NS	S	S	S
Baseline	S	S	S	S	S	S	S	T(pH)
Nutrients	S	P	S	S	S	S	S	S
Toxics	?	P	NS	NA	NS	S	S	S
C. Sediments	NA	NA	NA	NA	NA	NA	NA	NA
D. Hydrology	S	S	S	S	S	S	?	S
E. Habitat	S	S	P	S	S	S	?	S
<b>II. Public Health</b>	95	70	50	95	80	95	75	95
A. Bacteria	S	NS	NS	S	P	S	S	S
Swimming	S	NS	NS	S	P	S	S	S
Boating	S	S	NS	S	S	S	S	S
B. Aesthetics	S	S	P	S	S	S	S	S
C. Toxics in Fish	S	S	NA	NA	S	S	NS	S

# Report Card Summary

Status	Color codes / Response indicators for water uses
ID problems	Colors/ Causes card
Prioritize problems	View Columns
Geo-target problems	View Rows
ID threats	Color coded in yellow
ID remedial action groups	Indicators / Sources card
Trends	Multiple years / indicators better than uses
Information Inventory	Metadata card
ID Data gaps	



# Coordination in Development

- 305b reporting

- Uses

- Causes

- Sources

- Metadata

- 303d list

- Sources

- National Water Quality Monitoring Council

- Indicator groupings



# Report Card Uses

- Four page 305b report
- Water quality managers
- Group discussions (planning)
- Priorities for grant funding
- Coordinating with other monitoring groups
- Outreach (general public)



# Joseph Pulitzer

- Put it before them briefly so they will read it, clearly so that they will appreciate it, picturesquely so that they will remember it, and , above all accurately so that they will be guided by its light.