



## CONTENTS

---

---

<b>INTRODUCTION</b> .....	5
<b>AIR INDICATORS</b> .....	7
<u><a href="#">INDICATOR 1</a></u> : “Trends in ambient air quality for each of the 6 criteria air pollutants.” .....	7
Overview .....	8
Summary Matrix .....	10
Interview Results .....	11
<u><a href="#">INDICATOR 2</a></u> : “Number of non-attainment areas and their Associated population that reach attainment, including the number of ozone non-attainment areas that meet the 1-hour ozone standard.” .....	21
Overview .....	22
Summary Matrix .....	24
Interview Results .....	25
<u><a href="#">INDICATOR 3</a></u> : “Emission reductions since 1990 for each criteria air pollutant, as discussed in each annual edition of EPA’s National Air Pollutant Emission Trends report.” .....	33
Overview .....	34
Summary Matrix .....	36
Interview Results .....	38
<u><a href="#">INDICATOR 4</a></u> : “Trend in emissions of toxic air pollutants.” .....	51
Overview .....	52
Summary Matrix .....	54
Interview Results .....	55

**WATER INDICATORS** ..... 63

**INDICATOR 5:** *“Percent of assessed waterbodies that protect public health and the environment by supporting a) fish and shellfish consumption, b) safe recreation, and c) healthy aquatic life use designations.”* ..... 63

Overview ..... 64  
Summary Matrix ..... 67  
Interview Results ..... 69

**INDICATOR 6:** *“Percent of permitted surface water discharges (all, major, and/or minor) in compliance (or significant non-compliance).”* ..... 79

Overview ..... 80  
Summary Matrix ..... 81  
Interview Results ..... 82

**INDICATOR 7:** *“Population served by public surface water {break down by community, transient, and non-transient non-community} with state-approved source protection programs / population served by public surface water systems” and “population served by public ground water with state-approved wellhead protection programs / population served by public ground water systems.”* ..... 89

Overview ..... 90  
Summary Matrix ..... 92  
Interview Results ..... 94

**INDICATOR 8:** *“Number and percent of public water systems and population served meeting health-based regulations.”* ..... 101

Overview ..... 102  
Summary Matrix ..... 104  
Interview Results ..... 105

<b>ECOSYSTEM INDICATOR</b> .....	113
<u><a href="#">INDICATOR 9:</a></u> <i>“Percent of assessed rivers and estuaries with healthy aquatic communities.”</i> .....	113
Overview.....	114
Summary Matrix.....	116
Interview Results.....	117
 <b>WASTE INDICATORS</b> .....	 125
<u><a href="#">INDICATOR 10:</a></u> <i>“Number of RCRA corrective actions and LUST cleanups completed per unit time or cumulative.”</i> .....	125
Overview.....	126
Summary Matrix.....	128
Interview Results.....	130
 <u><a href="#">INDICATOR 11:</a></u> <i>“Amount of solid waste landfilled, incinerated, and recycled.”</i> .....	 145
Overview.....	146
Summary Matrix.....	148
Interview Results.....	149
 <u><a href="#">INDICATOR 12:</a></u> <i>“Percent of non-product outputs reduced, including TRI waste; percent of non-product outputs reduced, including TRI waste, normalized for production; percent of non-product outputs, including TRI waste, attributable to pollution prevention; percent of non-product outputs reduced, including TRI waste, attributable to pollution prevention, normalized for production; percent of facilities that have implemented pollution prevention practices as a result of technical assistance.”</i> .....	 157
Overview.....	158
Summary Matrix.....	160
Interview Results.....	161
 <u><a href="#">APPENDIX A</a></u> <i>Approximate Timeline for NEGIP Data Screening Work</i> .....	 173
<b>APPENDIX B</b> <i>Sample Data Screening Survey</i> .....	175

## INTRODUCTION

Since 1995, the New England Environmental Goals and Indicators Partnership (NEGIP) has served as a regional forum on issues related to the development and use of environmental indicators. The NEGIP Steering Committee, representing the six state environmental management agencies in New England and EPA – 1, New England (EPA – NE) adopted the following project goal, which continues to guide the partnership’s scope and direction:

*EPA Region 1, New England and the New England States shall work together with the assistance of the [Green Mountain Institute for Environmental Democracy] to build the capacity and commitment of the six New England states and EPA – New England to develop and use state and regional environmental goals and indicators to address specific state and regional problems, concerns, and priorities.*

It has been a fundamental goal of the NEGIP process to collaboratively identify a set of indicators to report on environmental quality for the New England region. In its first year, the Steering Committee agreed upon a “menu” of indicators for air, water, ecosystems, and waste that each state environmental agency and EPA – New England currently had data to support. A focus in the second year was to evaluate measurement issues and potentially add indicators, for which there was not yet regional agreement on measures (nonpoint sources of nutrients, pollution prevention, and air toxics). During the past year, NEGIP convened a process of screening state, regional, and national data presumed to be available and/or necessary to support the indicators – i.e., make them consistently reportable and meaningful for decision making and for reporting environmental conditions within the region.

As a first step in this data screening process, the Steering Committee revisited the original menu of indicators in an effort to revise and/or clarify their language– especially in light of the prominence that EPA and the Environmental Council of States’s (ECOS) Core Performance Measures (CPMs) had gained since NEGIP began in 1995. In some cases, the Steering Committee retained the original NEGIP indicator language. In others, the language of a similar CPM was substituted. And in a few instances, indicator language was modified to clarify what the Steering Committee intended, or to encompass the meaning of both the CPM and the NEGIP indicator.

The result of this process is a subset of twelve indicators in the categories air, water, waste, and ecosystems. With the assistance of the Green Mountain Institute for Environmental Democracy (GMI), NEGIP enlisted the cooperation of approximately one hundred individuals in state environmental management agencies, state health departments, EPA– New England, and EPA–headquarters, in an effort to identify specific characteristics of available data (e.g., dates available, spatial coverage, quality, comparability, methodology). This report represents a summary of phone interviews with those individuals. The data screening process is described in the timeline in Appendix A, and included an initial distribution of data surveys and indicator language to targeted individuals, brief phone interviews, and an opportunity for comment on a draft version of this report.

The data screening process, while significantly time consuming, was limited to brief phone interviews, thus has only begun to scratch the surface. The Steering Committee is currently reviewing the results of this screening process and considering the implications for CPMs and regional indicators generally, but believes this evaluation serves to identify a) some specific challenges in reporting indicators across multiple states – while retaining consistent or state-specific meaning b) the need for clarity and specificity in indicator language, and c) the value of data screening as a step in the development of indicators, which explores the “nuts and bolts” of data presumed to support the indicators.

**AIR**  
**INDICATOR 1**

*“Trends in ambient air quality for each of the 6 criteria air pollutants.”*

**CONTACTS**

EPA – New England	Norm Beloin
CT DEP	Al Leston
ME DEP	Jeff Emery
	Andy Johnson
MA DEP	Jerry Sheehan
NH DES	Kent Finemore
RI DEM	Barbara Morin
VT ANR, DEC	George Apgar

## SCREENING RESULTS: Overview

Ambient air quality monitoring is among the most extensive environmental data collection efforts in the United States. Following the Clean Air Act in 1970, the EPA mandated and supported the establishment of networks of stations at which air pollutants are continuously or at regular intervals, sampled and recorded. At the outset, an emphasis was placed on collecting the data these monitors generated in a centralized and accessible database.

The monitors are most often maintained by a state environmental agency or health department, although recent additions to the monitoring networks (such as the PAMS and PM2.5 monitors) have significant EPA support. Data is compiled and summarized, and delivered to EPA via hard copy reports or, as is nearly always the case now, via electronic transfer to the Aerometric Information Retrieval System (AIRS). The data includes hourly, monthly and seasonal averages of ambient concentrations of criteria air pollutants (and now other constituents), other computations such as daily and monthly maximum concentrations, and information about the location of the monitor and meteorological conditions during the sampling periods.

Because many aspects of ambient air monitoring are federally mandated and EPA supported, and because the data is collected in a common database, there is significant consistency in the quality of sampling and in the reporting of data. EPA provides extensive guidance and protocols for maintaining the accuracy and precision of sampling devices, for assuring statistical reliability of reported data, and for formatting data to be reported to AIRS. The AIRS database is currently undergoing a major overhaul to make data input, output, and public accessibility easier. For the purposes of this indicator however, extracting the necessary data to develop trends in criteria pollutants should not pose a great difficulty. In addition, nearly every state has produced annual written reports summarizing trends in ambient air quality, and EPA – New England publishes an annual report on ambient air quality in the region, with state-by-state descriptions. The most current regional report summarizes 1996 data.

While data quality and availability are *reasonably consistent* for ambient air quality in the New England states, there are some differences among the states in their monitoring efforts which may have bearing on the regional representation of this indicator. In particular, data differs among states in *what* pollutants are monitored, and *where* ambient air is monitored. Within a given state, what pollutants are monitored and where may vary over time, affecting the comparability of data used to present this indicator as a trend over time.

The ambient air monitoring network was established to monitor criteria air pollutants: carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), lead (Pb), and particulate matter (TSP, PM<sub>10</sub>, PM<sub>2.5</sub>). Monitoring of these pollutants has been based on those which are of most concern. As some have become lesser threats to human health, limited monitoring resources have been shifted accordingly. Most notably, major reductions in ambient lead concentrations have resulted in reduced monitoring efforts in the region. New Hampshire and Rhode Island no longer monitor for lead in ambient air, but monitor all other criteria pollutants. Maine monitors criteria pollutants with the exception of lead and carbon monoxide, neither of which is considered a significant threat in the state. Vermont monitors all criteria

pollutants, but continues to monitor lead as part of a state program, and does not report it to AIRS. Connecticut and Massachusetts currently monitor all criteria pollutants, although lead monitoring in Massachusetts was temporarily discontinued from 1995 to 1997.

While all of the New England states monitor at least the same four of the six criteria pollutants (NO<sub>x</sub>, SO<sub>2</sub>, ozone, and PM<sub>10</sub><sup>1</sup>), what is represented by the data on these pollutants depends in large part on where the monitors are located. Each state runs multiple monitoring locations, each location containing sampling devices for a variety of pollutants. Thus, within each state, pollutants are monitored at multiple locations.

According to EPA, the original and primary intention of the ambient air monitoring network is to measure air quality with respect to compliance with the national standards, which are intended to protect public health with a reasonable margin of safety. Therefore, monitors are expected to be sited in areas of human health concern – those areas with the highest suspected concentrations of pollutants, and/or the most population being exposed. This emphasis explains the targeting of monitors in primarily urbanized areas (although long-distance ozone transport has raised concerns for many non-urban areas). At the state level, the emphasis on monitoring has varied among states and within states over time. Every state has focused some or all of its monitoring efforts on high exposure (population)/high (pollutant) concentration areas. Massachusetts has located some additional sites with the intention of tracking “background” levels of pollutants, as have New Hampshire, Rhode Island, and Vermont. Vermont has located various monitors to reflect regional, statewide, and neighborhood scale air quality.

In the region, the total number of air monitors has decreased over time. More importantly, is the fact that monitors have moved over time, usually from areas that have experienced improved air quality, to areas with suspected problems. This “targeting” means that in some states, while a given pollutant may be monitored at several sites, long term trends may be available at a limited consistent set of monitors. It also means that long term trends combining two or more sites may represent periodic improvements, followed by apparent declines in air quality as sites are moved to new “hot-spots”.

In Connecticut, monitors have been moved over time to identify and monitor what have been described as “worst case scenarios”. Monitor locations have similarly evolved over time in Massachusetts, New Hampshire, and Rhode Island, and to a lesser extent, in Maine and Vermont.

---

<sup>1</sup> The standard for particulate matter is being changed to reflect an understanding of the significant health effects of particles smaller than 2.5 microns in diameter. A monitoring network for PM<sub>2.5</sub> is being established, but is at this point in its infancy, and PM<sub>10</sub> continues to be monitored and reported.

**SCREENING RESULTS: Summary Matrix**

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage/Consistency			Quality	Availability
		Spatial/demographic	Pollutants	Temporal		
<b>EPA-NE</b>	ambient air monitoring data	regional, and varies by state	All	monitoring networks (locations and pollutants) evolve over time	extensive hardware calibrations and statistical requirements for data are required; accuracy of monitors is considered good; concerns related to the geographic representation of ambient data or its relation to public health do exist	AIRS database nationally; limited web availability; hard copy annual regional report/summary
<b>Connecticut</b>	ambient air monitoring data	high exposure/high concentration areas	All	monitoring network evolves	see EPA-NE	AIRS; annual report (recent 1996)
<b>Maine</b>	ambient air monitoring data	high exposure/high concentration areas	All except lead and CO	Pb and CO monitoring discontinued	see EPA-NE	AIRS
<b>Massachusetts</b>	ambient air monitoring data	high exposure/high concentration areas; some background	All	Pb discontinued 1995-1997; network evolves geographically	see EPA-NE	AIRS; annual report (recent 1997)
<b>New Hampshire</b>	ambient air monitoring data	high exposure/high concentration areas; some background	All except lead	network evolves; several new monitors with short trend histories	see EPA-NE	AIRS
<b>Rhode Island</b>	ambient air monitoring data	high exposure/high concentration; urban metro areas; some background	All except lead	network evolves; one site has been discontinued recently	see EPA-NE	AIRS; annual report (current 1996)
<b>Vermont</b>	ambient air monitoring data	variety of background, high pollution/high exposure, regionally and state representative sites	All (lead in separate state database)	some evolution of monitor locations; new PM2.5 monitors to be added in 1999 and 2000	see EPA-NE	AIRS

## SCREENING RESULTS: Interview results

### AIR: INDICATOR 1

EPA – NEW ENGLAND

**Database** Type of data: ambient air quality  
Database(s): state ambient monitoring data entered into AIRS

Nationally, EPA maintains a database of ambient air quality data. It includes continuous samples from state- and EPA-run monitors for the criteria air pollutants.

### Coverage

#### *Spatial/*

*Demographic* The primary purpose of monitoring ambient air is to track ambient air with respect to some level of “compliance.” That is, to ensure that levels of criteria pollutants are below standards for protecting public health and the environment with a reasonable margin of safety. Measuring background levels for baselines/reference and for other research needs, is a secondary reason for the extensive monitoring networks.

*Pollutants* All states monitor some or all of the criteria pollutants, each state and each pollutant representing varying levels of effort.

*Temporal* The total number of sites in the region has diminished some over time. More notably, the location of monitoring sites has evolved, and continues to evolve. Earlier sites are located in areas of high concern to identify/confirm problem areas. As problems are addressed and trends improve, monitors are often moved. A large proportion of monitors in a state’s network may not have long histories and trend data.

When ambient monitoring networks were first established under the Clean Air Act in the 1970’s, each of the six criteria pollutants were monitored. As a pollutant becomes less of a threat, expending resources to monitor for it becomes less of a priority. Improvements in ambient lead concentrations since the late 1970s put lead levels below detection at most sites. Many states phased out lead monitoring, although some in recent years have resumed monitoring at select sites. NO<sub>x</sub> is now in a similar position. In most areas the pollutant is well below standards and likely to be subject to decreasing monitoring efforts on the one hand, however, at higher concentrations NO<sub>x</sub> continues to be of interest as an ozone precursor.

New monitors include the PAMS network which operates during the ozone season (summer) and includes monitors at 4 types of locations (upwind,

downwind, etc.), which monitor ozone and a variety of precursors. More recent additions include a growing network of PM sites capable of monitoring for PM<sub>2.5</sub> to address the new standard.

### **Quality/**

**Methodology** Quality of ambient monitoring data is generally good to excellent. Aside from EPA-administered requirements and guidelines for sampling equipment and methodology, EPA also audits individual sites for precision and accuracy. States and EPA use a variety of co-located samplers and point sample checks for precision, and control gas measurements for accuracy.

In addition, statistical requirements for reported continuous monitoring data controls the quality of data used for subsequent analyses.

EPA regional auditing has declined due to perceived quality of measurements and a decline in resources, although some auditing effort has been compensated for by an increased EPA – HQ role.

**Availability** Ambient air quality data from state and EPA monitors is available in a central database, called the Aerometric Information and Retrieval System (AIRS). This is an extensive electronic database maintained nationally by EPA. It is currently undergoing a restructuring to make data input and output more convenient. Monthly data from monitoring stations is entered into AIRS. The data contains information for each monitor, such as its location and monitoring objective, as well as on each pollutant including hourly and monthly mean and maximum concentrations, by pollutant. The AIRS database contains data as far back as the 1970s.

EPA-New England produces an annual report on air quality in New England, which summarizes recent trends in concentrations of criteria pollutants, by state.

## AIR: INDICATOR 1

### CONNECTICUT

<b>Database</b>	<p>Type of data: ambient air quality</p> <p>Database(s): state ambient monitoring data entered into AIRS</p> <p>The state maintains a network of approximately 60 individual monitors at air quality stations around the state.</p>
<b>Coverage</b>	
<i>Spatial/</i>	
<i>Demographic</i>	[See EPA-NE]
	Monitors are usually established in suspected and historically problem areas (i.e. high concentrations and high population exposures).
<i>Pollutants</i>	[see EPA-NE]
	All criteria pollutants (NO <sub>x</sub> , CO, ozone, SO <sub>2</sub> , PM <sub>10</sub> , Pb)
	Three PM 2.5 monitors have been operating since December 1997. PM concentrations vary dramatically between urban and rural areas.
<i>Temporal</i>	[see EPA-NE]
	As pollution in problem areas is addressed, the monitoring network continues to evolve to identify and measure the “worst case scenarios” – high exposure and high concentrations. Therefore, “young” monitors typically measure the highest levels of pollution.
	Lead monitoring was discontinued for 1997, and resumed in 1998.
<b>Quality/ Methodology</b>	[see EPA-NE]
	Monitors receive occasional audits by the state.
<b>Availability</b>	[see EPA-NE]
	Annual hard copy reports are produced with summary and trend information for criteria pollutants. The most recent report is available for 1996. The 1997 report is at press (as of 7/98) and should be available soon.

## AIR: INDICATOR 1

### MAINE

**Database**      Type of data: ambient air quality  
 Database(s): state ambient monitoring data entered into AIRS

The state maintains a network of approximately 60 individual monitors at air quality stations around the state.

#### **Coverage**

*Spatial/*

*Demographic* [See EPA-NE]

Monitors are sited primarily in high emission areas (i.e., near point sources), or in high exposure (population) areas.

Ozone is the only criteria pollutant in Maine that reaches significant levels. High levels are attributed to two primary “upwind” sources: Connecticut and the Boston metro area.

*Pollutants*      [see EPA-NE]

The network monitors criteria pollutants with the exception of lead and carbon monoxide.

*Temporal*      [see EPA-NE]

Lead monitoring was phased out when levels were regularly below detection. CO was monitored at several sites in the 1970s, until the state came into attainment for CO; then it was monitored in the historical high concentration/high population areas from 1985-1989 to ensure good levels were maintained; and when trends were apparently steady or declining, monitoring was discontinued for CO.

#### **Quality/**

**Methodology** [see EPA-NE]

**Availability** [see EPA-NE]

Most sites have long histories and trend data available.

## AIR: INDICATOR 1

### MASSACHUSETTS

**Database**      Type of data: ambient air quality  
 Database(s): state ambient monitoring data entered into AIRS

MA DEP maintains a network of approximately 70 individual monitors among 24 ambient air quality stations around the state.

### Coverage

#### *Spatial/*

*Demographic* [See EPA-NE]

The locating of monitors in MA is primarily population-based (to measure average exposures and maximum exposures). The majority of monitors are located in areas of high exposure (population) and expected high concentrations of pollutants. Monitors are not often located near high emissions/point sources. Some monitors are located for reference or background conditions.

*Pollutants*      [see EPA-NE]

All criteria pollutants (NO<sub>x</sub>, SO<sub>2</sub>, CO, PM<sub>10</sub>, ozone, lead).

*Temporal*      [see EPA-NE]

The monitoring network has changed with respect to the location of monitors, and continues to evolve over time.

MA DEP operates approximately 24 monitoring stations around the state, geographically representing the entire state, but with a bias towards high population, urban, and coastal areas.

Ambient lead monitoring was discontinued from 1995-1997 because levels were regularly below detection levels. Monitoring was resumed in 1998 (with new equipment) at one site in Kenmore Square, Boston which historically had the some of the highest levels.

### Quality/

**Methodology** [see EPA-NE]

**Availability** [see EPA-NE]

Monitoring data is regularly entered into AIRS

Most current sites have been collecting data for at least five years. Longer trends are available from a few sites for each pollutant (with the exception of the two year gap in lead data).

MA DEP produces an annual report summarizing air quality, in hard copy, available publicly. The most recent report is available summarizing 1997 data.

## AIR: INDICATOR 1

### NEW HAMPSHIRE

<b>Database</b>	<p>Type of data: ambient air quality</p> <p>Database(s): state ambient monitoring data entered into AIRS</p> <p>The state maintains a network of approximately 40 individual monitors at air quality stations around the state.</p>
<b>Coverage</b>	
<i>Spatial/</i>	
<i>Demographic</i>	[See EPA-NE]
	<p>Monitoring in New Hampshire is primarily targeted to high exposure (population) and high concentration (of pollutant) areas. Some monitors, even in non-attainment areas do register relatively low levels (e.g., Hubbard Brook) and are useful for background readings or for other research purposes in those areas (e.g., ecological).</p>
<i>Pollutants</i>	[see EPA-NE]
	All criteria pollutants with the exception of lead.
<i>Temporal</i>	[see EPA-NE]
	<p>The monitoring network has, and continues to evolve over time.</p> <p>Several monitors are recent additions, such as in Laconia.</p>
<b>Quality/ Methodology</b>	[see EPA-NE]
<b>Availability</b>	[see EPA-NE]
	<p>Annual hard copy reports are produced. Summarize and show trends in criteria pollutants. The most recent is available for 1996.</p>

## AIR: INDICATOR 1

### RHODE ISLAND

- Database** Type of data: ambient air quality  
Database(s): state ambient monitoring data entered into AIRS
- RI DEM and RI DOH maintain a network of monitors at air quality stations around the state.
- Coverage**  
*Spatial/*  
*Demographic* [See EPA-NE]
- There are approximately 9 air quality monitoring stations around the state. Most are in Providence and surrounding urban areas.
- Pollutants* [see EPA-NE]
- All criteria pollutants with the exception of lead.
- Temporal* [see EPA-NE]
- The monitoring network has, and continues to evolve over time.
- Two ozone sites have been located in the central and western parts of the state, which measure the highest ozone levels. One of these sites (Alton Jones) has a long history and trends for ozone. The other site (Narragansett) is a new site, operated since the 1997 ozone season. In 1997, one site in the city of Providence was discontinued. Currently, third ozone site operates in East Providence.
- Quality/**  
**Methodology** [see EPA-NE]
- Availability** [see EPA-NE]
- Annual hard copy reports are produced. These are typically 1-2 years behind. The RI DEM is currently working on the 1996 report.

## AIR: INDICATOR 1

### VERMONT

<b>Database</b>	Type of data: ambient air quality Database(s): state ambient monitoring data entered into AIRS  The state maintains a network of approximately 19 individual monitors at 8 air quality stations around the state.
<b>Coverage</b>	
<i>Spatial/</i>	
<i>Demographic</i>	[See EPA-NE]  Monitors are located throughout the state. For each pollutant, geographic representation is as follows: Ozone: Statewide monitors are regionally representative PM10: Statewide monitors represent high concentration/high population areas; and some background areas. NOx: Statewide monitors represent high concentration/high population areas at neighborhood scale Lead: Statewide monitors are state representative; some high concentration/high population; and some background sites. SO2: Statewide monitors represent high concentration/high population areas. CO: High concentration/high population sites.
<i>Pollutants</i>	[see EPA-NE]  All criteria pollutants are monitored. Lead is monitored at five sites for a separate state toxics monitoring program.
<i>Temporal</i>	[see EPA-NE]  Four PM 2.5 monitoring sites are to be added to the network by 1999, and two more by 2000.
<b>Quality/ Methodology</b>	[see EPA-NE]
<b>Availability</b>	[see EPA-NE] Most sites have long histories and trend data available.



**AIR**  
**INDICATOR 2**

*“Number of non-attainment areas and their associated populations that reach attainment, including the number of ozone non-attainment areas that meet the 1-hour ozone standard.”*

**CONTACTS**

EPA – New England	Dave Conroy
CT DEP	Anne Gobin
ME DEP	Jeff Emery
	Andy Johnson
MA DEP	Nancy Seidman
NH DES	Kent Finemore
RI DEM	Barabara Morin
VT ANR, DEC	Paul Wishinski
	George Apgar

## SCREENING RESULTS: Overview

Under the Clean Air Act, areas are designated as having attainment, non-attainment, partial attainment, or unclassifiable status with respect to each of the criteria pollutants PM, CO, NO<sub>x</sub>, SO<sub>2</sub>, lead, and ozone. These designations are reviewed on an on-going basis by EPA. A designated area may be defined as a state, county, part of county (including town or other geographic description), metropolitan statistical areas (MSAs), air quality control region, or some other unit. Designations are made by EPA based on compliance with national ambient air quality standards (NAAQS) using available ambient monitoring data, and other factors, including severity of non-compliance, trends, and state efforts to improve air quality.

Attainment designations are made by EPA and published in the *federal register* and then in the *code of federal regulations* (CFR). Therefore, other than informal lists duplicating the CFR list, there are no state databases for attainment area designations. The CFR is readily available at most libraries, in various electronic and internet formats, and from EPA (excerpted portions) in hard copy. For each state, designations are made for all attainment, non-attainment and other areas, such that the aggregate of the designated areas represents the entire state.

Population estimates for non-attainment areas are not included in the CFR listing, although do appear in other publications such as the annual Air Quality and Emission Trends report and on the EPA website. These sources include the number of non-attainment areas are listed by pollutant, by state, and population figures are given. Population figures in these other sources might be drawn from 1990 census data, supplemented by any state-contributed interim updates.

Concerns regarding the consistency of attainment/non-attainment reporting arise from the different units that may be used to define designated areas (e.g., counties), and from the methods and process for designating areas. Of particular concern for the near future, are the implications of a newly adopted ambient standard for ozone.<sup>2</sup> As mentioned above, areas are designated by a variety of units, from towns or partial counties, to entire states. Areas also differ within states, by pollutant. For example, Connecticut is designated by air quality *regions* for SO<sub>2</sub>, but by *partial counties* for CO and ozone. In Massachusetts, two areas represent the entire state for ozone, while partial counties define CO areas. All of Rhode Island is considered one non-attainment area for ozone. Thus, while each state may report the “number of non-attainment areas”, the sizes of these areas will vary dramatically. In addition, the units used to define non-attainment areas may change over time. In Maine for example, it is anticipated that if ozone designations (for the new standard) are made for 2000, they may be made for partial counties, rather than whole counties as they are currently. This in fact could occur in any state.

The other concern regarding consistency in reporting non-attainment status, is the process by which areas are designated and redesignated by EPA. Designations are based on a number of factors, including, but not limited to, compliance with ambient air quality standards. EPA reviews air data, along with trends and other factors. Areas out of compliance for a given year might not be designated non-attainment if the year represents particularly extreme meteorological conditions, or if the area is not severely out of compliance, or has not been out of

<sup>2</sup> From a 1-hour based standard to an 8-hour standard.

compliance for long. In addition, states have the discretion to propose existing non-attainment areas for redesignation as attainment. Thus a non-attainment area may meet air standards, but remain non-attainment, if the state does not wish immediate redesignation. Further, the process for re/designation may take 1-3 years for proposal, review, and publication in the CFR, which has implications for how responsive designations are to actual air quality.

Finally, the adoption of a new ozone standard will undoubtedly have an effect on the status of some areas in New England. Designations may be made in response to compliance with the new standard, regardless of changes in actual air quality.

### SCREENING RESULTS: Summary Matrix

(see results of individual interviews in next section for more detail)

State/Entity	Database	Parameters	Coverage		Quality	Availability
			Spatial	Temporal		
<b>EPA-NE</b>	EPA listing for each state, of non-attainment and attainment areas in CFR, by pollutant	areas are designated based on compliance with ambient standards for criteria pollutants; other factors; and state-EPA negotiations	each state is completely represented by listing of attainment and non-attainment areas; redesignations in 2000 may change boundaries (e.g., from counties to other units partial counties, towns, etc.)	the CFR lists areas based on 1978 designations and subsequent modifications	guidelines exist for ambient air monitoring and for EPA designation/approval of attainment status; flexibility exists in designations; temporary and modified designations appear officially in the federal register before CFR update; redesignations may reflect changes in standards rather than air quality	lists in CFR are widely available in hard copy and electronically
<b>Connecticut</b>	see EPA-NE	see EPA-NE	see EPA-NE	see EPA-NE	see EPA-NE	see EPA-NE
<b>Maine</b>	see EPA-NE	see EPA-NE	see EPA-NE	see EPA-NE; some areas may become non-attainment in 2000 for new ozone standard, based on 96-98 data	see EPA-NE; future ozone redesignations will likely reflect change in standard	see EPA-NE
<b>Massachusetts</b>	see EPA-NE	see EPA-NE	whole state represented by two ozone non-attainment areas, while carbon monoxide is designated by partial counties	see EPA-NE	see EPA-NE	see EPA-NE
<b>New Hampshire</b>	see EPA-NE	see EPA-NE	see EPA-NE; some partial counties and MSAs	see EPA-NE; no redesignations likely in near future	see EPA-NE	see EPA-NE
<b>Rhode Island</b>	see EPA-NE	see EPA-NE	whole state is designated as one ozone non-attainment area (for 1-hour standard)	see EPA-NE	see EPA-NE	see EPA-NE
<b>Vermont</b>	see EPA-NE	see EPA-NE	see EPA-NE	see EPA-NE	see EPA-NE	see EPA-NE

## SCREENING RESULTS: Interview results

### AIR: INDICATOR 2

EPA – New England

**Database** Type of data: non-attainment areas and populations  
Database(s): EPA and state listings of attainment designations (officially in Federal Register and CFR)

Nationally, EPA determines and publishes designations of non-attainment and attainment status for areas within each state.

**Parameters** Non-attainment describes an area, designated by EPA, as not sufficiently meeting ambient air quality standards. Areas can be designated as non-attainment for any of the criteria air pollutants: ozone, NO<sub>2</sub>, SO<sub>2</sub>, PM-10, CO. Attainment status is listed by whole state, county, partial county, MSA, or other area, by name or description, by pollutant. As designations are updated by EPA, they are published in the federal register. Complete listings are published in each edition of Title 40 of the Code of Federal Regulations, part 81.

Designations for non-attainment are based on an evaluation of state performance with respect to ambient air quality standards and other factors. Exceedences of ambient air quality standards are considered along with the severity, frequency, and period of exceedence, as well as meteorological variations, and state-EPA air management agreements.

Proposals for redesignation of non-attainment areas as attainment areas are made to EPA at the discretion of each state. Thus a state may choose to not seek redesignation for an area that has met ambient standards.

*Basis for Populations* Populations associated with each attainment or non-attainment area are not listed in the 40 CFR 81. Populations are listed for non-attainment areas in other publications.

**Coverage**  
*Spatial* Entire states are represented by the aggregate of designated attainment and non-attainment areas.

*Temporal* Each listing in 40 CFR 81 includes designations updated from 1978. However, there is often a 1-2 year lag time from proposal and review, to official redesignation.

Because of the new 8-hour ambient standard for ozone, states will recommend designations in 1999 (using 1996-1998 data), and official designations will not be made for ozone by EPA until 2000 (using 1997-1999 data).

**Quality/**

**Methodology** Standards are in place for ambient air quality, and guidelines exist for (non)attainment designation, however there is flexibility in state-EPA negotiations for redesignation. The federal register and CFR are official listings of effective attainment and non-attainment designations.

**Availability** The CFR and federal register are available in hard copy with wide distribution, and electronically via several sources.

**AIR: INDICATOR 2**  
CONNECTICUT

**Database** Type of data: non-attainment areas and populations  
Database(s): EPA and state listing of attainment designations (officially in Federal Register and CFR)

[see EPA-NE]

Connecticut is non-attainment for ozone. Some areas are non-attainment for PM10 and carbon monoxide.

**Parameters** [see EPA-NE]

*Basis for Populations* [see EPA-NE]

**Coverage**  
*Spatial* [see EPA-NE]

*Temporal* [see EPA-NE]

**Quality/  
Methodology** [see EPA-NE]

**Availability** [see EPA-NE]

**AIR: INDICATOR 2**

## MAINE

**Database** Type of data: non-attainment areas and populations  
 Database(s): EPA and state listing of attainment designations (officially in Federal Register and CFR)

[see EPA-NE]

Maine has non-attainment areas for ozone, and is in attainment for all other pollutants. Designated areas are listed by EPA in the CFR. While informal lists of designated areas may exist, the state does not maintain an official database.

**Parameters** [see EPA-NE]

*Basis for Populations* [see EPA-NE]

**Coverage**  
*Spatial* [see EPA-NE]

If redesignations are made in Maine after July 1999 proposals are made, non-attainment areas may no longer fall on county boundaries, but may be designated by some smaller unit(s), e.g., towns, in order to more accurately delineate areas in and out of compliance.

*Temporal* [see EPA-NE]

Based on new ozone standard, Maine will likely propose new designations in July 1999 Based on '96, '97, and '98 data some areas in attainment will likely be redesignated as non-attainment in 2000 or later.

**Quality/ Methodology** [see EPA-NE]

Any redesignations for ozone will likely reflect changes in the standard rather than in air quality. A redesignation in 2000, will reflect data from 1996 through 1998.

**Availability** [see EPA-NE]

## AIR: INDICATOR 2

### MASSACHUSETTS

**Database** Type of data: non-attainment areas and populations  
 Database(s): EPA and state listing of attainment designations (officially in Federal Register and CFR)

[see EPA-NE]

Massachusetts is in non-attainment for ozone, and in some areas, for carbon monoxide. Designated areas are listed by EPA in the CFR. While informal lists of designated areas may exist, the state does not maintain an official database.

**Parameters** [see EPA-NE]

*Basis for Populations* [see EPA-NE]

**Coverage**  
*Spatial* [see EPA-NE]

Entire state represented. Ozone non-attainment areas are designated by whole counties in eastern and western portions of the state. Carbon monoxide areas are designated by partial counties and other areas (towns, AQCRs, etc.)

*Temporal* [see EPA-NE]

**Quality/  
 Methodology** [see EPA-NE]

**Availability** [see EPA-NE]

**AIR: INDICATOR 2**  
NEW HAMPSHIRE

**Database** Type of data: non-attainment areas and populations  
Database(s): EPA and state listing of attainment designations (officially in Federal Register and CFR)

[see EPA-NE]

**Parameters** [see EPA-NE]

*Basis for Populations* [see EPA-NE]

**Coverage**  
*Spatial* [see EPA-NE]

Designated areas are defined by partial counties, towns, MSAs, etc.

*Temporal* [see EPA-NE]

No redesignations are likely in the near future.

**Quality/  
Methodology** [see EPA-NE]

**Availability** [see EPA-NE]

**AIR: INDICATOR 2**  
RHODE ISLAND

**Database** Type of data: non-attainment areas and populations  
Database(s): EPA and state listing of attainment designations (officially in Federal Register and CFR)

[see EPA-NE]

Rhode Island is non-attainment for ozone, but in attainment for all other pollutants.

**Parameters** [see EPA-NE]

*Basis for Populations* [see EPA-NE]

**Coverage**  
*Spatial* [see EPA-NE]

All of Rhode Island is designated as one non-attainment area for ozone. The state is in attainment for all other pollutants.

*Temporal* [see EPA-NE]

Rhode Island will likely be in non-attainment of the new 8-hour standard.

**Quality/  
Methodology** [see EPA-NE]

**Availability** [see EPA-NE]

**AIR: INDICATOR 2**  
VERMONT

**Database** Type of data: non-attainment areas and populations  
Database(s): EPA and state listing of attainment designations (officially in Federal Register and CFR)

[see EPA-NE]

Vermont is in attainment for all pollutants.

**Parameters** [see EPA-NE]

*Basis for Populations* [see EPA-NE]

**Coverage**  
*Spatial* [see EPA-NE]

*Temporal* [see EPA-NE]

**Quality/  
Methodology** [see EPA-NE]

**Availability** [see EPA-NE]

## AIR INDICATOR 3

*“Emission reductions since 1990 for each criteria air pollutant, as discussed in each annual edition of EPA’s National Air Pollutant Emission Trends report.”*

### CONTACTS

EPA – New England	Bob McConnell
CT DEP	Bill Simpson
ME DEP	Mike Karagiannes
MA DEP	Ken Santlal
NH DES	Sonny Strickland
RI DEM	Barbara Morin
VT ANR, DEC	Paul Wishinski

## SCREENING RESULTS: Overview

EPA maintains a national emissions trend (NET) inventory. This data is used to publish an annual Air Pollutant Emission Trends report, which describes emissions estimates for criteria air pollutants (all but ozone, for which VOCs are substituted) by state, source, and in other ways. The most recent report presents data through 1996. The data is drawn from a number of sources, primarily a 1990 base year inventory conducted using national level activity data (e.g., gasoline consumption, vehicle miles traveled, manufacturing and production estimates). Data for subsequent years is extrapolated by applying growth factors and population estimates to the 1990 data. Some estimates incorporate state-level data into the national calculations. For example, point sources use some state point source emissions data submitted to the AIRS database (from CT, NH, and VT). Mobile source estimates are calculated using national, as well as county-level data such as VMTs (in some years). Other pollutant sources are estimated almost solely on national data, grown from the 1990 inventory, and then apportioned to produce estimated state contributions using population and other demographic data. Overall, the 1990 NET inventory represents primarily national-level data. Data for subsequent years has little basis in actual state-level emissions data.

The annual Air Pollutant Emission Trends reports include emissions data for each of the criteria pollutants, for all source categories (point, mobile, area, non-road, and others), by state. The 1996 report does not include data for each year from 1990-1996 for each state, but this data is readily available in the NET database. It is important to note that the standard emissions factors and models are constantly modified and improved. In each Emission Trends report, data for previous years is 'backcast' using the latest factors, to ensure that emissions from all years are determined using the same procedures. However, the constant updating of emission estimation methodology from one year to the next makes emission trends from sequential reports not comparable.

In contrast to this national inventory which uses some state-level emissions data, but relies primarily on national estimates projected annually from 1990, each New England state has its own emissions inventory. These inventories were completed to meet a variety of requirements, particularly those placed on states with non-attainment areas under the Clean Air Act, and those created by the ozone transport assessment group(OTAG)<sup>3</sup>.

The state inventories may provide a more accurate picture of emissions, and could help support the indicator above, however they vary in the pollutants and time periods covered, as well as in their methodology for estimating emissions. Each state has conducted an inventory of point (facility) and non-point sources of the ozone precursors NO<sub>x</sub>, CO, and VOCs. Connecticut, Maine, Rhode Island, and Vermont include SO<sub>2</sub> and PM<sub>10</sub> in their facility inventories. Massachusetts includes SO<sub>2</sub> as well.

---

<sup>3</sup> OTAG is an effort of EPA, ECOS, and industry and environmental groups, in which part of their activities involved creating a 1990 base emissions inventory for ozone precursors, using state-submitted estimates).

Every state has compiled a 1990 base year inventory for both point and non-point sources. Some states have completed reports on non-point emissions for 1993 and/or 1996. Some states have maintained facility inventories for years after 1990. The most recently compiled emissions data is available in Connecticut and Vermont for estimated annual emissions from facilities for 1997. See individual forms in Section II for specific availability by state.

The sources included in state-level inventories vary. Every state includes major point sources as defined in the Clean Air as well as many smaller facilities. The threshold criteria for inclusion of these smaller facilities vary by state. See individual forms in Section II.

In general, states estimate emissions similarly. They all utilize the same available factors, guidance, and models available from EPA. Facility inventories in every state are based on self-reported questionnaires, which ask the facilities to estimate their emissions using any of a number of methods such as mass balance equations, continuous emissions monitoring, or other data. Mobile emissions are typically estimated by inputting state data on VMTs, meteorology, and vehicle registries into a standard EPA model. Other non-point sources of emissions are estimated by either state-level data, or national figures apportioned to the state based on population/demographics, or a combination of both. See individual forms in Section II for specific state methods.

The primary concern for utilizing emissions data over time, is consistency in estimation. Emissions data is heavily dependent upon factors and models. EPA and other entities are constantly adjusting emissions factors and models to better reflect actual emissions. Thus, discerning real changes in emissions from year to year or from report to report, from changes due to new estimation methods is difficult.

SCREENING RESULTS: Summary Matrix

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage			Quality	Availability
		Sources	Pollutants	Temporal		
EPA-NE	NET inventory of emissions estimates; annually published National Air Pollutant Emission Trends report	numerous point categories, mobile, non-road, area, and others (including biogenics)	all criteria pollutants (VOCs in place of ozone)	Net includes 1985-1990; emission trends report 1900-1996 current	1990 NET based on mostly national estimates with some state-level input; subsequent years are extrapolated using growth factors and some supplementary state data; mobile sources are calculated annually using county-level VMT data; states have been asked to	NET is an electronic database maintained nationally by EPA; the Emission Trends report is published annually in hard copy and electronically (on the www)
Connecticut	criteria pollutant emissions estimates: facilities inventory and non-point inventory	facilities include: all Title V, emitters of >10 tons of Nox or VOC, or >25 tons combined criteria pollutants; non-point includes: mobile, non-road, area sources	all criteria pollutants (VOCs in place of ozone)	facilities inventory available annually from 1994-1997; non-point inventory is complete for 1990 and 1993	facilities self-report emissions using standard factors, methods, and models; non-point sources are calculated using standard EPA protocols, factors, and state data	estimates reported to EPA; facilities data available via electronic query at CT DEP for 1995-97. Facilities data 1994 and prior is available through AIRS
Maine	criteria pollutant emissions estimates: facilities inventory and non-point inventory	facilities include: all major sources (emissions > 100 tons for any criteria pollutant), and all sources emitting over 100 tons CO, 25 tons Nox, 15 tons PM10, 40 tons SO2, 25 tons VOCs; non-point sources include mobile, non-road, area and biogenic	facilities report CO, Nox, PM10, SO2, VOCs; mobile and other non-point sources are estimated for CO, Nox, and VOCs	facility emissions are estimated annually, but have been compiled for 1990 and 1992; 1993-95 years were skipped, and 1996 will be completed this year; non-point sources are estimated every three years; data for 1990, 93, and 96 are complete	facilities self-report emissions using standard factors, methods, and models; ME DEP performs QA by comparing facility data over time and identifying inconsistencies; mobile sources are recalculated for each inventory based on state data, EPA models and	electronic database; reported to EPA for use in the Pollutant Emission Trends Report
Massachusetts	criteria pollutant emissions estimates: facilities inventory and non-point inventory	facilities included: major (>100 tons) and minor (>1 ton) sources, and numerous smaller sources; mobile, area, non-road, and biogenic sources as well	emissions are estimated for CO, NOx, VOCs, and SO2 for facilities, mobile, area, and non-road sources; VOCs are estimated for biogenics	emissions data on major sources exists for 10+ yrs; full facility inventory is available for 1990, 1996 soon, reporting is intended to be 3yr cycle; non-point sources are estimated every 3yrs; SO2 is estimated on 2-3 yr cycle	facilities self-report emissions estimates, DEP performs analysis and investigates suspected errors/fraud; area, biogenic, and mobile sources are estimated from standard models and state level data, mobile estimates are done in ~12 transportation regions	electronic database; reported to EPA

<p><b>New Hampshire</b></p>	<p>criteria pollutant emissions estimates: facilities inventory and non-point inventory</p>	<p>all permitted facilities (for criteria pollutants); mobile, area, non-road, and biogenic sources; while only emissions in non-attainment areas are required to be reported, NH DES estimates represent a majority of these sources in the state</p>	<p>CO, NOx, VOCs</p>	<p>base inventory 1990; facilities report emissions annually, but DES has processed this completely for 1994-95, 96 due soon; non-point estimates are complete for 1990 and 1993, 1996 due soon</p>	<p>facilities use variety of standard methods in self-reporting emissions; mobile, area, and biogenic sources are estimated with standard factors and models, along with state-level data; non-road emissions are apportioned to the state from national data</p>	<p>electronic database; some data reported to EPA</p>
<p><b>Rhode Island</b></p>	<p>criteria pollutant emissions estimates: facilities inventory and non-point inventory</p>	<p>all major and minor facilities, over 800 in all; area, mobile, and non-road sources</p>	<p>CO, NOx, VOCs; SO2 and PM for facilities</p>	<p>facilities inventoried annually; area, non-road, and mobile emissions estimated every 3yrs, 1990 base year, 1993 partial, 1996 complete</p>	<p>facilities use variety of standard methods in self-reporting emissions to DEM; DEM does some investigations to ensure accuracy; other sources estimated using standard models, factors, and state data</p>	<p>1990 and 1996 inventory available; data reported to EPA</p>
<p><b>Vermont</b></p>	<p>criteria pollutant emissions estimates: facilities inventory and non-point inventory</p>	<p>facilities emitting &gt; 5 tons of all criteria pollutants combined (~240), but report to EPA only for those emitting &gt;25 tons for any one pollutant; some small area sources; mobile, area, non-road, and biogenics</p>	<p>CO, NOx, VOCs, SO2, PM</p>	<p>facilities submit emissions data annually, partial data exists for 1985-86, full inventory exists for 1987-1997, some facilities have been added to inventory over time; a complete non-point inventory was done in 1993, for 1990 data</p>	<p>facilities use standard methods to self-report emissions; smaller sources submit data and VT ANR does estimates; mobile and area emissions are based on models, factors, and state data; non-road and biogenics are estimated based on national data apportioned</p>	<p>1990 complete inventory, reported to EPA; facility registry in database</p>

## SCREENING RESULTS: Interview results

### AIR: INDICATOR 3

EPA – NEW ENGLAND

<b>Database</b>	Type of data: estimated emissions of criteria air pollutants Database(s): National Emissions Trends(NET) emissions inventory; National Air Pollutant Emission Trends report
	Nationally, EPA maintains the NET inventory of emissions, and publishes the National Air Pollutant Emission Trends report, which includes criteria pollutant quantities, by state.
<b>Coverage</b>	
<i>Sources</i>	Emissions are estimated for numerous sources within the general categories: point, mobile, non-road, and other (e.g., biogenic).
<i>Pollutants</i>	Emissions of NO <sub>x</sub> , SO <sub>2</sub> , PM <sub>10</sub> , VOCs, CO, and lead are estimated.
<i>Temporal</i>	Inventory data is available from 1900-1996. Data based on 1990 NET inventory is available in the NET annually from 90-96.
<b>Quality/ Methodology</b>	Emissions quantities reported in the annual editions of the National Air Pollutant Emission Trends reports, are based primarily on 1990 NET data. This data is extrapolated to subsequent years and apportioned to state-level estimates. The initial 1990 NET inventory estimated emissions using a variety of data sources, primarily national level activity data, such as gasoline consumption and VMTs. The 1990 NET also incorporated some state-level data, particularly from state inventories submitted under OTAG, and point source data reported to AIRS/AFS. For subsequent years, the national inventory/report estimates emissions generally, as follows:

Point sources are estimated from the 1990 NET inventory using growth factors, except in CT, NH, and VT, where those states requested that EPA use data updated in the AIRS/AFS database.

Mobile sources from 1990-95 are estimated annually using county-level VMT data from the Federal Highway Administration's Highway Performance Monitoring System, and county-level emission factors (based on national factors and state-level data such as temperature and vehicle registrations). The 1990 inventory used some state-supplied VMT data (including New England). In 1990,

1995, and 1996, some states, primarily in the OTAG domain, supplied additional data for the emissions model.

Non-road emissions were estimated in the 1990 NET based on a 27 non-attainment area sample. Emissions estimates were then apportioned to other areas in the country based on climatic and geographic similarities to the samples, as well as population factors.

Other emissions were estimated in the 1990 NET using primarily national data, supplemented by some state-level data. Emissions in subsequent years were estimated based on growth factors applied to the 1990 data.

EPA has asked states to review emissions estimates for 1996, and for subsequent emissions estimates/reports, to supply their own state-level data to supplement and improve upon the EPA estimates where possible.

**Availability** EPA maintains an electronic database of emissions estimates for years 1985-1996. A hard copy and electronic copy report on National Air Pollutant Emission Trends is produced annually. The most recent covers estimates from 1900 through 1996.

## AIR: INDICATOR 3

### CONNECTICUT

<b>Database</b>	<p>Type of data: estimated emissions of criteria air pollutants          Database(s): facility inventory; estimated source reports</p> <p>CT DEP maintains a database of facilities, and the estimated emissions of pollutants. CT DEP also estimates emissions from mobile and area sources and reports these estimates.</p>
<b>Coverage</b>	
<i>Sources</i>	<p>The facility inventory is comprised of approximately 275 sources and businesses. These include all facilities under Title V of the Clean Air Act, and sources which emit greater than 10 tons of VOCs or Nox, or greater than 25 tons of all other criteria pollutants.</p> <p>The CT DEP estimates emissions from mobile, area, and non-road sources as well, separately.</p>
<i>Pollutants</i>	<p>The facility inventory tracks emission of criteria pollutants (VOCs in place of ozone).</p>
<i>Temporal</i>	<p>Data is available on facilities annually from 1994 through 1997. Some data is available prior to 1994.</p> <p>Data on mobile, area, and other sources covers three year intervals, but only as recent as 1993.</p>
<b>Quality/</b>	
<b>Methodology</b>	<p>Facility emissions are estimated by the facilities using a variety of methods and guidelines including stack test results, and are reported by the facilities on a standard DEP form.</p> <p>Mobile, area, and other estimates are based on standard protocols. Mobile sources are based on EPA's Mobile modeling software, VMT calculations, and EPA emission factors. EPA guidance/methods are used where appropriate.</p>
<b>Availability</b>	<p>Facilities inventory data is available through AIRS through 1994. 1995-1997 data is available by data query in CT DEP.</p> <p>Mobile, area, and other source estimates area available for 1990 and 1993.</p>

Both facility and mobile/area estimates are reported to EPA for use in the Annual Air Pollutant Emission Trends Reports.

## AIR: INDICATOR 3

### MAINE

<b>Database</b>	<p>Type of data: estimated emissions of criteria air pollutants</p> <p>Database(s): facility inventory; estimated source reports</p> <p>ME DEP maintains a database of facilities emitting criteria pollutants, and estimates emissions from non-point sources.</p> <p>Emissions are reported in tons, by source and by pollutant.</p>
<b>Coverage</b>	
<i>Sources</i>	<p>Facilities in the database include all federally defined major sources (emissions greater than 100 tons for any criteria pollutant), and all sources emitting greater than:</p> <ul style="list-style-type: none"> <li>100 tons of CO</li> <li>25 tons of NO<sub>x</sub></li> <li>15 tons of PM<sub>10</sub></li> <li>40 tons of SO<sub>2</sub></li> <li>25 tons of VOCs</li> </ul> <p>Non-point sources tracked in the complete emissions source inventory include mobile, non-road, area, and biogenics.</p>
<i>Pollutants</i>	<p>Facilities report emissions of CO, NO<sub>x</sub>, PM<sub>10</sub>, SO<sub>2</sub>, and VOCs.</p> <p>Mobile, area, and other non-point emissions are estimated for CO, NO<sub>x</sub>, and VOCs.</p>
<i>Temporal</i>	<p>Facilities report estimated emissions annually. These have been computed by ME DEP for 1990, and 1992. 1993-1995 estimates are skipped. The agency is currently working on 1996 data, to be completed this year. The group of facilities required to report has remained consistent since 1990.</p> <p>For non-point sources, a base year inventory was completed for 1990. This is updated every three years (1993 and 1996 are complete)</p>

**Quality/**

**Methodology** Facilities report emission estimates to ME DEP, using the standard variety of methods (stack tests, emission models, AP-42, mass balance). ME DEP does QA by comparing facilities from year to year. Inconsistencies are flagged and presented to the licensing division for explanation. Some may require site visit or investigation, but most are explained by changes in licensing/permits.

Non-point emissions are estimated using standard models, factors, and data. Mobile sources are estimated by ME DEP using VMTs, and other information. Other non-point sources are calculated from the 1990 base year data, using standard growth factors and demographics. Some calculations (e.g., for biogenics) are done by EPA.

**Availability** Emissions estimates are available in DEP databases. Estimates are furnished to EPA.

## AIR: INDICATOR 3

### MASSACHUSETTS

<b>Database</b>	<p>Type of data: estimated emissions of criteria air pollutants          Database(s): facility inventory; estimated source reports</p> <p>MA DEP maintains a database of facilities, and their estimated pollutant emissions. MA DEP also estimates emissions from mobile and area sources and reports these estimates.</p>
<b>Coverage</b>	
<i>Sources</i>	<p>The facility inventory is comprised of all major (&gt; 100 tons for any pollutant) and minor (&gt;1 ton) facilities. Some smaller emitters are included as well. The inventory is described as having nearly complete coverage for these point sources.</p> <p>The MA DEP estimates emissions from mobile, area (dry cleaners, landfills, degreasers, etc.), non-road (small engine), and biogenic sources as well, separately.</p>
<i>Pollutants</i>	<p>The facility inventory tracks CO, NO<sub>x</sub>, VOCs, and other ozone precursors. SO<sub>2</sub> is also tracked, primarily for acid rain program purposes. PM<sub>2.5</sub> emissions are not reported, but could be in the future if MA becomes non-attainment for PM.</p> <p>VOCs, NO<sub>x</sub>, SO<sub>2</sub>, and CO are estimated for stationary area, mobile, and non-road emissions. VOCs are estimated for biogenics.</p>
<i>Temporal</i>	<p>Facility inventory is intended to be conducted every three years, from a 1990 base year. However, a 1993 inventory was not done, and 1996 is due to be completed soon.</p> <p>Data on major sources is available back more than 10 years.</p> <p>Stationary area, mobile, and non-road estimates are completed every three years. SO<sub>2</sub> is reported at 2-3 year intervals.</p>
<b>Quality/ Methodology</b>	<p>The facilities inventory receives emissions estimates on survey forms from facilities. MA DEP verifies data and investigates suspected error or fraud. DEP uses EPA guidance and models to calculate emissions for: facility segments, point, stack, and entire plant.</p> <p>Stationary area sources are estimated using EPA models and protocols. Mobile sources are calculated by each transportation planning area in the state using VMTs, registry of vehicles, EPA factors and other data. These (~12) are then</p>

combined for state total. Non-road estimates are based on national calculation, apportioned to the state, based on demographic data. Biogenics are estimated using EPA models and data on land use, tree cover, species composition, etc.

**Availability** Facilities and other source data are maintained in electronic databases by MA DEP. Data is also reported to EPA for use in the Annual Pollutant Emission Trends Report.

## AIR: INDICATOR 3

### NEW HAMPSHIRE

<b>Database</b>	<p>Type of data: estimated emissions of criteria air pollutants          Database(s): facility inventory; estimated source reports</p> <p>NH DES maintains a database of criteria pollutant emissions from facilities and non-point sources.</p>
<b>Coverage</b>	
<i>Sources</i>	<p>The database includes inventories of all permitted facilities emitting criteria pollutants in NH (majority of emissions are from power plants).</p> <p>Non-point sources include mobile, non-road, area, and biogenic sources.</p> <p>Inventories are required only in non-attainment areas, although most emissions are estimated for the whole state.</p>
<i>Pollutants</i>	CO, NO <sub>x</sub> , VOCs
<i>Temporal</i>	<p>A base inventory was completed in 1990. Facilities report emissions data to DES annually. DES then processes and enters the data. Inventory data is available in the database completely for 1994-95, with 1996 almost complete.</p> <p>Non-point estimates have been completed for 1990 and 1993. 1996 is almost complete.</p>
<b>Quality/</b>	
<b>Methodology</b>	<p>Facilities estimate emissions based on a variety of methods: stack tests, continuous monitoring, or AP-42 model.</p> <p>Mobile, area, and biogenic emissions are estimated using EPA standard models and factors, along with state-level data.</p> <p>Non-road estimates are made using national data, apportioned using state population/demographics.</p>
<b>Availability</b>	Emissions estimates are available in the database. Some emissions data is reported to EPA.

**AIR: INDICATOR 3**

## RHODE ISLAND

<b>Database</b>	Type of data: estimated emissions of criteria air pollutants Database(s): facility inventory; estimated source reports
	RI DEM maintains an inventory of criteria pollutant emission sources.
	Emission sources are tracked by facility, and by source (area, non-road, mobile). Quantity of emissions are estimated by source.
<b>Coverage</b>	
<i>Sources</i>	Over 800 sources are tracked. All major and minor facilities, and area, non-road, and mobile sources are included.
<i>Pollutants</i>	CO, NO <sub>x</sub> , and ozone precursors
<i>Temporal</i>	Inventory is conducted every three years. Base year is 1990, for which a complete inventory is available. A partial inventory is available for 1993, and the 1996 has not yet been done.
<b>Quality/ Methodology</b>	Facility emissions are estimated by the facilities using a variety of methods and guidelines including stack test results, and are reported by the facilities on a standard DEM questionnaire. DEM conducts some follow-up inspections.
<b>Availability</b>	Both facility and mobile/area estimates are reported to EPA for use in the Annual Air Pollutant Emission Trends Reports.

## AIR: INDICATOR 3

### VERMONT

<b>Database</b>	<p>Type of data: estimated emissions of criteria air pollutants          Database(s): facility inventory; estimated source reports</p> <p>VT ANR maintains an annual registry of facilities emitting criteria pollutants. VT ANR has also conducted one non-point emission report.</p> <p>Emission quantities are estimated by source and pollutant. Facility emissions are broken out by points (stack, boiler, etc.)</p>
<b>Coverage</b>	
<i>Sources</i>	<p>The facilities database includes all facilities emitting greater than 5 tons of all criteria pollutants combined, approximately 240 facilities. In reporting to EPA for the Trends Report, only those emitting greater than 25 tons for any one pollutant are included. VT ANR also estimates emissions from smaller area sources.</p> <p>Vermont conducted one complete inventory including mobile, non-road, area, and biogenic sources.</p>
<i>Pollutants</i>	CO, NO <sub>x</sub> , SO <sub>2</sub> , VOCs, PM
<i>Temporal</i>	<p>Facilities are required to register annually, submitting emission estimates upon which fees are based. The formal registration program was established in 1987, and has been updated annually through 1997. Partial data is available for 1985-86. Since 1987, some new or missed facilities have been added to the registry. A major group of these includes ski resorts – large NO<sub>x</sub> emitters previously missed due to the program's summer season focus.</p> <p>In 1993, ANR conducted a complete inventory including mobile, non-road, biogenic, and area sources. The inventory calculates 1990 base-year emissions data. Based on Vermont's attainment status, there is little obligation to produce another inventory, although one might be completed for 1996 data, but has not yet been.</p>
<b>Quality/ Methodology</b>	<p>Facilities estimate their emissions for annual registration and fees using a variety of approved methods, and submit to ANR. The state has agreements with smaller area sources, whereby these sources submit data, and ANR estimates emissions for them using factors and models (e.g., EPA's AP-42 model).</p>

The 1990 base-year inventory sources were estimated using standard factors and models. EPA provided estimates for Vermont's non-road and biogenic sources using national and state level data.

**Availability** The facility registry is available in a consolidated electronic database. This data and the 1990 inventory are furnished to EPA.



**AIR**

**INDICATOR 4**

*“Trend in emissions of toxic air pollutants.”*

**CONTACTS**

EPA – New England	Dwight Peavey
CT DEP	
ME DEP	Ellen Doering
MA DEP	Ken Pelletier
	Bob Boisel
NH DES	Tom Nejadlik
RI DEM	Barbara Morin
VT ANR, DEC	Paul Wishinski

## SCREENING RESULTS: Overview

Nationally, EPA maintains the Toxics Release Inventory under the Emergency Planning and Community Response Act (EPCRA). This inventory is a widely available and distributed database of releases of toxic chemicals from facilities around the country. Facilities self-report their releases, emissions, and transfers to environmental media and storage or disposal facilities of chemicals listed by EPA. These reports are submitted annually to EPA, using standard estimation methods and a standard reporting form.

The TRI covers all facilities in all states meeting the following criteria and thresholds:

- Conduct manufacturing operations (are in SIC 20-39)
- Have 10 or more full time employees (or part time equivalent)
- Manufacture, process, or import a listed chemical or group of chemicals in quantity over 25,000 pounds, *or* otherwise use a listed chemical in quantity over 10,000 pounds.

Chemicals with reporting requirements (approximately 650) are listed by EPA under EPCRA. The TRI contains data on the quantity of releases, emissions, and transfers, in pounds, annually from 1988-1996. Facilities are currently submitting, and EPA is currently compiling 1997 data.

The quality of the TRI data is often challenged. The TRI data is based on self-reported estimates of chemical quantities. While EPA issues explicit and detailed guidelines (often criticized for their complexity), and facilities report the methods used for estimation, the fact that data is based on approximations has been of concern. In addition, the inclusion of only a subset of all facilities which emit toxic pollutants, the group of manufacturing facilities, is important in understanding that the TRI does not represent the entire universe of toxics sources or emissions. In addition, as listed chemicals, reporting criteria, included facilities, and estimation methods have evolved over time, so have concerns for the comparability of TRI data over the years.

Beyond the TRI, there are other sources of data on toxic emissions for the New England states. Each of the states in the region, with the exception of Connecticut, maintains a separate inventory of facility toxics emissions. Some are supported under state toxic use reduction laws, others are attached to existing facility reporting requirements.

Three states – Maine, Massachusetts, and Rhode Island – track emissions from all TRI reporting facilities, as well as numerous other facilities either within a selected SIC group beyond the TRI, or meeting a state-defined emissions threshold. New Hampshire tracks emissions from all CAA Title V sources (some but not all of which may also be TRI reporters). Vermont tracks only those facilities that are already reporting to the state for meeting the thresholds for criteria air pollutants.

Three states – Maine, Massachusetts, and Vermont – require facilities to report on a list of chemicals which includes those required by the TRI, as well as additional chemicals which vary by state. Maine tracks numerous compounds of state significance in addition to the TRI list. Massachusetts adds all chemicals listed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Vermont tracks all chemicals used by reporting

facilities, which are listed on materials safety data sheets (MSDSs), in addition to other solvents and compounds. Rhode Island tracks the 188 EPA listed Hazardous Air Pollutants (HAPs) and other chemicals. New Hampshire tracks a subset of the HAPs.

Every state with a toxics inventory has data available for 1996. Massachusetts, Vermont, and Rhode Island have data for a common period from 1993 to 1996. The comparability of each state's data over time varies and is discussed in the individual forms in Section II.

SCREENING RESULTS: Summary Matrix

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage			Quality	Availability
		Sources	Pollutants	Temporal		
<b>EPA-NE</b>	TRI	all facilities listed in EPCRA section 313: SIC 20-39, have >10 employees, either manufacture, process, or import >25,000 lbs of any listed chemical, or otherwise use >10,000lbs of any listed chemical	approximately 650 reported chemicals are listed by EPA	1988-1996 annual reporting; changes in chemicals and facilities over time	facilities self report emissions to EPA; EPA does QA; many concerns have been expressed about the scope of facilities and chemicals reported, as well as with reporting/estimation methods	the TRI is widely available annually; CD-ROM, internet, electronic, published reports annually
<b>Connecticut</b>	none; see EPA - New England	N/A	N/A	N/A	N/A	N/A
<b>Maine</b>	state toxic emissions inventory	all TRI facilities; all facilities emitting >2000 lbs of a listed chemical or >200 lbs of a carcinogen; most point sources are included, but many small area sources are missed	all TRI chemicals, all EPA-listed HAPs, other compounds of state significance	inventories done for 1990 (incomplete), 93 and 96; inventories expected at two year intervals	emissions estimates are self-reported by facilities; DEP conducts QA and on- and off-site audits	electronic database; 1993 inventory in hard copy, 1996 to be published in hard copy
<b>Massachusetts</b>	state toxic emissions inventory	all TRI facilities; includes additional facilities in commercial sectors beyond the TRI SIC group	all TRI chemicals, all CERCLA chemicals; chemicals are reported for all process uses; facilities meeting 25 tons manufacture or 10 ton otherwise use threshold must report all listed chemicals over 10 tons, regardless of use	facilities report to DEP annually; data compiled for 1990-1996	facilities self report to DEP and describe methods used for estimation; inspectors conduct some site audits	electronic database
<b>New Hampshire</b>	state toxic emissions inventory	all Title V sources	VOCs, and a subset of EPA HAPs	1996 inventory for Title V sources only; 1997 inventory includes Title V and some other sources	facilities self-report emissions estimates	electronic database
<b>Rhode Island</b>	state toxic emissions inventory	all major, minor, and other permitted sources; many other small sources (dry cleaners inventoried seperately)	all EPA HAPs and other chemicals	1989-present; although numerous chages in facilities and chemicals included	facilities self -report emissions estimates; state calculates for smaller sources; all verified by RI DEM	electronic database
<b>Vermont</b>	state toxic emissions inventory	all facilities registering for criteria emissions (greater than 5 tons of all criteria emissions combined)	all TRI, all chemicals listed in facilities MSDS, and numerous other solvents and compounds	1993-1997, updated annually	facilities self-report emissions estimates for toxics surcharge; facilities report controls and explain reductions in emissions figures; ANR does off-site QA	within the electronic criteria emissions registry database

## SCREENING RESULTS: Interview results

### AIR: INDICATOR 4

EPA – NEW ENGLAND

**Database** Nationally, EPA maintains the toxics release inventory (TRI), an inventory of toxic emissions, releases, and transfers from facilities, by media, along with other information on manufacturing processes and pollution prevention measures.

#### Coverage

##### *Sources*

Sources are described in Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA). Reporting facilities are those which conduct manufacturing operations (SIC 20-39), have 10 or more full-time employees (10 FTE), and use a listed chemical(s) as follows:

Manufacture, process, or import any chemical or group in quantity over 25,000 lbs

or,

otherwise use any chemical or group in quantity over 10,000 lbs.

*Pollutants* Approximately 650 listed chemicals and compounds (EPCRA).

*Temporal* TRI data is available from 1988-1996. The TRI is published annually, with a 1-2 year lag time. Listed chemicals and reporting facilities have changed over that time.

#### Quality/

**Methodology** Facilities self-report estimates of releases, on standardized forms, using extensive EPA guidance and mandated protocols. EPA compiles and performs quality assurance of this data.

Numerous issues have been raised regarding the quality of TRI data. Constant changes in guidance, listed chemicals, and covered facilities have improved the representativeness of the data, but at the expense of consistency over time. The TRI has been criticized for its methods, including: the limited range of facilities required to report (only manufacturing), the methods used for estimating releases, and the accurate identification of facilities and locations.

**Availability** The TRI is widely available in electronic format, on CD-ROM, via the Internet, and in hard copy reports. The 1996 data is available electronically, and will soon be available in hard copy and on CD-ROM.

**AIR: INDICATOR 4**  
CONNECTICUT

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p.55).

Connecticut does not conduct a state toxics inventory at this time.

**Coverage**

*Sources* N/A

*Pollutants* N/A

*Temporal* N/A

**Quality/  
Methodology** N/A

**Availability** N/A

## AIR: INDICATOR 4

### MAINE

- Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p.55).
- ME DEP maintains a periodic inventory of toxic emissions from TRI-reporting and other facilities.
- Coverage**
- Sources* All TRI reporting facilities are included in the ME DEP database. Also, all facilities emitting more than 2000 lbs of any listed chemical, or more than 200 lbs of any carcinogen (as defined by EPA, weight of evidence criteria).
- Pollutants* Chemical compounds listed by DEP to be reported in the inventory include all TRI chemicals, 189 HAPs, and other compounds of specific state significance (e.g., sulfur compounds from pulp mills).
- Temporal* Inventories have been done for 1990 (incomplete), 1993, and 1996. Future inventories are expected on a two year cycle ('98, '00,...).
- Quality/**
- Methodology** Facilities self-report emissions data to DEP. DEP performs QA on data reported by facilities.
- DEP describes the 1990 inventory is as incomplete. 1993 and 1996 data are described as consistent. DEP conducts targeted audits both off- and on- site. In 1993, little auditing took placed on-site at facilities.
- The inventory is said to include most “point sources,” and some area sources. It is assumed that many small area sources are missed.
- Availability** Emissions inventories are maintained in a database. The 1993 inventory has been produced in hard copy; a 1996 hard copy report is to be published soon. Emissions data is *not* reported to AIRS.

**AIR: INDICATOR 4**  
MASSACHUSETTS

- Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p.55).
- MA DEP maintains a database of TRI forms and additional data from facilities, such as information required by the state's Toxics Use Reduction law.
- Coverage**
- Sources* All TRI reporting facilities report to MA DEP. Also, numerous other "service" facilities beyond the TRI SIC group report.
- The reporting threshold for MA DEP's TUR inventory is the same as that for the TRI. However, if a facility exceeds the 25 ton threshold for any processed or manufactured chemicals, or 10 tons for any chemical otherwise used, all chemicals used by that facility over 10 tons, regardless of use, are also reported.
- Pollutants* Facilities report use and release of all TRI chemicals, in addition to all CERCLA chemicals, approximately 1400 in all.
- Again, once a facility reports over 25 tons for one pollutant, all are subject to a 10 ton threshold, thus more chemicals per facility may be reported to the state TUR database, than to the TRI alone.
- State requires reporting of chemicals in all process uses.
- Temporal* Facilities report to DEP annually. Data is compiled for 1990-1996.
- Quality/**
- Methodology** Facilities use and describe standard methods for calculating. MA DEP has multi-media trained inspectors who provide assurance of accuracy during some site visits.
- Availability** Electronic database.

## AIR: INDICATOR 4

### NEW HAMPSHIRE

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p.55).

NH DES has maintained a partial inventory of toxic air sources, and plans to implement a comprehensive inventory in the future.

The inventory includes emissions quantities by pollutant and source.

#### **Coverage**

*Sources* All CAA Title V sources.

*Pollutants* VOC's, and a subset of hazardous air pollutants ("HAPs" listed by EPA).

*Temporal* From 1996-97, toxics were inventoried for Title V sources and some other sources. In 1996, an inventory was completed speciating all toxics from Title V sources only. In 1999, this speciated inventory will include all permitted facilities in New Hampshire.

#### **Quality/**

**Methodology** Inventory data is acquired from written surveys completed by facilities.

**Availability** Inventory data is available from a DES database.

**AIR: INDICATOR 4**  
RHODE ISLAND

- Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p.55).
- RI DEM maintains an inventory of facilities releasing air toxics.
- The inventory tracks emissions quantities by pollutant and by source.
- Coverage**
- Sources* All major, minor, and permitted sources. Includes many small sources (e.g., autobody shops). Dry cleaners are listed in a separate database.
- Pollutants* HAPs and others
- Temporal* The inventory has tracked facilities and emissions as far back as 1989. However, changes in the pollutants and facilities included, and periodic emphases on geographic areas or business sectors, are likely to affect trends over time.
- Quality/**
- Methodology** Inventory data is provided via questionnaires to facilities. The DEM estimates emissions for small sources. All estimates are verified by RIDEM.
- Availability** Inventory data is available in an electronic database.

## AIR: INDICATOR 4

### VERMONT

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p.55).

VT ANR maintains an air toxics inventory “piggy-backed” on its criteria pollutant registration program and database. Facilities report total quantity of toxics used and amount emitted to air. Facilities also report controls which avoided or reduced emissions, and methods for calculations.

### Coverage

*Sources* All facilities required to register criteria pollutant emissions: those emitting greater than 5 tons of all criteria pollutants combined.

*Pollutants* All chemicals released to air, including TRI chemicals, all chemicals listed on a facility’s materials safety data sheets (MSDS), and numerous solvents. Approximately 150-200 compounds are reported in all.

*Temporal* Toxics data is available in the database with consistent format and survey methodology from 1993 through 1997 and is updated annually.

### Quality/

**Methodology** Toxics use and emission estimates are calculated by facilities and self-reported in their annual registration to compute toxics surcharges in addition to criteria pollutant emission fees. ANR uses mass balance and other calculations for QA and to summarize the data.

Facilities report the use of any controls to explain reductions in emissions, and report methods for calculating use and emissions.

**Availability** Toxics data is available via the criteria pollutant registration database.



**WATER**  
**INDICATOR 5**

*“Percent of assessed waterbodies that protect public health and the environment by supporting a) fish and shellfish consumption, b) safe recreation, and c) healthy aquatic life use designations.”*

**Contacts**

EPA – New England	Diane Switzer, Ray Thompson
CT DEP	Fred Banah
ME DEP	Barry Mower
MA DEP	Tom Dallaire
NH DES	George Berlandi, Greg Comstock
RI DEM	Connie Cary
VT ANR, DEC	Doug Burnham

## SCREENING RESULTS: Overview

Under the Clean Water Act (CWA), states are required to conduct water quality surveys to characterize the health of waterbodies in the state, and to determine whether or not designated uses are supported. These surveys are produced by states biennially in even years. These 305(b) reports as they are known (referring to the CWA section which requires them), serve as detailed descriptions of state's waters. They include quantitative and qualitative information about water resources, quality problems and causes of problems, as well as efforts to improve and monitor water quality.

In regulating and coordinating the state water quality surveys, "EPA has pursued a balance between flexibility and consistency in the Section 305(b) process."<sup>4</sup> Critical to this indicator, consistency is evident in the type of information reported, in particular the percent of assessed waters meeting designated uses. Each state assesses waters for their degree of support of uses designated by the state as being beneficial and desired for the particular waterbodies, such as swimming, fishing, aquatic life, or drinking water. To do this, states compare a broad range of data and information against criteria by which they define necessary characteristics waters must attain to support uses. States assess lakes, streams, rivers, coastal waters, reservoirs and other waterbodies.

The flexibility afforded to states in preparing their 305(b) reports is evident in the variability of use designations, support criteria, and methods for assessment, as well as in the selection of waters that are assessed. A significant proportion of each 305(b) report is devoted to describing in detail the specific methodologies used for assessments, the data and monitoring infrastructure used to support the assessments, and other information regarding the quality of specific waterbodies and efforts to improve water quality and evaluation. This information is far too detailed to discuss and compare here. The interview results in the following pages present some information about the coverage and emphases of individual state water quality surveys. Some general concerns for consistency and data quality among state 305(b) assessments is discussed here and in the interview results, and some examples are highlighted. For more detail on the implications of state water quality assessment data, the individual state 305(b) reports should also be consulted.

Each of the New England states, via their 305(b) assessments, reports the percent of waters supporting designated uses (number supporting/total waters assessed). These are reported by type of water (lake, river, estuary, etc.), type of use (swimming, fishing, etc.), and degree of support (fully, threatened, partial, not supporting, not attainable). All states designate and assess some waters for similar uses. However, there is variability in the definition of uses. For example, this indicator requires a percentage of waters supporting "(c) safe recreation". All of the states assess some of their waters for recreation. For some this means primarily swimming, while some include other recreational uses. Massachusetts assesses waters for primary contact (e.g., swimming) and secondary contact (e.g., boating). These categories would likely be aggregated to report the percentage of waters supporting "safe recreation".

---

<sup>4</sup> US EPA, *National Water Quality Inventory, report to Congress*, 1994.

Additional concerns for the utility of an indicator based on 305(b) assessments include the percent of waters assessed within a state in a given reporting cycle, and the criteria for the selection of waters for assessment. As with most concerns regarding the quality of 305(b) data, EPA is addressing the assessed waters issue by focusing on clearer guidance, more extensive and comprehensive data collection/reporting, and consistency. Most states are able to assess only a small fraction of their total waterbodies. Following EPA guidance, some states have moved to a rotating monitoring schedule whereby different fractions of the state's waters are assessed in given years. Massachusetts has operated on cycle of assessing 1/5 of the state's waters a year. Thus in any given 305(b) reporting year since (1994,1996), some assessment data is based on information collected within the preceding 1-2 years, while other assessments reflect older information, while the total number of waters assessed is larger than would be otherwise possible. New Hampshire implemented a rotating assessment program, but suspended this in 1993 in order to focus on particular problem sites. For the 1998 reporting year, Connecticut will also be utilizing a rotating basin program. In contrast to the rotating basing method, Rhode Island has assessed all waters in the state. While most states rely on USGS 1:100,000 scale delineations of waterbodies (USGS, digital line graphs, EPA RF3) for selecting waters for assessment, Rhode Island assesses all waters apparent at 1:24,000 scale (e.g., USGS 7.5 min topo-quads).

While the indicator addresses this variable by measuring only the percent of *assessed* waters supporting uses, it cannot reconcile the variability in how representative assessed waters are. Most states target assessment efforts towards waters with known, suspected, or historical problems. Thus the set of assessed waters may be comprised of an unrepresentative proportion of unhealthy river miles, lake acres, etc. This emphasis on waters with likely pollution impacts and thus use impairments is not unique to any state. However, the move to more comprehensive monitoring has had the effect of expanding some state's assessments to more representative groups of waterbodies in recent years. Connecticut for example has measured predominantly problem sites, along with several sites representing "pristine" conditions. In moving to a rotating assessment method, many existing monitoring sites will be retained, while additional waters will be assessed, increasing the overall representation of the assessed waterbodies in the state. Rhode Island, by assessing all waterbodies within the state, including segments representing all of Narragansett Bay, paints a very different picture of designated use support than most states.

Some other general concerns regarding variability in 305(b) assessments<sup>5</sup>:

- Waters are assessed using combinations of water quality information. These sources of data range from ambient water quality parameter data collected and analyzed under strict protocols, to less reliable citizen volunteer data, to professional judgements and "windshield surveys". States are asked to describe in their reports the relative proportions of waters assessed using monitored data, and those assessed by evaluating waters based on less reliable data. These proportions and the definitions used in distinguishing the bases for assessment follow EPA guidance, yet are significantly variable from state-to-state and year-to-year.

<sup>5</sup> For more detail on 305(b) reporting issues, see US EPA. *Guidelines for Preparation of the Comprehensive State Water Quality Assessments and Electronic Updates: Report Contents*, 1997. EPA-841-B-97-002A. and *Supplement*, EPA-841-B-97-002B.

- Designations of uses for waterbodies and the criteria used for determining the support of uses are not necessarily consistent from state-to-state, or from year-to-year. Changes and improvements in EPA guidance documents may yield more accurate and consistent reporting among states, but can adversely affect consistency over time.
- In some cases, changes in criteria for use support or differences in the interpretation of other data used to determine use support, can have profound effects on the numbers of waters meeting a given use. For example, the use of fish advisories as a criteria for the support of fish consumption has been criticized as unfairly distorting the water quality “story”, especially in states with general fish advisories which cover all waters, often for one pollutant (e.g., mercury).

This indicator poses a tradeoff between reportability and consistency. Data to support this indicator is available in each of the New England state’s 305(b) reports, and is summarized by EPA in the *National Water Quality Inventory*. The percent of waters meeting designated uses can be extracted easily from these sources. Given the variability in waters chosen for assessment, definitions of uses (e.g., recreation, swimming, boating), methods for assessment, and other factors, these number may have different meaning for each state. Given this, EPA suggests that caution be used “in comparing data or determining the accuracy of data submitted by different states and jurisdictions”, and “when comparing water quality information submitted during different 305(b) periods.”<sup>6</sup>

---

<sup>6</sup> US EPA. *About State Water Quality Assessments*. [www.epa.gov/indicator/about305.html](http://www.epa.gov/indicator/about305.html).

## SCREENING RESULTS: Summary Matrix

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage			Quality/ Methodolog	Availability
		Waters	Parameters	Temporal		
<b>EPA - NE</b>	National Water Quality Inventory summarizes data from state 305(b) reports	see individual states	reports support of basic uses as percent of waters, by type (e.g., lakes, rivers, estuaries); use support is described by fully supporting, threatened, partially supporting, not supporting, and not attainable	Biennial reporting; most recent National Water Quality Inventory is for 1996	EPA issues guidelines for monitoring, assessment, and reporting, however the states are granted flexibility; guidance and consistency among states has increased over time, however significant definintional variability remains	National Water Quality Inventory in hard-copy; state fact sheets on EPA's World Wide Web site
<b>Connecticut</b>	305(b) report	Long Island Sound and coastal areas have almost 100% coverage; 15-20% of other waters are assessed	waters assessed for fish and shellfish consumption, recreation, and aquatic life	biennial reporting since 1976	monitoring targeted to problem areas, while a few "pristine" areas are sampled; many assessments utilize high-quality data from fixed stations; some assessments rely on "best professional judgement"	hard copy reports through 1996
<b>Maine</b>	305(b) report	not contacted; see EPA - New England	not contacted; see EPA - New England	not contacted; see EPA - New England	not contacted; see EPA - New England	not contacted; see EPA - New England
<b>Massachusetts</b>	305(b) report	rotating assessments since 1993, approximately 1/5 of state's waters per year; approximately 15-20% of rivers and streams assessed to date	waters assessed for primary contact, secondary contact, fish consumption (freshwater), shellfish consumption (by Marine Fisheries Div.), and aquatic life.	biennial reporting	rotating assessment schedule has increased the number of waters assessed, but efforts are still targeted towards problem areas; bases for assessment vary widely from ambient data to windshield surveys; entire state is under fish consumption advisory, precluding any waters from meeting fish consumption use	hard copy reports through 1996

<p><b>New Hampshire</b></p>	<p>305(b) report</p>	<p>rotating assessment schedule was suspended from 1993-96, and efforts were refocused on problem sites</p>	<p>see EPA - New England</p>	<p>biennial reporting</p>	<p>rely on mix of assessment methods/data: either reliable monitoring data collected within the past five years, or older data and other methods/judgement; NH uses QA/QC approved by EPA for own data, as well as data from outside sources (e.g., volunteers)</p>	<p>hard copy reports through 1996; lake and pond assessment data in database</p>
<p><b>Rhode Island</b></p>	<p>305(b) report</p>	<p>all waters in state, including Narragansett Bay, appearing at 1:24,000 scale</p>	<p>assess waters for swimming, aquatic life, drinking water (RI DOH), and shellfish consumption</p>	<p>biennial reporting</p>	<p>RI uses a combination of data sources including university and volunteer monitoring; recent improvements in calculating the total amount of waters has improved the accuracy of "percent of total waters" calculations</p>	<p>hard copy reports through 1996; assessments kept in electronic database</p>
<p><b>Vermont</b></p>	<p>305(b) report</p>	<p>small percentage of total waters</p>	<p>rivers and streams, lakes and ponds, and Lake Champlain are assessed for fish consumption, shellfish consumption, recreation, and aquatic life</p>	<p>biennial reporting, supplemented by annual electronic updates</p>	<p>relies on EPA guidance closely for assessments; assessments are targeted towards impacted, suspected, and historical problem sites; some assessments rely on data from 50-60 monitoring sites, while a large proportion of waterbodies are evaluated without ambient data</p>	<p>hard copy reports through 1996 and electronic updates to EPA</p>

## SCREENING RESULTS: Interview Results

### WATER: INDICATOR 5

EPA – New England

**Database** Under the Clean Water Act, states, tribes and other jurisdictions are required to conduct water quality surveys to assure that basic uses are being met. EPA approves various aspects of the state water quality standards and assessments and issues extensive guidance, however, states conduct their own surveys, and produce individual “305(b)” reports. EPA summarizes a subset of this information in biennial reports to Congress, called National Water Quality Inventories. Some of this information is also used to make state water quality fact sheets available on the EPA World Wide Web site.

#### Coverage

*Waters* [ See state forms.]

*Parameters* All states report the percent of waters meeting certain uses designated by the states, based upon criteria defined by the states with EPA guidance and approval. [See state forms.]

*Temporal* 305(b) reports are published biennially. [See state forms.]

EPA produces a national Water Quality Inventory report for Congress biennially, in even years. The latest report contains data for 1996. This information is used to update the fact sheets on the World Wide Web.

#### Quality/

**Methodology** EPA issues guidance and definitions for monitoring and assessment methods, as well as guidelines for selecting the waters to assess within a state.

Flexibility in reporting has often been granted at the expense of consistency from state-to-state and from year-to-year. In many cases, the waters assessed, as well as the definitions of uses, criteria for assessing, and methods for monitoring have changed over time. [See state forms.]

**Availability** State reports are available in hard copy. The National Water Quality Inventory is available in hard copy. The state fact sheets are available on the World Wide Web.

## WATER: INDICATOR 5

### CONNECTICUT

**Database** Connecticut submits a 305(b) report biennially.

#### Coverage

##### *Waters*

The extent of coverage varies in Connecticut among particular waters and among types of waters (e.g., rivers, ponds, estuaries). Due to specific programs and emphasis for example, nearly 100% of the Long Island coastal areas and near shore estuaries are assessed. On the other hand, only approximately 15-20% of rivers and streams are assessed. Of the 6,000 lakes, ponds, and reservoirs in the state, approximately 115 with the most public access are assessed. Beginning in 1998, Connecticut will be assessing 1/5 of the states waters per year in addition to existing trends sites.

##### *Parameters*

Waters are assessed for their support of designated uses: fish and shellfish consumption, recreation, and aquatic life. These definitions follow EPA guidance.

##### *Temporal*

Biennial reporting since 1976.

#### Quality/

##### **Methodology**

Waters are assessed using either or a combination of environmental data and “professional judgement”. Environmental data includes physical, chemical, and biological monitoring. Most data used in the CT assessments are collected in-stream from samples taken by DEP staff. In a joint effort with USGS, approximately 30 *fixed* monitoring stations have consistently recorded long-term data. These sites are augmented with some additional special interest sites.

Most monitoring is targeted towards problem areas, particularly those with a suspected high need for point source controls. As point source problems are improved, DEP tends to move monitoring efforts elsewhere, while some monitoring may be continued to ensure that “backsliding” does not occur. Approximately 3-4 sites are used to represent “pristine” or background conditions. However such a distinction does not appear in the 305(b).

Sites maintained with the USGS are quality assured by USGS under their stringent quality protocols. CT DEP utilizes its own guidelines for assessing waters. These have been reviewed by the EPA regional office.

##### **Availability**

Biennial hard copy 305(b) report.  
[See EPA – New England.]

**WATER: INDICATOR 5**  
MAINE

**Database** Maine submits a 305(b) report biennially.  
[See EPA – New England.]

**Coverage**  
*Waters* Not contacted  
[See EPA – New England.]

**Parameters** Not contacted  
[See EPA – New England.]

**Temporal** Not contacted  
[See EPA – New England.]

**Quality/  
Methodology** Not contacted  
[See EPA – New England.]

**Availability** Not contacted  
[See EPA – New England.]

## WATER: INDICATOR 5

### MASSACHUSETTS

**Database** Massachusetts submits a 305(b) report biennially.

[See EPA – New England.]

#### **Coverage**

##### *Waters*

Massachusetts uses a rotating assessment schedule. Since 1993, MA DEP has attempted to assess approximately 1/5 of the state's waters per year. In any given biennial report since (1994, 1996), some waters have been assessed in recent (1-2) years, while other represent older assessments. Approximately 15-20% of rivers and streams have been assessed to date.

##### *Parameters*

Waters are assessed by the MA DEP relative to four uses: primary contact, secondary contact, fish consumption (freshwater), and aquatic life. The Marine Fisheries Division within the state's Department of Fisheries, Wildlife and Environmental Law Enforcement provides assessments of waters for shellfish consumption.

Waters are described as supporting, supporting but threatened, partially supporting, not supporting, or not attainable.

##### *Temporal*

Report biennially.

[See EPA – New England.]

#### **Quality/**

##### **Methodology**

While Massachusetts has moved to a rotating basin assessment scheme, the selection of waters to be assessed has and continues to be "targeted" towards problem areas. The DEP has organized "watershed teams" around monitoring and assessing waters, as well as enhancing public outreach and cross-agency participation. Because these teams are typically organized around areas of particular concern, so too are the resulting water quality assessments. The assessment of rivers in particular is biased to areas likely to be affected by point sources. Another effect of targeted monitoring and assessment is that the targets move as problems are addressed and others emerge, or as the general focus of concern shifts. For example, an early emphasis on addressing conspicuous pollution such as dyes from textile plants, gave way to an emphasis on more subtle problems related to nutrients, and then to the health concerns associated with persistent toxicity in water and consumed fish tissue.

Methods for assessment also vary by waterbody. Massachusetts criteria define any waters under fish advisory as not supporting fish consumption. Fish advisories are issued by and based in part on fish tissue samples and risk assessment performed by the Department of Public Health. Because all state waters are currently under advisory, no waters are said to support fish consumption. Lakes on the other hand are assessed by individual towns using “windshield surveys”, along with some data support from DEP.

In general, the MA DEP has become more cautious in assessing waters because of the substantial requirements related to waters listed as not supporting (and included on the 303(d) list). In recent years, the DEP has been more reluctant to list waters as not-supporting.

**Availability** Biennial hard copy 305(b) report.

[See EPA – New England.]

**WATER: INDICATOR 5**  
NEW HAMPSHIRE

**Database** New Hampshire submits a 305(b) report biennially.

[See EPA – New England.]

**Coverage**

**Waters** In 1989, NH DES began a 3-year rotating watershed monitoring program. From 1993 to 1996, this program was suspended to focus on problem sites. The rotating assessments should continue in 1997 and for the 1998 reporting year. Thus the 1996 and 1994 reports include a mix of recent and older data.

**Parameters** Waters are assessed relative to several uses including fish consumption, shellfish consumption, recreation, and aquatic life.

Waters are described as supporting, supporting but threatened, partially supporting, not supporting, or not attainable.

**Temporal** Report biennially

[See EPA – New England.]

**Quality/**

**Methodology** As in other states, assessed waters are based on either reliable monitoring data, or on older, less reliable data, and/or “best professional judgement.” In New Hampshire, waters considered “monitored”, are assessed using reliable ambient water data collected within five years. Those considered “evaluated” are based on ambient data more than five years old, or no ambient data at all. Data used to assess waters is drawn from combinations of many sources, including several state and federal agencies.

New Hampshire conducts QA/QC of water quality monitoring data including that from outside sources, under a plan approved by EPA. Methods for ambient monitoring have not changed significantly over time. The designation of uses are made by state legislation, and also have not changed significantly since the late 1980s when several “class c” waters were changed to “class b”. The definitions and criteria used for assessments *have* been changed in recent years and continue to change in order to be more consistent with EPA guidelines for both monitored and evaluated waters.

**Availability** Biennial hard copy 305(b) report. Detailed data for lakes and ponds is in an electronic database.

[See EPA – New England.]

## WATER: INDICATOR 5

### Rhode Island

**Database** Rhode Island submits a 305(b) report biennially.

[See EPA – New England.]

#### Coverage

##### *Waters*

Rhode Island DEM attempts to assess all waters in the state for each biennial report. Currently all waters that are evident at 1:24,000 scale (USGS 7.5 min quad) are assessed. This includes estuaries, Narragansett Bay, coastal ponds, lakes, ponds, and rivers. The Bay is divided into segments and assessed comprehensively.

##### *Parameters*

Waters are assessed relative to several uses including swimming, aquatic life, drinking water (done by RI DOH), and shellfish consumption.

Waters are described as supporting, supporting but threatened, partially supporting, not supporting, or not attainable.

##### *Temporal*

Report biennially, 1996 available.

#### Quality/

##### **Methodology**

RI DEM relies on combinations of several data sources in assessing the state's waters, such as chemical, physical, and biological data. Lake monitoring is conducted by the University of Rhode Island and volunteers through a URI program. Additional citizen volunteer sampling is used in assessing other waters.

Monitored waters are based on current ambient monitoring data. Evaluated waters are based on data more than ten years old, and citizen data or other data that has not been through quality assurance protocols. RI DEM is becoming more stringent in its expectations for waters considered as "monitored" – using only the most current and relevant data. This will be most evident in the 1998 report.

Recent improvements in the accuracy of the numbers of miles and acres of total waters in the state have increased the accuracy of calculations of "percent of total waters impaired...etc."

##### **Availability**

Biennial reporting, 1996 available.

RI DEM maintains an electronic database of assessments.

[See EPA – New England.]

## WATER: INDICATOR 5

### VERMONT

**Database** Vermont submits a 305(b) report biennially.

[See EPA – New England.]

#### Coverage

*Waters* A small percentage of total waters in the state are assessed. This is particularly true of rivers and streams.

*Parameters* Assessments are listed for rivers and streams, lakes and ponds, and Lake Champlain. Waters are assessed relative to several uses including fish consumption, shellfish consumption, recreation, and aquatic life.

Waters are described as supporting, supporting but threatened, partially supporting, not supporting, or not attainable.

*Temporal* Biennial reporting, now supplemented with annual electronic updates.

#### Quality/

**Methodology** VT ANR utilizes EPA guidance closely in conducting waterbody assessments.  
[See EPA – New England.]

Assessment efforts are targeted towards sites impacted by water quality problems, sites with suspected problems or impacts, and sites with historical water quality problems.

Many assessments are conducted (evaluated) without ambient water data. Ambient water quality data that is used relies on combinations of long-term fixed station monitoring as well as annual synoptic and discretionary sampling often targeting the areas described above. Rivers and streams data are predominantly biological assessments of fish and macro invertebrate communities; include 10-15 reference site assessments annually. Lakes and ponds and Lake Champlain are predominantly chemical (phosphorus, pH, alkalinity) and biological (chlorophyll, macrophytes, and exotic species) with other biological communities (e.g. macro invertebrates, phytoplankton) currently being evaluated. Fish consumption advisories developed in cooperation with the Department of Health from monitored fish contaminant data using DOH risk assessment methodologies. Some citizen monitoring data used, including phosphorus, chlorophyll, and bacteriological data. Wetland assessments include analysis of

functions and values. Assessment of hydrological modifications used in some instances to evaluate aquatic life and recreational use support status.

**Availability** Biennial report, annual electronic updates to EPA.

[See EPA – New England.]

**WATER**  
**INDICATOR 6**

*“Percent of permitted surface water discharges (all, major, and/or minor) in compliance (or significant non-compliance).”*

**CONTACTS**

EPA – New England	Warren Lee
CT DEP	Mike Harder
ME DEP	Mike Barden, David Dodge
MA DEP	
NH DES	George Berlandi, Greg Comstock
RI DEM	Angelo Laberti
VT ANR, DEC	Marilyn Davis

## SCREENING RESULTS: Overview

Under the Clean Water Act (CWA), all point source dischargers into navigable waters are required to have a National Pollutant Discharge Elimination System (NPDES) permit. EPA issues these permits to all dischargers (including municipal wastewater treatment plants and industrial facilities) in order to set acceptable levels of pollutants in order to maintain adequate water quality. Since beginning the NPDES program, EPA has reached agreements with approximately 43 states, allowing them to administer their own NPDES permitting program. In New England, Connecticut, Rhode Island, and Vermont have been delegated responsibility for NPDES. Dischargers in Maine, Massachusetts, and New Hampshire are permitted by EPA.

NPDES permits generally set accepted levels of pollutants which may be discharged from a point source (“end-of-pipe”) into receiving waters. Permits also establish schedules for the discharger to monitor and report levels of pollutants to EPA or the state environmental protection agency (in the case of delegated responsibility). Details of these permits, as well as effluent sampling data from dischargers, are kept in a national database, the Permits Compliance System (PCS). PCS tracks major and minor facilities. EPA defines major facilities as being above a flow threshold (greater than one million gallons per day), as having a service population of 10,000 or greater, or as having a significant impact on water quality. In delegated states, the determination of “significant impact” is left to the agency administering the NPDES program, with EPA guidance. Minor facilities include those not meeting the major facility criteria.

Permit data has been tracked since the beginning of the NPDES program, and more than 15 years of data is available in PCS. Dischargers report information on effluent levels at regular intervals according to their permits. Thus data is frequently entered into PCS. By comparing permit requirements with reported information on effluent, treatment, and other factors, PCS generates lists of non-compliance quarterly. Non-compliance is determined by definitions which calculate the number, type, and severity of violations of permit-specific requirements.

In states not delegated authority for NPDES administration, EPA administers permits, and accordingly enters data into PCS. Those states administering their own NPDES programs (Connecticut, Rhode Island, Vermont) maintain their own permit databases with all relevant information (limits, compliance, etc.). In addition to maintaining electronic state databases, Connecticut submits discharge information on all major dischargers to the national PCS database. Rhode Island enters all relevant NPDES information into PCS as well, for all dischargers. Each of these three delegated states submits to EPA quarterly lists of dischargers in non-compliance, although these are not necessarily available through PCS. While variability is inevitable in the granting of individual permits, the NPDES program is administered with extensive guidance and protocols, as well as explicit statutory and regulatory standards for pollution control. State programs are approved by EPA and operate under consistent guidelines.

## SCREENING RESULTS: Summary Matrix

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage			Quality/Methodology	Availability
		Dischargers	Pollutants	Temporal		
<b>EPA - NE</b>	PCS database tracks NPDES permits and data nationally	all NPDES permits - all direct discharges into navigable waters; does not include all data from dischargers in states with delegated responsibility	All pollutants specified in permit	updated continually since the 1970s	extensive and consistent methodology for sampling and reporting;; definitions of non-compliance are standardized, but subjectivity of limits, provisions and issuance of individual permits raises concerns over comparability	PCS is an electronic database and can be queried by request, or via the world wide web
<b>Connecticut</b>	Connecticut is delegated and maintains a NPDES database. Some data is also submitted to the federal PCS.	all NPDES dischargers, differentiated by major and minor	all NPDES parameters; database tracks and reports compliance according to EPA definitions by comparing reported to permitted quantities	continually since the 1980s	see EPA - New England	electronic database; major dischargers available in PCS, see EPA - New England
<b>Maine</b>	Maine is not delegated NPDES responsibility; see EPA - New England	see EPA - New England	see EPA - New England	see EPA - New England	see EPA - New England	see EPA - New England
<b>Massachusetts</b>	Massachusetts is not delegated NPDES responsibility; see EPA - New England	see EPA - New England	see EPA - New England	see EPA - New England	see EPA - New England	see EPA - New England
<b>New Hampshire</b>	New Hampshire is not delegated NPDES responsibility, but NH DES has tracked some NPDES information to help in the permitting process	see EPA - New England; NH DES tracks all dischargers except stormwater dischargers	see EPA - New England	see EPA - New England; NH DES has tracked major dischargers since 1994, and minor dischargers since 1996	see EPA - New England	see EPA - New England; NH DES data is available in hard copy
<b>Rhode Island</b>	Rhode Island is delegated and maintains a NPDES database. Data is also submitted to the federal PCS.	all NPDES, differentiated by major and minor, municipal and non-municipal, and general and individual permit	all NPDES parameters; database tracks and reports compliance according to EPA definitions by comparing reported to permitted quantities	data submitted continually from dischargers; RI has entered data into PCS since 1987; RI has maintained its own database since c.1995	see EPA - New England	electronic database, can be queried; see EPA - New England for PCS availability
<b>Vermont</b>	Vermont is delegated and maintains a NPDES database. Data is also submitted to the federal PCS.	all NPDES, differentiated by major and minor, municipal and non-municipal, and general and individual permit	all NPDES parameters; database tracks and reports compliance according to EPA definitions by comparing reported to permitted quantities	data submitted continually from dischargers; VT has entered data into PCS since 1993 VT has maintained its own database since c.1995	see EPA - New England	electronic database, can be queried; see EPA - New England for PCS availability

## SCREENING RESULTS: Interview Results

## WATER: INDICATOR 6

EPA – NEW ENGLAND

- Database** Nationally, EPA maintains the Permit Compliance System (PCS) which tracks NPDES dischargers.
- Coverage**
- Dischargers* PCS tracks permit requirements and compliance for all facilities with a National Pollutant Discharge Elimination System permit, *except for those in states with delegated responsibility for NPDES administration* (includes Connecticut, Rhode Island, and Vermont). However, delegated states do report lists of facilities in non-compliance quarterly. NPDES permits are required of all point source dischargers into navigable waters.
- Pollutants* Any pollutants which may impact environmental or human health via discharge into navigable waters may be covered by a NPDES permit. PCS tracks individual permit requirements (e.g., discharge limits) and reported discharges. By comparing these, PCS reports non-compliance.
- Temporal* NPDES permit data has been tracked under the Clean Water Act since the 1970s. Data is reported from facilities at varying frequencies determined by permit and statute.
- Quality/**
- Methodology** EPA utilizes extensive guidelines and regulations under the CWA in administering the NPDES program and its specific provisions. Facilities follow EPA regulations in reporting information required in their permits.
- The meaning of significant non-compliance varies depending upon specific permit requirements.
- Availability** PCS data is available from EPA, and is available on the world wide web. PCS generates a list of facilities in significant non-compliance quarterly.

## WATER: INDICATOR 6

### CONNECTICUT

- Database** Connecticut has delegated responsibility for administering NPDES permits, and tracks this data accordingly. Data on major facilities is submitted to EPA's PCS database while all relevant permit data is kept "in-house".
- Coverage**
- Dischargers* CT DEP enters permit information for *major* dischargers into PCS. [See EPA – New England for explanation of PCS.]
- CT DEP tracks all NPDES and other state discharge permits (e.g., pretreatment) in its own database. However this system is currently being reorganized – data on minor and other dischargers is currently in "disarray".
- Pollutants* All permitted pollutants.
- Temporal* Dischargers report continually according to permit schedules.
- CT DEP has reported to PCS since the 1980s.
- Quality/  
Methodology** See EPA – New England, description of PCS.
- Availability** CT DEP maintains an electronic permit database.
- See EPA – New England, description of PCS.

**WATER: INDICATOR 6**  
MAINE

**Database**      Nationally, EPA maintains the Permit Compliance System (PCS) which tracks NPDES dischargers in states without delegated NPDES responsibility.

**Coverage**

*Dischargers*    see EPA – New England

*Pollutants*     see EPA – New England

*Temporal*       see EPA – New England

**Quality/**

**Methodology**    see EPA – New England

**Availability**    see EPA – New England

**WATER: INDICATOR 6**  
MASSACHUSETTS

**Database** Nationally, EPA maintains the Permit Compliance System (PCS) which tracks NPDES dischargers in states without delegated NPDES responsibility.

**Coverage**

*Dischargers* see EPA – New England

*Pollutants* see EPA – New England

*Temporal* see EPA – New England

**Quality/**

**Methodology** see EPA – New England

**Availability** see EPA – New England

**WATER: INDICATOR 6**  
**NEW HAMPSHIRE**

**Database** Nationally, EPA maintains the Permit Compliance System (PCS) which tracks NPDES dischargers in states without delegated NPDES responsibility. New Hampshire is not a delegated state, however the NH DES has tracked some of the same discharge and permit information that is reported by dischargers to EPA, in order to work with EPA in coordinating their respective federal and state discharge permit programs.

**Coverage**

*Dischargers* NH DES tracks all dischargers except storm water dischargers.

See EPA – New England for explanation of PCS database.

*Pollutants* See EPA – New England.

*Temporal* NH DES has tracked major dischargers since 1994 and minor dischargers since 1996.

See EPA – New England for explanation of PCS database.

**Quality/**

**Methodology** See EPA – New England.

**Availability** NH DES data is available in hard copy only.

See EPA – New England for explanation of PCS database.

## WATER: INDICATOR 6

### RHODE ISLAND

**Database** Rhode Island has delegated responsibility for administering NPDES permits, and tracks this data accordingly. Data is also entered into EPA's PCS database.

#### **Coverage**

*Dischargers* All NPDES permits are tracked in the database. Dischargers are differentiated using EPA definitions of major and minor, by municipal and non-municipal, and those with general permits (issued to a category of discharger by formal review process, then to individual dischargers without formal review).

*Pollutants* Any pollutants which may impact environmental or human health via discharge into navigable waters may be covered by a NPDES permit. The Rhode Island database and EPA's PCS track individual permit requirements (e.g., discharge limits) and reported discharges. By comparing these, the database can report non-compliance based on EPA definitions.

*Temporal* Rhode Island has entered NPDES information into EPA's PCS database from 1987 to the present. Since 1995, Rhode Island has maintained its own database of NPDES permits and information. Dischargers submit data to RIDEM at intervals from monthly to annually. Thus data is continually entered into the databases.

See EPA – New England for explanation of PCS data and non-compliance lists.

#### **Quality/**

**Methodology** See EPA – New England

**Availability** Rhode Island DEM maintains an electronic database which can be queried. See EPA – New England for availability of the PCS database.

**WATER: INDICATOR 6**  
VERMONT

- Database** Vermont has delegated responsibility for administering NPDES permits, and tracks this data accordingly. Data is also entered into EPA's PCS database.
- Coverage**
- Dischargers* All NPDES permits are tracked in the database. Dischargers are differentiated using EPA definitions of major and minor, by municipal and non-municipal, and those with general permits (issued to a category of discharger by formal review process, then to individual dischargers without formal review).
- Pollutants* Any pollutants which may impact environmental or human health via discharge into navigable waters may be covered by a NPDES permit. The Vermont database and EPA's PCS track individual permit requirements (e.g., discharge limits) and reported discharges.
- Temporal* Vermont has entered NPDES information into EPA's PCS database from 1993 to the present. Since 1995, Vermont has maintained its own database of NPDES permits and information. Dischargers submit data to ANR-DEC at intervals from monthly to annually. Thus data is continually entered into the databases.
- See EPA – New England for explanation of PCS data and non-compliance lists.
- Quality/**
- Methodology** See EPA – New England
- Availability** Vermont ANR-DEC maintains an electronic database which can be queried. See EPA – New England for availability of the PCS database.

**WATER  
INDICATOR 7**

*“Population served by public surface water {break down by community, transient, and non-transient non-community} with state-approved source protection programs / population served by public surface water systems” and “population served by public ground water with state-approved wellhead protection programs / population served by public ground water systems.”*

**CONTACTS**

EPA – New England	Tony Chickerelli, Roger Jansen
CT DEP	Mike Harder
ME DOH	David Braley
MA DEP	David Gutterman
NH DES	Sarah Pillsbury
RI DOH	June Swallow
VT ANR, DEC	Jean Nicolai

## SCREENING RESULTS: Overview

This indicator requires data on the percentage of population served by surface drinking water and by groundwater drinking water sources with protection programs in place. To compute this indicator, data is required on *populations served by water suppliers with source protection* and on *total of populations served for all water suppliers*.

EPA maintains the Safe Drinking Water Information System (SDWIS), a national database of information on individual drinking water suppliers. Under the Safe Drinking Water Act, and rules and regulations promulgated by EPA, states collect information from drinking water suppliers to be reported to EPA and submitted to SDWIS. The required information emphasizes compliance with federal safe drinking water standards related to monitoring, reporting, treatment, and levels of contaminants. However, SDWIS also contains information about the infrastructure, source waters (ground or surface), type of system (community, transient, non-transient non-community), and population served by individual public water suppliers.

The SDWIS database can be used to identify the population served by water suppliers, but does **not** currently track the existence of source water protection programs for water suppliers. EPA, through its regional office is in the process of approving general state-run source protection programs. While EPA does not currently track individual protection plans approved under these state-run programs, some states have incorporated this information into their own drinking water supplier databases (most states maintain a drinking water database similar to the federal SDWIS). Each of the New England states has a source water protection program, although these are in varying stages of activity. Some have only recently become operational, while others are well established and have approved many individual source protection plans.

Massachusetts, New Hampshire, and Vermont each maintain an electronic database of water suppliers which includes the type of supplier, type of source water, the population served, and whether or not some source protection is in place. Maine has a database which tracks population and other information as well as source protection efforts for groundwater suppliers. Source protection is not tracked specifically for surface water suppliers in Maine- source protection is required in the provision of filtration waivers for these sources so the existence of source protection can be inferred from the existence of a waiver. Connecticut and Rhode Island each maintain hard copy records of individual source protection plans. Each of these states also maintain electronic databases with the supplier information required by the federal SDWIS database.

Some general concerns related to the reporting of data for this indicator (see results of individual interviews for how these vary by state):

- Source protection takes various forms, as do the definitions of source protection activities. EPA is in the process of approving state programs; this may suggest some degree of harmonization among the definitions of individual “state-approved” protection plans, but states are currently at different levels of implementation. Some states have extensive standard requirements for protection plans, while other seek varying levels of participation in their protection

programs. Some track whether or not ANY protection exists (e.g., education and outreach, assessment, land use controls), while others track the specific activities related to protecting source water.

- How suppliers/states estimate the population served by a water supply varies. Some conduct inventories of users. Others submit data to the state, from which population figures can be derived by applying factors.
- Some suppliers draw on more than one source of water, and may draw on more than one type of source (i.e., surface *and* ground). Population served from a supplier may reflect a mix of sources, some or all of which may have associated source protection. Some suppliers avert this complication by reporting a “primary” source.
- An individual may consume water at home (community supplier), at work (non-transient non-community supplier), and while at a restaurant or public place (transient supplier). This suggests a certain degree of double or triple counting in the indicator.

SCREENING RESULTS: Summary Matrix

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage			Quality/Methodology	Availability
		Suppliers	Parameters	Temporal		
EPA - NE	SDWIS database tracks information on water suppliers nationally, but does not include source protection data	SDWIS tracks all public water suppliers	SDWIS tracks data on individual water suppliers, including the type of supplier (transient, community, non-transient non-community), source of water (ground or surface), and population served	SDWIS has tracked water supplier data for several years and includes data from an earlier system; states submit data from water suppliers such as violations of drinking water rules at least quarterly	EPA has issued extensive guidelines and regulations for monitoring contaminants and reporting information to SDWIS; data on populations served is not regulated as closely as other data	N/A; see description of SDWIS in Indicator 8
Connecticut	CT DOH maintains a database of water suppliers which does not include source protection data; source protection information is kept in hard copy for individual suppliers/sources	the database tracks all public water suppliers; separate records exist for suppliers with source protection programs	the database tracks standard information including population served, type of supplier, and source of water (see EPA - New England); source protection records reflect protection plans in various stages and various levels of effort	information on water suppliers goes back to 1988; information on protection plans is submitted to CT DOH continually	see EPA - New England	the electronic drinking water database can be queried for population and other information; source protection records are available in hard copy
Maine	ME DOH maintains a database of water suppliers which includes their source protection efforts	all public water suppliers are tracked in the database; source protection is tracked for groundwater sources only	the database tracks standard information including population served, type of supplier, and source of water(see EPA - New England), and whether or not a supplier is participating in source protection efforts	database goes back c.1992; information on source protection efforts was requested of suppliers c.1995 and has since been phased into the database gradually	source protection is reported by suppliers; database does not distinguish types of source protection or level of effort - these do vary; data on population served is provided by larger suppliers, but for most is estimated by DOH	electronic database
Massachusetts	MA DEP maintains a database of water suppliers, and a database of source protection which can be linked	all public water suppliers	the database tracks standard information including population served, type of supplier, and source of water(see EPA - New England); and any source protection efforts	the water supplier database goes back to 1993; source protection data is updated continually	state has guidelines for source protection plan approval, and the database tracks how these are met	electronic database

<p><b>New Hampshire</b></p>	<p>NH DES maintains a database of water suppliers which includes their source protection efforts</p>	<p>all public water suppliers</p>	<p>the database tracks standard information including population served, type of supplier, and source of water(see EPA - New England), and any source protection efforts</p>	<p>database goes back to 1994 electronically and further in hard copy for standard supplier information; source protection information is updated continually</p>	<p>type/level of source protection efforts vary dramatically; data on population served is not considered reliable in all cases</p>	<p>electronic database</p>
<p><b>Rhode Island</b></p>	<p>RI DOH maintains a database of water suppliers which does not include source protection data; source protection information is kept in hard copy for individual suppliers/sources</p>	<p>all public water suppliers are tracked in the database</p>	<p>the database tracks standard information including population served, type of supplier, and source of water(see EPA - New England); hard copy files contain information on individual source protection efforts/plans</p>	<p>database goes back to 1988; information on source protection efforts is collected continually in hard copy</p>	<p>data on population served is reported by suppliers and is verified during DOH inspections</p>	<p>electronic database includes standard information such as population served; paper files document source protection and are available at RI DOH</p>
<p><b>Vermont</b></p>	<p>VT ANR maintains a database of water suppliers which includes their source protection efforts</p>	<p>all public water suppliers</p>	<p>the database tracks standard information including population served, type of supplier, and source of water(see EPA - New England); also tracks whether or not a source protection plan is in place</p>	<p>database goes back to 1994; source protection data is updated continually</p>	<p>source protection plans are approved by VT ANR using EPA-approved state program guidelines; ANR considers population data for suppliers to be reliable</p>	<p>electronic database</p>

## SCREENING RESULTS: Interview Results

**WATER: INDICATOR 7**  
EPA – New England

**Database** Nationally, EPA maintains the SDWIS database of public water suppliers, but does not track source protection programs. Regionally, EPA approves general state source protection programs, but does not maintain a database of individual protection efforts in the states.

**Coverage**

*Suppliers* N/A

*Parameters* N/A

*Temporal* N/A

**Quality/**

**Methodology** N/A

**Availability** N/A

## WATER: INDICATOR 7

### CONNECTICUT

<b>Database</b>	CT DEP and CT DOH work together to administer source protection program. CT DOH keeps hard copy records of this program. CT DOH also maintains an electronic database of other water supplier information.
<b>Coverage</b> <i>Suppliers</i>	CT DOH tracks all public water suppliers in a database to track compliance with regulated contaminant levels, and treatment and other rules.
<i>Parameters</i>	The DOH database tracks suppliers by type, as well as populations. It does not track the implementation of source protection programs. Records of source protection programs exist, but not in a formal database. Source protection efforts are in place in various stages, and at various levels of effort.
<i>Temporal</i>	N/A
<b>Quality/ Methodology</b>	N/A
<b>Availability</b>	Hard copy records of source protection efforts are kept by CT DOH. The Department's primary electronic drinking water database can be queried for population served and other information.

**WATER: INDICATOR 7**  
MAINE

**Database** Maine DOH maintains a database of water suppliers, which includes their source protection efforts.

**Coverage**  
*Suppliers* Database tracks all public water suppliers and their sources. Source protection efforts are tracked for groundwater suppliers. Surface water suppliers are required to implement source protection as conditions of filtration waivers. For surface water suppliers, counting those with waivers would represent those implementing source protection.

*Parameters* Along with population served, and testing and compliance data (for regulated contaminants), the DOH database notes whether or not a supplier is participating in source water protection efforts.

*Temporal* Suppliers were asked in 1995 to submit information to DOH on their protection efforts. This information has been gathered gradually from suppliers since the initial request.

**Quality/**  
**Methodology** Because information has been gathered gradually over the last three years, it does not necessarily represent protection efforts in “real time”.

DOH has emphasized participation in source protection over the extent of protection efforts. The database does not distinguish varying levels or types of source protection effort, only whether or not a supplier participates in any protection.

Population data is currently submitted by larger suppliers, but is estimated for most suppliers by DOH, based on other data and applied factors (e.g., population derived by multiplying factor by the number of restaurant seats to estimate population served).

**Availability** Information is kept in an electronic database by ME DOH.

## WATER: INDICATOR 7

### MASSACHUSETTS

- Database** MA DEP maintains a database of public water suppliers, and a separate but linkable database on source protection programs.
- Coverage**
- Suppliers* All public water suppliers.
- Parameters* The primary DEP drinking water database tracks water suppliers by type, source water, and other infrastructure information.
- DEP maintains a separate database containing information on water suppliers who have met state requirements for source water protection planning, how they have met state requirements, and when requirements were met.
- Temporal* The primary database goes back to 1993. The source protection database is updated continually.
- Quality/**
- Methodology** The state has established a program for approving source protection plans. The database tracks how water suppliers have met state requirements.
- Availability** MA DEP maintains a primary database of water suppliers, and a database of source protection plans which may be linked to extract other information such as population served for suppliers with approved protection plans.

**WATER: INDICATOR 7**  
NEW HAMPSHIRE

**Database** NH DES maintains a database of water suppliers which includes information on source water protection programs.

**Coverage**

*Suppliers* All public water suppliers.

*Parameters* The DES database includes information on the type of supplier, source of water, population served, and any source water protection activities.

*Temporal* The database contains information on water suppliers back to 1994, and is updated continually. Data goes back farther in hard copy.

**Quality/**

**Methodology** Data provided on the populations served by water suppliers is self reported and checked every three years during sanitation surveys. Figures are not considered reliable in all cases.

Source protection efforts can vary dramatically from delineating sources or land uses, to providing education to local land users.

Some suppliers may rely on more than one source, each potentially having a source protection plan in place.

**Availability** DES maintains the database electronically.

## WATER: INDICATOR 7

### RHODE ISLAND

<b>Database</b>	RI DOH maintains a database of water suppliers, but source protection efforts are not tracked. Hard copy records of individual source protection plans do exist.
<b>Coverage</b>	
<i>Suppliers</i>	All public water suppliers.
<i>Parameters</i>	The DOH database tracks suppliers by type, population served, source waters and other information. Source protection plans are kept separately in hard copy for those suppliers that have submitted plans.
<i>Temporal</i>	N/A
<b>Quality/</b>	
<b>Methodology</b>	Population data in primary drinking water database are submitted by suppliers and verified by DOH during inspections.
<b>Availability</b>	Hard copy records of source protection plans are kept by RI DOH. Primary electronic drinking water database can be queried for population served and other information.

**WATER: INDICATOR 7**  
VERMONT

**Database** VT ANR maintains a database of water suppliers, including information on source water protection efforts.

**Coverage**  
*Suppliers* All public water suppliers.

*Parameters* Suppliers are broken out by type. Database also includes information on source waters, population served, compliance with contaminant standards, and whether or not a source protection program is in place.

*Temporal* The drinking water database is updated continually. It contains data back to 1994.

**Quality/**  
**Methodology** Population data is inventoried and submitted by suppliers, and is considered reliable by ANR.

ANR approves source protection plans based on guidelines approved by EPA. However, plans are designed to address varying types and severity of problems.

**Availability** VT ANR maintains the database electronically.

**WATER**  
**INDICATOR 8**

*“Number and percent of public water systems and population served meeting health-based regulations.”*

**CONTACTS**

EPA – New England	Clara Chow
CT DOH	Jerry Iwan
ME DOH	David Braley
MA DEP	Damon Gutterman
NH DES	Sarah Pillsbury
RI DEM	June Swallow
VT ANR, DEC	Jean Nicolai

## SCREENING RESULTS: Overview

The EPA regulates public water suppliers by administering the Safe Drinking Water Act. Regulations and rules under the Act mandate a complex system of treatment, monitoring, reporting, and other drinking water protection requirements, depending upon factors related to the individual suppliers. Data from approximately 175,000 individual water suppliers is collected by states and reported to EPA and entered into the national Safe Drinking Water Information System (SDWIS).

SDWIS data includes basic information on each system such as the type of system (community, transient, non-transient non-community), source of water (ground or surface), and the population served by the system. SDWIS also includes records of violations of drinking water rules – these include treatment, monitoring, and reporting rules – and violations of maximum contaminant levels (MCLs). Suppliers are required to sample and report to states the concentrations of various contaminants which have been identified as threats human health. Schedules for sampling and reporting vary by pollutant, type of supplier, and waivers and exemptions based on other activities such as source water protection or filtration. These schedules can vary from daily monitoring for bacteriological contaminants, to every nine years for asbestos. Violations of these contaminant levels are reported to EPA and recorded in SDWIS. Using established criteria such as the number of violations in a specified period, SDWIS automatically generates a list of suppliers in non-compliance. This list is generated quarterly.

States are allowed to maintain their own database of water suppliers in any fashion such that they can report the required information to the federal SDWIS database at least quarterly. Many states maintain nearly identical systems as SDWIS.

SDWIS is able to report the total number and percent of public water suppliers not in compliance with regulations. Non-compliance can be due to the exceedence of health-based standards, or can be due to violations of treatment, reporting and other requirements. Violations of health-based standards can be queried from the SDWIS database by EPA, or through the state databases. SDWIS can also report the populations served by those suppliers violating standards.

While SDWIS can report the data necessary to support this indicator, there are some differences in the quality and collection of data by states from suppliers, and thus reported to SDWIS. Every New England state maintains its own drinking water database and collects information to be reported to SDWIS. In every state, water suppliers report information frequently, varying according to their required monitoring schedules and method of data submittal. All states distinguish water suppliers by type according to EPA guidelines for community, transient, and non-transient non-community suppliers. All state databases track and report to the federal SDWIS violations of MCLs for all pollutants required by suppliers' individual schedules. Suppliers vary not only in the frequency of reporting, but also in the specific pollutants reported. For example, transient systems are often required to report only bacteriological and nitrate/nitrite contaminants because long-term exposures (for which other contaminants are of concern) are not likely to occur with these systems.

All states maintain electronic databases of drinking water information which, like SDWIS, can be queried for the necessary information.

Some issues raised during the data screening interviews:

- The reliability of population data for water system users varies by state and by type of supplier. In most states, suppliers report population served by conducting inventories of users. In others, or for some (often smaller) suppliers, the population served is estimated by applying factors to other known data (such as number of seats per restaurant, or number of housing units). Only one state reported actual skepticism about population figures, yet others suggested that issues of accuracy exist.
  
- An individual may consume water at home (community supplier), at work (non-transient non-community supplier), and while at a restaurant or public place (transient supplier). This suggests a certain degree of double or triple counting in the indicator.

The relationship between violations of drinking water regulations and actual risks to human health has been drawn into question. For example, a supplier may be issued an interim standard in working towards water that is of acceptable quality. This interim standard may not ensure a level of safety as high as that which is ultimately desired. Thus, a supplier meeting such an interim standard will not be in violation, but is not necessarily achieving the level of health protection ultimately desired.

## SCREENING RESULTS: Summary Matrix

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage			Quality/Methodology	Availability
		Suppliers	Pollutants	Temporal		
<b>EPA - NE</b>	national SDWIS database	all public water suppliers by community, transient, and non-transient non-community	SDWIS tracks violations of MCLs; SDWIS reports contaminant test results when MCLs are exceeded; SDWIS includes violations of other treatment and reporting rules, as well as other information such as population served; not all contaminants are reported for all suppliers; SDWIS generates a list of suppliers in non-compliance	states report violations and other data to SDWIS quarterly, or more frequently; actual monitoring frequency varies by contaminant, supplier, and source, based upon regulations and waivers or exemptions; SDWIS generates a quarterly list of suppliers in non-compliance; states/EPA have entered drinking water data into SDWIS for several years, and earlier data has been incorporated	EPA has promulgated extensive regulations and guidelines for sampling and reporting, as well as criteria for non-compliance, under the SDWA; suppliers utilize state labs or state-approved labs; the required frequency of monitoring varies dramatically; violations include exceedences of health standards (MCLs) as well as non-compliance with monitoring and treatment rules	EPA maintains the electronic SDWIS database; SDWIS can be queried by EPA, or via the internet on EPA envirofacts; hard copy reports can be requested
<b>Connecticut</b>	state database and reporting to SDWIS	see EPA-NE	monitoring results on MCLs and other information are reported to the CT DOH; regulations and waivers determine which contaminants are reported	see EPA-NE; CT has reported drinking water data to EPA since 1986	see EPA-NE	state maintains electronic database and reports violations, etc. to SDWIS
<b>Maine</b>	state database and reporting to SDWIS	see EPA-NE	monitoring results on MCLs and other information are reported to the ME DOH; regulations and waivers determine which contaminants are reported	see EPA-NE; Maine's drinking water database goes back c.1992	see EPA-NE; most suppliers use state public health lab for testing; data on population served is provided by larger suppliers, but for most is estimated by DOH by applying factors to other data	state maintains electronic database and reports violations, etc. to SDWIS
<b>Massachusetts</b>	state database and reporting to SDWIS	see EPA-NE	monitoring results on MCLs and other information are reported to the MA DEP; regulations and waivers determine which contaminants are reported; state database reports suppliers out of compliance	see EPA-NE	see EPA-NE; suppliers use any of approximately 200 approved labs, including the state lab	state maintains electronic database and reports violations, etc. to SDWIS
<b>New Hampshire</b>	state database and reporting to SDWIS	see EPA-NE	monitoring results on MCLs and other information are reported to the NH DES; regulations and waivers determine which contaminants are reported	see EPA-NE	see EPA-NE; data on population served is not considered reliable in all cases	state maintains electronic database and reports violations, etc. to SDWIS
<b>Rhode Island</b>	state database and reporting to SDWIS	see EPA-NE	monitoring results on MCLs and other information are reported to the RI DOH; regulations and waivers determine which contaminants are reported	see EPA-NE; RI DOH drinking water database goes back to 1988	see EPA-NE; data on population served is reported by suppliers and is verified during DOH inspections	state maintains electronic database and reports violations, etc. to SDWIS; RI DOH also prepares an annual report on public water which summarizes info such as violations
<b>Vermont</b>	state database and reporting to SDWIS	see EPA-NE	monitoring results on MCLs and other information are reported to the VT ANR; regulations and waivers determine which contaminants are reported	see EPA-NE	see EPA-NE; test data is submitted electronically from state lab, or in hard copy from other approved labs; ANR considers population data for suppliers to be reliable	state maintains electronic database and reports violations, etc. to SDWIS

## SCREENING RESULTS: Interview Results

### WATER: INDICATOR 8

EPA – NEW ENGLAND

<b>Database</b>	Nationally, EPA maintains the Safe Drinking Water Information System (SDWIS), a database of information from drinking water suppliers.
<b>Coverage</b> <i>Suppliers</i>	States report information gathered from all public water suppliers in their jurisdiction to SDWIS. This information includes population served, type of system, and source of water (ground or surface).
<i>Pollutants</i>	<p>States report to the federal SDWIS database any violations of maximum contaminant levels (MCLs), as well as violations of treatment, monitoring, or reporting requirements, and enforcement actions. Actual pollutant monitoring results are reported only when MCLs are exceeded.</p> <p>Reported contaminants vary based on the type of supplier as well as on individual waivers or exemptions. Transient non-community suppliers, for example, are not required to monitor for contaminants posing long-term health risks, due to the fact that the same users are not repeatedly exposed to this water. These TNC suppliers do however report bacteriological contaminants, which can infect a user in one exposure. Other suppliers receive monitoring waivers and exemptions for various contaminants.</p> <p>SDWIS automatically generates a list of suppliers in non-compliance quarterly, by comparing reported violations with specific criteria for non-compliance (i.e., a certain number of exceedences for a particular contaminant in a given period of time).</p>
<i>Temporal</i>	Drinking water information is required quarterly from states at a minimum, although some report more frequently, or as violations occur. The schedules on which suppliers are required to sample water vary dramatically, by supplier, and by pollutant. Monitoring frequencies can vary from daily or weekly for bacteria, to once-in-nine year cycles for asbestos. Monitoring requirements also vary according to exemptions and waivers granted to suppliers for treatment or source protection efforts. Drinking water information in SDWIS is available for the last 3-4 years. Older data has been incorporated from SDWIS's predecessor, the Federal Reporting Data System (FRDS).

**Quality/**

**Methodology** Suppliers follow extensive protocols and regulations in submitting information to the states. Suppliers use state run or state approved laboratories for sample analysis. Monitoring schedules are determined by regulations under the Safe Drinking Water Act and are affected by exemption and waiver programs for which guidelines exist. States follow guidelines in reporting required information to SDWIS. State contacts suggest that SDWIS represents nearly all water suppliers meeting the reporting criteria.

In terms of SDWIS information and the given indicator this data may support, contacts raised concerns about the inclusion of monitoring and reporting violations – violations which do not necessarily reflect any increased risk to human health.

**Availability** Data from SDWIS can be reported by EPA electronically, and can be acquired via the World Wide Web through EPA's Envirofacts.

## WATER: INDICATOR 8

### CONNECTICUT

<b>Database</b>	Connecticut maintains a database of drinking water suppliers, and reports required information to the national SDWIS database. [See EPA – New England]
<b>Coverage</b> <i>Suppliers</i>	All public water suppliers, broken out by community, transient non-community, and non-transient non-community.
<i>Pollutants</i>	Water suppliers report monitoring data, and other information to the CT Department of Health for all regulated pollutants, according to the SDWA and waiver provisions.  [See EPA – New England]
<i>Temporal</i>	Water suppliers report monitoring information continuously to CT DOH according to the provisions of their required monitoring schedules.  Connecticut has reported data to SDWIS and previously to FRDS since 1986.
<b>Quality/ Methodology</b>	[See EPA – New England]
<b>Availability</b>	State drinking water data is kept in an electronic database and is reported to SDWIS.  Since 1996, CT DOH has prepared annual compliance reports detailing the performance of public water suppliers in the state.  [See EPA – New England]

**WATER: INDICATOR 8**

## MAINE

- Database** Maine maintains a database of drinking water suppliers, and reports required information to the national SDWIS database.  
[See EPA – New England]
- Coverage**  
*Suppliers* All public water suppliers, broken out by community, transient non-community, and non-transient non-community.
- Pollutants* Water suppliers report monitoring data, and other information to the ME Department of Health for all regulated pollutants, according to the SDWA and waiver provisions.  
  
[See EPA – New England]
- Temporal* Water suppliers report monitoring information continuously to ME DOH according to the provisions of their required monitoring schedules.  
  
Maine’s drinking water database goes back to 1992.
- Quality/**  
**Methodology** Approximately 80% of suppliers use the state public health laboratory for testing of samples. Others use state-approved labs.  
  
Population data reported for suppliers were previously based on actual inventories of users. Currently, the larger suppliers report population served, while other report data (such as seats/restaurant or number of housing units served) from which the DOH estimates population served using standard factors.  
  
[See EPA – New England]
- Availability** State drinking water data is kept in an electronic database and is reported to SDWIS.  
  
[See EPA – New England]

**WATER: INDICATOR 8**

## Massachusetts

<b>Database</b>	Massachusetts maintains a database of drinking water suppliers, and reports required information to the national SDWIS database. [See EPA – New England]
<b>Coverage</b> <i>Suppliers</i>	All public water suppliers, broken out by community, transient non-community, and non-transient non-community.
<i>Pollutants</i>	Water suppliers report monitoring data, and other information for all regulated pollutants, according to the SDWA and waiver provisions. The DEP database is ‘exceptions-based’, in that it identifies those suppliers out of compliance with regulations by comparing violations with non-compliance definitions.  Massachusetts has an extensive waiver program , so pollutants monitored vary dramatically by supplier.  [See EPA – New England]
<i>Temporal</i>	Water suppliers report monitoring information continuously to MA DEP according to the provisions of their required monitoring schedules.  Massachusetts has an extensive waiver program , so monitoring schedules vary dramatically.  [See EPA – New England]
<b>Quality/</b> <b>Methodology</b>	Suppliers use the state lab, or any of approximately 200 approved labs.  [See EPA – New England]
<b>Availability</b>	State drinking water data is kept in an electronic database and is reported to SDWIS.  [See EPA – New England]

## WATER: INDICATOR 8

### NEW HAMPSHIRE

<b>Database</b>	New Hampshire maintains a database of drinking water suppliers, and reports required information to the national SDWIS database. [See EPA – New England]
<b>Coverage</b> <i>Suppliers</i>	All public water suppliers, broken out by community, transient non-community, and non-transient non-community.
<i>Pollutants</i>	Water suppliers report monitoring data, and other information for all regulated pollutants, according to the SDWA and waiver provisions.  [See EPA – New England]
<i>Temporal</i>	Water suppliers report monitoring information continuously to NH DES according to the provisions of their required monitoring schedules.  Monitoring schedules vary by supplier, contaminant, and by source (ground or surface).  [See EPA – New England]
<b>Quality/ Methodology</b>	Data provided on the populations served by water suppliers is self reported and checked every three years during sanitation surveys. Figures are not considered reliable in all cases.  [See EPA – New England]
<b>Availability</b>	State drinking water data is kept in an electronic database and is reported to SDWIS.  [See EPA – New England]

**WATER: INDICATOR 8**

## RHODE ISLAND

<b>Database</b>	Rhode Island maintains a database of drinking water suppliers, and reports required information to the national SDWIS database. [See EPA – New England]
<b>Coverage</b> <i>Suppliers</i>	All public water suppliers, broken out by community, transient non-community, and non-transient non-community.
<i>Pollutants</i>	Water suppliers report monitoring data, and other information for all regulated pollutants, according to the SDWA and waiver provisions.  [See EPA – New England]
<i>Temporal</i>	Water suppliers report monitoring information continuously according to the provisions of their required monitoring schedules.  The state database contains data from 1988 on.  [See EPA – New England]
<b>Quality/</b> <b>Methodology</b>	Population data is reported by suppliers and is verified during RI DOH inspections.  [See EPA – New England]
<b>Availability</b>	State drinking water data is kept in an electronic database and is reported to SDWIS.  RI DOH also prepares an annual report on public water, which summarizes information such as drinking water violations.  [See EPA – New England]

## WATER: INDICATOR 8

### VERMONT

**Database** Vermont maintains a database of drinking water suppliers, and reports required information to the national SDWIS database.  
[See EPA – New England]

**Coverage**  
*Suppliers* All public water suppliers, broken out by community, transient non-community, and non-transient non-community.

*Pollutants* Water suppliers report monitoring data, and other information for all regulated pollutants, according to the SDWA and waiver provisions.  
  
[See EPA – New England]

*Temporal* Water suppliers report monitoring information continuously to VT ANR according to the provisions of their required monitoring schedules.  
  
[See EPA – New England]

**Quality/**  
**Methodology** Monitoring data is reported to ANR electronically from the state DOH lab, or is entered from hard copy submitted via other approved labs.  
  
Population data is inventoried and submitted by suppliers, and is considered reliable by ANR.  
  
[See EPA – New England]

**Availability** State drinking water data is kept in an electronic database and is reported to SDWIS.  
  
[See EPA – New England]

**ECOSYSTEM  
INDICATOR 9**

*“Percent of assessed rivers and estuaries with healthy aquatic communities.”*

**CONTACTS**

EPA – Headquarters	Wayne Davis
EPA – New England	Diane Switzer
CT DEP	
ME DEP	Barry Mower
MA DEP	Tom Dallaire
NH DES	Robert Estabrook
RI DEM	Connie Cary
VT ANR, DEC	Doug Burnham

## SCREENING RESULTS: Overview

Determining the health of aquatic communities typically involves the assessment of some or all aspects of fish, macro-invertebrate, and algae populations, as well as habitat, and a variety of other chemical and physical factors. EPA, in cooperation with several state programs and others, has developed guidance to help states in conducting aquatic biological assessments. One such guidance is the Rapid Bioassessment Protocol (RBP). This document and its associated guidance and revisions, attempts to consolidate information on various aquatic community assessment protocols for use by states. EPA and several states have been working towards incorporating more biological assessment into state water quality assessments, particularly the determination of aquatic life use support in 305(b) reports. In most cases, the incorporation of extensive biological assessment for determining aquatic health in state water quality assessment programs is in its infancy. Some states have included biological parameters in determining aquatic health for a portion of their assessed waters, some with long histories of biological data. Still, a relatively small proportion of aquatic health determinations are made using “comprehensive” biological assessment.

As in most states, it is clear that comprehensive aquatic community assessments are not widespread in New England. Assessments are neither comprehensive in the coverage of significantly representative sets of waters assessed using biological criteria, nor in the utilization of multiple biological criteria in particular assessments (e.g., fish, macro invertebrate, algae, and habitat). Several states have however been expanding their biological assessment efforts, and utilize the relatively small amount of information gathered in preparing their 305(b) assessments.

Since the 1970s, Maine has been building a database of benthic macro invertebrate data. This data covers approximately 300 miles of waterway, and has been used since 1986 in making aquatic life use assessments based on biocriteria defined by the state in describing water quality criteria. The approximately 200 sites used during the course of this program to collect samples include reference and pristine sites, as well as sites downstream of specific pollution sources. Vermont has also maintained a biological sampling program for many years. Both fish and macro invertebrate community data is used to help in making 305(b) aquatic life use determinations, and in establishing a state fish community index of biotic integrity and macro invertebrate metrics. Over 1,000 miles of waterway have been assessed in Vermont using aquatic community assessment methods. Connecticut, Massachusetts, and Rhode Island have each included macro invertebrate community data in making aquatic life use assessments for small proportions and those states’ waters respectively. Each of these states has assessed approximately 300 miles of their waterways using aquatic community data. New Hampshire has an aquatic biological monitoring program in its early years, and is currently working to establish baseline data. Macro invertebrate and fish population data has been collected at a number of sites throughout the state, but assessments have not been formally made. See the individual interview results for more detail on differences among state programs.

Another challenge to the support of this indicator is the consistent definition of a healthy aquatic community. Some states have incorporated aquatic community criteria into state standards for aquatic health. These are comprised of narrative and numeric criteria, dependent upon multiple

indices using biological data (e.g., the IBI), but often include other aquatic health factors. Many of these indices and aquatic community assessments are based on reference conditions specific to each waterbody and to the state-specific definitions and criteria. States utilize unique aggregates of indices in making some aquatic life use support determinations for state 305(b) reports. Biological criteria do not comprise the sum of information used in making aquatic life use determinations, nor do all aquatic life use determinations utilize some biological data. If the indicator is supported by actual biological community indices (e.g., the IBI), determining values to equate with “healthy aquatic communities” will be required.

**SCREENING RESULTS: Summary Matrix**

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage			Quality/ Methodology	Availability
		Waters	Parameters	Temporal		
<b>EPA - NE</b>	none, other than what is included in state 305(b) assessments	n/a	n/a	n/a	n/a	n/a
<b>Connecticut</b>	CT DEP collects some biological monitoring data for use in 305(b)	small proportion of total waters; approximately 300 miles have been assessed	macro invertebrate community indices; biocriteria defined in state water quality standards	data since 1973; biological data used in 305(b) assessments since 1988	RBP, standard sampling, etc.; macro invertebrates and some fish population data are utilized	CT DEP collects this data; some data is used in preparing the state's 305(b)
<b>Maine</b>	ME DEP maintains a database of macro-invertebrate data, and uses this to support 305(b) assessments	small proportion of total waters; approximately 300 miles have been assessed; this includes reference, pristine, and problem sites	macro invertebrate community indices; biocriteria defined in state water quality standards	data since 1970s; biological data used in 305(b) assessments since 1986	standard sampling, etc.; numerous indices and models are used in making assessments	electronic database of macro invertebrate data; some data is used in preparing the state's 305(b)
<b>Massachusetts</b>	MA DEP collects some biological monitoring data for use in 305(b)	small proportion of total waters; approximately 300 miles have been assessed on a rotating schedule; this mostly includes problem sites	macro invertebrate community indices and other criteria; biocriteria defined in state water quality standards	DEP collects data on an ongoing basis; biennial 305(b) reporting	standard sampling, etc.; modified RBP; numerous indices and models are used in making assessments	DEP collects this data; some data is used in preparing the state's 305(b)
<b>New Hampshire</b>	NH DES has a program which has begun collecting aquatic biological data	developing reference conditions site by site	macro invertebrate and fish population sampling	program has been sampling sites for the last three years	standard sampling, etc.; most data represents reference conditions; DES samples a site once and moves on in building the reference baseline	data is in the process of being upgraded to a usable database
<b>Rhode Island</b>	RI DEM collects some biological monitoring data for use in 305(b)	small proportion of total waters; approximately 45 sites are sampled	variety of aquatic community parameters, including macro invertebrates at some sites	several years of data exist at most sites; approximately 5 sites have macro invertebrate data going back 10-15+ years; data used in biennial 305(b) reports	standard sampling and protocols	hard copy sampling data; indices and other metrics are not formally generated and published; data is used in preparing some water quality assessments included in the 305(b)
<b>Vermont</b>	VT ANR maintains an active biological monitoring program and uses this data in preparing some of the state water quality assessments	approximately 1300 miles of waterway have been sampled; approximately 50-60 sites continue to be sampled annually	fish and macro invertebrate communities and physical habitat are assessed to develop IBI values and other indices to determine aquatic life use support	ongoing biological sampling program since 1982; data used in biennial 305(b) reporting	standard sampling and protocols, RBP	VT ANR, DEC maintains this data, some incorporated into aquatic life use support determinations in the 305(b) report

**SCREENING RESULTS: Interview Results****ECOSYSTEM: INDICATOR 9**

EPA – NEW ENGLAND

**Database** EPA does not maintain a database of aquatic community health data in the New England states, which might support this indicator. EPA does collect biennial state water quality assessments (305b reports), of which some determinations of include aquatic life use support determinations which have drawn on aquatic community assessment data. This data is currently limited.

[See individual state forms].

**Coverage**

*Waters* [See individual state forms].

*Parameters* [See individual state forms].

*Temporal* [See individual state forms].

**Quality/**

**Methodology** [See individual state forms].

**Availability** [See individual state forms].

## ECOSYSTEM: INDICATOR 9

### CONNECTICUT

- Database** Connecticut has utilized biological monitoring including aquatic community health in preparing a subset of use support assessments in their 305(b) reports.
- Coverage**
- Waters* Connecticut has utilized biological monitoring since 1973, and incorporated this data into its 305(b) report since 1988. Connecticut has attempted to increase the coverage of its biological monitoring efforts, but faces ongoing resource constraints. Approximately 50 fixed sites cover 34 waterbodies and are used on a rotating basis to make aquatic health assessments. These are in addition to assessments made using data from sites selected on an ad hoc basis as needed. Connecticut has assessed fewer than 300 miles of rivers and streams using biological criteria.
- Parameters* Waters are assessed using a version of the rapid Bioassessment Protocol. Several parameters of macro invertebrate community structure and derived indicators are used in making assessments. Narrative biological criteria were incorporated into the state's water quality standards in 1987, and numerical criteria have been implemented since, as resources permit.
- Temporal* Bioassessments have been incorporated in making a small portion of the aquatic life use support assessments since 1988. Macro invertebrate data has been collected since 1973.
- Quality/Methodology** Connecticut utilizes a version of EPA's RBP, and other standard sampling and assessment techniques. Assessments are primarily based on macro invertebrate community data, although limited fish population data has been collected when possible.
- CT DEP regularly targets biological assessments to areas of specific need, including spills, pollution source impacts, and in evaluating the effectiveness of waste treatment installations.
- Availability** Assessments are reported in the 305(b) report along with those made on non-biocriteria information. The CT DEP collects aquatic biology data on an ongoing basis.

**ECOSYSTEM: INDICATOR 9**

## MAINE

- Database** The Maine DEP has been built a database of biological sampling data since the early 1970s. This is primarily a baseline database of benthic macro invertebrate community samples. Since 1986, the state has used biological data in making determinations of aquatic life use support in its 305(b) report.
- Coverage**
- Waters* Maine DEP has assessed approximately 300 miles of rivers and streams utilizing biocriteria/assessments, by drawing on data from 200 sites since the monitoring program began. Sampling has been conducted below all significant inland wastewater discharges. Many reference sites above pollution sources and other pristine conditions have been sampled.
- Parameters* In 1986, the state adopted definitions of aquatic life use for purposes of 305(b) assessment, that include narrative descriptions of characteristics which must be met, and corresponding numerical criteria. These include the support of indigenous fish populations and the maintenance of the structure and function of resident biological community. The characteristics are specific to each waterbody classification. The DEP utilizes probabilistic models and several indices drawn from macro invertebrate data in making assessments.
- Temporal* Macroinvertebrate data has been collected since the early 1970s, and applied to formal aquatic health criteria for the 305(b) since 1986.
- Quality/**
- Methodology** ME DEP utilizes standard protocols, methods, and guidelines, including well-defined state standards. Statistical methods and models are used in making attainment determinations. ME has built an extensive baseline database including numerous reference conditions.
- Availability** ME DEP database of macro invertebrates. Data incorporated into biennial 305(b) assessments.

**ECOSYSTEM: INDICATOR 9**  
MASSACHUSETTS

- Database** In preparing the state's 305(b) report, Massachusetts DEP draws on a variety of aquatic health monitoring data in order to assess support for aquatic life use designations.
- Coverage**
- Waters* Aquatic health sampling is conducted for a limited set of waters assessed for the state's 305(b) report. While Massachusetts has implemented a rotating basin assessment schedule, assessments continue to be targeted primarily towards problem sites. Assessments cover approximately 300 miles of rivers and streams, drawing on data from 21 sites.
- Parameters* Aquatic health data used in determining aquatic life use support as defined by the state, includes chemical and toxicity data, as well as some macro-invertebrate measures which are used in a combination of metrics. The degree of macro-invertebrate community impairment determines the corresponding degree of use support (i.e., not supporting, fully supporting, partially supporting).
- Temporal* Biennial 305(b) reporting.
- Quality/**
- Methodology** DEP has used a variety of data and seven metrics in determining aquatic health. The Department has established its own protocols and guidance, and uses the EPA Rapid Bioassessment Protocols.
- Availability** DEP tracks these assessments. DEP did not identify a database used to maintain this data.

**ECOSYSTEM: INDICATOR 9**  
NEW HAMPSHIRE

- Database** New Hampshire DES has begun a program of biological water assessments. The agency is in the process of creating a database for this assessment information.
- Coverage**
- Waters* Current focus is on specific sights of interest, while trying to establish a baseline (i.e. reference conditions) for the state's waters. DES samples a sight once, then moves to another in establishing the reference conditions.
- Parameters* Sample for macro-invertebrate and fish populations.
- Temporal* Program has been in operation for approximately the last three years, mostly gathering reference condition data during this time.
- Quality/  
Methodology** DES relies on standard protocols. Most data collected to date represents reference conditions.
- Availability** Bioassessment data is not yet in a useable database.

**ECOSYSTEM: INDICATOR 9**  
RHODE ISLAND

- Database** In preparing the state's 305(b) report, Rhode Island DEM draws on a variety of aquatic health monitoring data in order to assess support for aquatic life use designations.
- Coverage**
- Waters* RI DEM collects biological data from approximately 45 sites, covering a small proportion of the states waters and those waters assessed in the 305(b).
- Parameters* DEM utilizes the EPA Rapid Bioassessment Protocol, sampling a variety of biological community data, including macro-invertebrates at some sites.
- Temporal* Biennial 305(b) reporting. Macro-invertebrates at several deep-water sites have been sampled for many years.
- Quality/  
Methodology** DEM utilizes standard protocols in conducting bioassessments.
- Availability** This data is kept in hard copy. Indices (e.g., IBI) are not typically generated from this data, although such calculations are potentially feasible.

## ECOSYSTEM: INDICATOR 9

### VERMONT

**Database** Vermont has maintained an active and extensive biomonitoring program since 1982. Data collected is used in determining aquatic life use support for the 305(b), and in creating a state fish community index of biotic integrity (IBI), and macro-invertebrate metrics.

#### **Coverage**

*Waters* Approximately 50-60 sites are sampled annually. Other 350 sites have been sampled since the program began. Approximately 1300 miles of rivers and streams are characterized.

*Parameters* Fish and macro-invertebrate communities and physical habitat are assessed to develop IBI values, macro-invertebrate indices, and to determine aquatic life use support.

*Temporal* Biennial 305(b) reporting includes some assessments drawn from biological data. Biological assessment program has sampled since 1982.

#### **Quality/**

**Methodology** Vermont utilizes protocols modified and consistent with EPA's Rapid Bioassessment Protocol.

**Availability** VT ANR, DEC maintains this data.



**WASTE**  
**INDICATOR 10**

*“Number of RCRA corrective actions and LUST cleanups completed per unit time or cumulative.”*

**CONTACTS**

EPA – New England	Ken Blumberg, Ernie Waterman, Bill Torrey, Pam Shields, Lynn Hanifan
CT DEP	Yvonne Bolton, Gregory Piontek
ME DEP	David Maxwell
MA DEP	Eric Arvedon, Jeff Chorman
NH DES	George Lombardo
RI DEM	Terry Gray
VT ANR, DEC	Peter Marshall, Chuck Schwer

## SCREENING RESULTS: Overview

Under the Resource Conservation and Recovery Act (RCRA), EPA has the authority to regulate wastes from “cradle-to-grave”. Facilities conducting operations that include the treatment, storage, or disposal of hazardous material are required to have a permit under RCRA. Under RCRA, EPA also identifies and regulates corrective actions at (or approves state programs for) contaminated sites at existing or future RCRA permitted facilities<sup>7</sup>. The 1986 amendments to RCRA added issues related to potential and actual contamination from underground storage tanks and leaking underground storage tanks (USTs and LUSTs) to EPA’s responsibilities.

### *RCRA Corrective Actions*

EPA has approved 33 state-run RCRA programs which it deems to be equivalent to or better than the federal program, and has delegated corrective action responsibilities to them. In New England, states delegated with corrective action responsibility are: Maine, New Hampshire, and Vermont. Connecticut’s, Massachusetts’, and Rhode Island’s programs have not been authorized by EPA, and thus EPA continues to work cooperatively with these states in administering the RCRA corrective action program. In Connecticut, the state and EPA have identified a list of approximately 115 RCRA facilities in need of corrective action, based on determinations of high risk. The state program, with some EPA involvement, solicits voluntary cleanup activities by facilities in Connecticut. In Rhode Island, EPA and the state work more closely in administering a RCRA corrective action program, although EPA maintains primary responsibility and authority.

In the three states with delegated programs, cleanup activities are recorded by the state program offices and reported in hard copy to the regional EPA office biannually (approximately six month intervals). For Vermont and Maine, EPA enters this information into the Resource Conservation and Recovery Information System (RCRIS), a national electronic database. Data is recorded by facility, and includes relevant information on each facility, including descriptions of steps that may comprise a corrective action process (e.g., “interim measures undertaken”, “interim measures completed”, “human exposure controlled”). The activities are entered using codes that correspond with definitions established by EPA under RCRA. In New Hampshire, data is maintained in a state contaminated sites database, but is not entered into RCRIS. In Connecticut and Rhode Island, where RCRA corrective action programs are not authorized, it is unclear what data is reported to RCRIS. It is likely that this data, whether in state databases or in RCRIS, is incomplete or inconsistent with data from the four authorized states.

EPA requests RCRA corrective action information from states with delegated programs using standardized forms. EPA has provided guidance to the states on responding to the information requests using these forms, and in using the RCRIS activity codes. *However*, each of the three states with delegated programs has created its own definition of corrective action and systems for tracking corrective action activities. Therefore, in reporting to EPA, the states match their distinct activity descriptions to RCRIS codes, creating potentially significant inconsistencies in

<sup>7</sup> Abandoned or historical contaminated sites are regulated and managed under the “Superfund” provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

what the codes ultimately appearing in RCRIS actually represent in a given state or at a given site. Further concern is raised by the fact that the RCRIS codes describe various aspects of “corrective action” from administrative and enforcement activities to risk-based activities (e.g., exposure controlled, groundwater contamination controlled). Identifying the number of “corrective actions completed” as the indicator requests may entail the consistent selection of multiple RCRIS codes.

While these definitional issues may indeed have a significant effect on the consistent representation of information by the indicator across the region, data (for at least the four authorized states) does exist in a centralized and standardized database, which EPA has updated with state data biannually for the last five years. This information can be extracted from the database and is available on the World Wide Web. Each of the delegated states also maintains this data in their own electronic database.

### *LUST CLEANUPS*

EPA intended its LUST program, coordinated under RCRA, to be flexible, and to allow states to administer cleanup programs that meet their own needs, and goals. Each state in New England administers LUST cleanups as required by EPA, and funded by a common trust fund, the LUST Trust. Each coordinates its programs in a different fashion with different priorities, and defines which activities or conditions constitute a “cleanup”.

This variability is reconciled, at least in part for purposes of this indicator, in a standardized reporting form required of states to be submitted to EPA. Similar to RCRA data, EPA requests hard copy forms to be submitted by states biannually on their LUST program progress. These forms include requests for: total number of confirmed releases (from L/USTs), total number of cleanups initiated, and the total number of cleanups completed. Again, while EPA has allowed flexibility in the state programs, definitions, and cleanup goals (acceptable levels of cleanup), there is an expectation that cleanups achieve some level of protection of human health and the environment. A consistency concern not addressed by this standard reporting is that of a state-level reporting threshold. In Rhode Island, for example, *all* identified LUSTs with cleanup activities are recorded. In other states, thresholds may limit the universe of LUSTs and their activities that are reported. For example, the Connecticut database is said to include the most “dramatic” sites (i.e. highest contamination), while Massachusetts and New Hampshire both observe formal reporting thresholds (in New Hampshire, spills of more than 25 gallons or requiring more than 24 hours to address are reported).

States report information on the progress of their LUST programs to EPA in hard copy on the forms mentioned above, biannually. EPA has collected this information since c.1986, but consistently using standard forms since 1993.

**SCREENING RESULTS: Summary Matrix**

(see results of individual interviews in next section for more detail)

*RCRA Corrective Actions*

State/Entity	Database	Parameters	Coverage	Quality/ Methodology	Availability
<b>EPA - NE</b>	RCRIS national RCRA corrective action database, updated biannually with information submitted by state authorized programs (ME, MA, NH, VT)	activities/events related to corrective actions are coded and recorded by facility and date, along with other site-specific information	all RCRA facilities with corrective actions undertaken are included, except data may be incomplete in CT and Rhode Island which do not have state authorized programs	consistent forms have been used to report information biannually for the past five years	electronic database, World Wide Web
<b>Connecticut</b>	CT is not authorized for RCRA corrective action program, but some data may be reported to RCRIS	reported in RCRIS format; Connecticut sources/definitions unknown	unknown	unknown	some data in RCRIS
<b>Maine</b>	RCRA information database	tracks corrective action activities as defined by state statute, using corresponding codes	all RCRA sites undertaking corrective action as defined by state statute	consistent quarterly/biannual reporting for the last five years; final site assessments are done by staff and outside contractors	electronic database and hard copy; reported to RCRIS
<b>Massachusetts</b>	submits hard copy data to EPA, and relies on RCRIS database	tracks corrective action activities as defined by state	all RCRA sites undertaking corrective action as defined by state	consistent biannual reporting for last five years	hard copy files submitted to RCRIS
<b>New Hampshire</b>	RCRA and LUST information is contained in a contaminated sites database	tracks corrective action activities, organized by risk, volume of waste, and priority	all RCRA sites with release or spill greater than 25 gallons, or requiring longer than 24 hours to clean up	consistent biannual reporting for last 5+ years	contaminated site database, and World Wide Web
<b>Rhode Island</b>	RI is not authorized for RCRA corrective action program, but some data may be reported to RCRIS	reported in RCRIS format; Rhode Island sources/definitions unknown	unknown	unknown	some data in RCRIS
<b>Vermont</b>	RCRA information database	tracks site cleanup activities as defined by state	all RCRA sites with cleanup activities	consistent biannual reporting since 1990	electronic database and RCRIS

*LUST Cleanups*

State/Entity	Database	Parameters	Coverage	Quality/ Methodology	Availability
<b>EPA - NE</b>	EPA receives biannual hard copy reports from state LUST programs and produces an aggregate report	EPA issues guidance for reporting, and uses standard forms which request: total number of confirmed releases, total number of LUST cleanups initiated, and total number of LUST cleanups completed; each state defines its own cleanup goals (i.e., acceptable)	all states report biannually	standardized, hard copy forms since c.1986	hard copy reports, biannually
<b>Connecticut</b>	CT maintains a database of LUST sites and activities	site specific information, chemicals involved, and actions taken (e.g., cleanup activities)	high priority/worst sites are tracked	reporting methods have changed over time, and assessments often rely on "best professional judgement"	hard copy reports, biannually
<b>Maine</b>	ME maintains a database of cleanup information	uncertain	uncertain	consistent biannual reporting for last five years	electronic and hard copy reporting biannually
<b>Massachusetts</b>	MA maintains a continuous database of cleanup "responses"	site specific information and sites assessed as cleaned up to: a certain quantified level, to background levels, or to a level of no significant risk	LUST sites at or above reporting threshold	licensed professionals make site assessments of cleanup efforts	electronic (continuous) and hard copy reporting biannually
<b>New Hampshire</b>	NH maintains a contaminated site database, including LUSTs	tracks cleanup activities, organized by risk, volume of waste, and priority	all LUST sites with release or spill greater than 25 gallons, or requiring longer than 24 hours to clean up	consistent reporting for the last five+ years	electronic, World Wide Web, and hard copy reporting biannually
<b>Rhode Island</b>	RI maintains a database of cleanup activities	site specific information and cleanup activity descriptions	LUST sites statewide	consistent reporting for last five years	electronic and hard copy reporting biannually
<b>Vermont</b>	VT maintains a database of hazardous waste sites	LUST information and cleanup status, as defined by state	LUST sites statewide	consistent biannual reporting on standard form used by site managers and staff, since 1987	electronic and hard copy reporting biannually

## SCREENING RESULTS: Interview Results

### WASTE: INDICATOR 10 EPA-NEW ENGLAND

#### Database

##### RCRA

##### Corrective

##### Actions

Information on corrective actions is a part of the Resource Conservation and Recovery Information System (RCRIS), a process and/or event-oriented database maintained nationally by EPA.

##### LUST

##### Cleanups

States provide hard copy reports to EPA-New England.

#### Parameters

##### RCRA

##### Corrective

##### Actions

“Corrective actions” are defined statutorily and can include a number of different administrative or risk-based activities that have corresponding RCRIS codes: interim measures undertaken (CA600); interim measures completed (CA650); human exposure controlled (CA 725); no uncontrolled releases to groundwater (CA750). The concept of actions “completed” is not accurately captured by RCRIS with the closest activity statement being “corrective action process is terminated” (CA999).

##### LUST

##### Cleanups

There is EPA LUST program guidance defining cleanups, but every state can have a different cleanup goal. Information requested of states, by EPA, includes total number of confirmed releases; total number of LUST cleanups initiated; total number of LUST cleanups completed.

#### Coverage

##### RCRA

##### Corrective

##### Actions

The authorized RCRA programs (Maine, Massachusetts, New Hampshire and Vermont) report all corrective actions (activities) at RCRA facilities to RCRIS. State and regional numbers can be generated.

##### LUST

##### Cleanups

States report hard copy forms which can be aggregated at EPA Headquarters, for all LUST cleanup activities.

**Quality/Methodology***RCRA**Corrective**Actions*

For the last five years, EPA-New England has requested biannual information on corrective actions from the authorized programs in the state agencies using a consistent form. The hard copy forms are entered by the Region and the data is sent to Headquarters. A diskette of state information is provided to the agency by EPA one month later.

*LUST**Cleanups*

Since 1986, EPA-New England has requested hard copy forms.

**Availability***RCRA**Corrective**Actions*

RCRIS data is available electronically and on-line as part of the EPA Envirofacts Website. States submit data biannually.

*LUST**Cleanups*

The data is available as hard copy for each state or aggregated in the biannually report. States submit data biannually.

**WASTE: INDICATOR 10**  
CONNECTICUT

**Database***RCRA**Corrective**Actions*

As a voluntary corrective action program, Connecticut DEP maintains a 10-20 participant data set.

*LUST**Cleanups*

Connecticut DEP maintains a LUST inventory list of about 30 sites using the EPA-provided UST database platform.

**Parameters***RCRA**Corrective**Actions*

Participant status and action steps are included.

*LUST**Cleanups*

Fields in the database include site name, location, source of releases, chemical compounds involved, and actions taken. Criteria for LUST cleanup is defined by rule with cleanup standards becoming more stringent in 1994.

**Coverage***RCRA**Corrective**Actions*

Candidates for voluntary corrective action are identified in cooperation with EPA-New England from high scoring sites (about 115 in Connecticut) in the National Corrective Action Program data base. The voluntary corrective action program has been operating since 1995.

*LUST**Cleanups*

The LUST inventory list covers sites defined as the most “dramatic”.

**Quality/Methodology***RCRA**Corrective**Actions*

Uncertain.

*LUST**Cleanups*

Reporting methods have changed over time for the LUST list. Professional judgement is used and may affect comparability. Hard copy reports are sent to EPA-New England biannually (twice).

**Availability**

*RCRA*

*Corrective*

*Actions*

The data is in electronic form backed by hard copy files.

*LUST*

*Cleanups*

The data is in electronic form entered from hard copy.

**WASTE: INDICATOR 10**  
MAINE

**Database***RCRA Corrective**Actions**and**LUST*

*Cleanups*      Corrective action and cleanup information is maintained in continuous databases by Maine DEP.

**Parameters***RCRA**Corrective*

*Actions*      Maine statute defines corrective action.

*LUST*

*Cleanups*      Uncertain.

**Coverage***RCRA**Corrective*

*Actions*      All sites meeting the corrective action definition.

*LUST*

*Cleanups*      Uncertain.

**Quality/Methodology***RCRA Corrective**Actions**and**LUST*

*Cleanups*      About 10 years of data with the last five years reported consistently on a semi-annual (twice) basis to EPA-New England and internally on a quarterly basis. Program staff and outside contractors undertake assessments of the final site status. These assessments are reviewed internally prior to data entry.

**Availability**

*RCRA Corrective*

*Actions*

*and*

*LUST*

*Cleanups*

The data is in electronic form backed by hard copy files.

**WASTE: INDICATOR 10**  
MASSACHUSETTS

**Database***RCRA**Corrective**Actions*

Massachusetts DEP has no database like RCRIS with specific site tracking information and consequently relies on RCRIS.

*LUST**Cleanups*

A continuous database of “response action outcomes” (RAOs) is maintained on proprietary software on an Oracle platform with overnight updates.

**Parameters***RCRA Corrective**Actions**and**LUST**Cleanups*

Corrective actions (e.g., soil removal, groundwater mitigated, site stabilization) and LUST cleanups are defined in Massachusetts Contingency Plan (310CMR40). For LUST cleanups are undertaken in three ways: 1) cleaned up to a certain numerical value; 2) cleaned up to background levels; 3) cleaned up to a determination of no significant risk.

**Coverage***RCRA**Corrective**Actions*

All facilities undertaking corrective action (n<24).

*LUST**Cleanups*

Statewide sites triggering a notification threshold.

**Quality/Methodology***RCRA**Corrective**Actions*

Corrective action information for the last five years has been reported consistently on a semi-annual (twice) basis to EPA-New England.

*LUST**Cleanups*

Since October 1993, reporting cleanups has been undertaken consistently using licensed site professionals to make determinations. Data are reported consistently

on a semi-annual (twice) basis to EPA-New England and internally on a annual and fiscal (budgetary) basis.

**Availability**

*RCRA*

*Corrective*

*Actions*

The data is available from RCRIS backed by hard copy files.

*LUST*

*Cleanups*

The data is available electronically and, on a limited basis, on-line.

## WASTE: INDICATOR 10

### NEW HAMPSHIRE

#### Database

*RCRA Corrective*

*Actions*

*and*

*LUST*

*Cleanups* Both corrective actions and underground storage tank cleanups are included in a contaminated sites database mounted on an Oracle platform.

#### Parameters

*RCRA Corrective*

*Actions*

*and*

*LUST*

*Cleanups* The type and active remediation of sites is organized by risk, volume of waste, and workload priority.

#### Coverage

*RCRA Corrective*

*Actions*

*and*

*LUST*

*Cleanups* All contaminated sites with a release or spill over 25 gallons or that take longer than 24 hours to address are reported into the database.

#### Quality/Methodology

*RCRA Corrective*

*Actions*

*and*

*LUST*

*Cleanups* Since the early 1990s, the contaminated sites information has been collected consistently. Corrective action information for the last five years has been reported consistently on a semi-annual (twice) basis to EPA-New England.

#### Availability

*RCRA Corrective*

*Actions*

*and*

*LUST*

*Cleanups*      The contaminated sites database is electronic, on-line and supported by hard copy files.

**WASTE: INDICATOR 10**  
RHODE ISLAND

**Database***RCRA**Corrective  
Action*

Rhode Island DEM is not authorized by EPA as a RCRA corrective action program, but maintains a 12 site list stemming from a jointly coordinated program.

*LUST**Cleanups*

LUST site data is maintained using UST database system (Access).

**Parameters***RCRA**Corrective  
Action*

Uncertain.

*LUST**Cleanups*

LUST data is categorized by types of activities taking place: soil removal only; sites remediated or where extraction takes place; and monitoring.

**Coverage***RCRA**Corrective  
Action*

Uncertain.

*LUST**Cleanups*

Statewide data.

**Quality/Methodology***RCRA**Corrective  
Action*

Uncertain.

*LUST**Cleanups*

LUST cleanup data has been collected since the late 1980s, but with high quality and more consistently in the last five years. Data are reported consistently on a semi-annual (twice) basis to EPA-New England and internally on a annual (calendar) and state and federal fiscal (budgetary) bases.

**Availability**

*RCRA*

*Corrective*

*Action*           Hard copy.

*LUST*

*Cleanups*       The data is available in electronic form supported by hard copy files.

**WASTE: INDICATOR 10**  
VERMONT

**Database***RCRA**Corrective  
Action*

Vermont ANR maintains a data set of 7-8 facilities structured similarly to RCRIS.

*LUST**Cleanups*

LUST cleanup data is part of a hazardous waste site database maintained on Access software converted from Paradox.

**Parameters***RCRA**Corrective  
Action*

Vermont tracks corrective action (activities) at sites, using a variety of codes and definitions.

*LUST**Cleanups*

LUST cleanup is defined in state rule and statute, based on releases, with closure criteria found in guidance.

**Coverage***RCRA**Corrective  
Action*

Various activities tracked at LUST sites. Activity descriptions cannot necessarily be used to represent “corrective action completed”.

*LUST**Cleanups*

Since 1987, statewide data in comparable form has been collected using a standard form used by site managers and data entry personnel.

**Quality/Methodology***RCRA**Corrective  
Action*

Since 1990, corrective action data has been reported consistently to RCRIS through EPA-New England semi-annually.

*LUST**Cleanups*

Data are reported consistently on a semi-annual (twice) basis to EPA-New England and as a quarterly mailing to the public.

**Availability**

*RCRA*

*Corrective*

*Action*           The data is available from RCRIS.

*LUST*

*Cleanups*        The data is available electronically and on-line updated quarterly.



**WASTE  
INDICATOR 11**

*“Amount of solid waste landfilled, incinerated, and recycled.”*

**CONTACTS**

EPA – New England	Cynthia Greene
CT DEP	Lois Hager
ME DEP	David Maxwell, George MacDonald
MA DEP	Brian Holdridge
NH DES	Sharon Yergeau
RI DEM	Terry Gray, Michael McGonagle (RI Resource Recovery Corp.)
VT ANR, DEC	Julie Hackbarth

## SCREENING RESULTS: Overview

EPA does not maintain a database of state-level solid waste information. Information is available in each of the New England states on the quantities of solid waste landfilled, incinerated, and recycled. Most have data available annually (with the exception of Massachusetts recycling data, which is collected by occasional surveys). Most data is maintained by the respective state environmental agency (with the exception of recycling data in Maine which is maintained by the State Planning Office, and all solid waste in Rhode Island which is tracked by the Rhode Island Resource Recovery corporation). Drawing on this variety of state-level sources, data to support this indicator could be produced in each state for each category – landfilled, incinerated, recycled – annually (recycling data in Massachusetts will not necessarily be current). However, questions regarding the consistency, reliability, and representativeness of these data are significant. Some key concerns relate to: the sources of solid waste data (e.g., disposal facilities or haulers), its comprehensiveness (e.g., are certain wastes not included, such as commercial debris), and waste that is shipped in or out of state. Most states collect information from a variety of disposal facilities, haulers, and/or municipalities. The difference between data from disposal facilities and data from haulers may have an impact on whether an indicator represents data *generated by* a state, or *disposed of in* a state. Most states track all wastes, while large debris and commercial waste often do not get counted. Each state’s data faces complications or double counting from waste that is shipped in or out of state (i.e., waste attributed to one state may not have been produced there, or *vice versa*).

Connecticut collects data from municipalities, haulers, and disposal facilities, although there is concern regarding the accuracy of reporting by haulers. All solid waste is tracked, except for large debris such as demolition waste and scrap metal collected by dealers. Maine collects landfill and incineration data from disposal facilities. Haulers are not required to report. The State Planning Office collects recycling data from municipalities (rate of return on information request is approximately 90%). Massachusetts collects landfill and incineration data from facilities. Recycling data is estimated based on occasional surveys of transfer stations and other points of sorting. New Hampshire collects data from municipalities and disposal facilities, representing approximately 95% coverage. Rhode Island Resource Recovery operates the state’s primary landfill and materials recovery facility (which processes approximately 98% of the state’s municipal residential recycling). The vast majority of the state’s residential solid waste and recycled material is tracked by the facility by weight. However, several commercial waste transfer stations recycle commercial waste and transport some out of state. Thus RI Resource Recovery’s data is considered to reliably represent the state’s residential waste and recycling, but is limited for commercial waste. No incineration is conducted in Rhode Island. Vermont collects waste data from permitted facilities and haulers.

It is important to note that other potential sources of waste data exist. While the data screening efforts were focused on state data sources, some other sources were identified in conversations with state and regional contacts. GMI assessed two of these cursorily as potential sources of data to support this indicator. The sources are a waste issue magazine called “*BioCycle*”, and the other an organization established by the Eastern Regional Conference of the Council of State Governments to research and assist recycling viability in the northeast, called the Northeast

Recycling Council (NERC). Each of these entities compiles annual, state-specific waste data. *BioCycle* publishes this information annually, for each state and the District of Columbia, annually. NERC compiles data which is available via the World Wide Web for the northeast states, including all New England states. Both sources rely on contacts with state agencies, waste facilities, and haulers in developing their annual figures. Potential inaccuracies and inconsistencies in state data reporting are not eliminated, but the application of consistent methodologies by both *BioCycle* and NERC in compiling these data, has the potential to improve the consistency and comparability of numbers generated. Both sources generate quantities of solid waste landfilled, incinerated, and recycled, by state.

**SCREENING RESULTS: Summary Matrix**

(see results of individual interviews in next section for more detail)

<b>State/Entity</b>	<b>Database</b>	<b>Coverage</b>	<b>Quality/ Methodology</b>	<b>Availability</b>
EPA - NE	annual national survey; refer to other sources such as Biocycle magazine	United States, cannot be disaggregated	unknown	annual national report, 1996 most current
Connecticut	CT DEP maintains solid waste database	solid waste except large debris, and scrap metal handled by dealers	data collected annually in standard form from municipalities, who collect data from facilities and haulers; consistent from 1992 on	electronic database and internal management reports
Maine	ME DEP maintains a database of landfilled and incinerated waste; ME SPO maintains recycling information	landfilled and incinerated waste and recycled waste in tons; recycled excludes sludge, waste oil, and asphalt	landfill and incineration facilities report data, haulers are not required; recycling data is collected by consultants from commercial and municipal recyclers (90% response); consistent annual data from 1993, most current recycling data from 1995	electronic databases, and summary reports of both solid waste disposal and recycling
Massachusetts	MA DEP maintains a database of landfilled and incinerated waste; an occasional survey is used to estimate recycling rates	landfilled and incinerated waste tracked consistently from 1994-1996, 1997 data is not yet calculated; recycling survey done as base year in 1992, updated in 1996	DEP considers incinerator data to be accurate, landfill data slightly less reliable, and recycling data unreliable	electronic database, annual reports for solid waste disposal; a recycling "report card" for municipalities has been developed
New Hampshire	NH DES maintains a database of solid waste landfilled, incinerated, and recycled	municipal and commercial solid waste	data is collected from municipalities and disposal facilities; DES expects some data (~5%) to be uncounted	electronic database and reports
Rhode Island	RI DEM does not track solid waste data; the RI Resource Recovery Corp. operates the state's main solid waste facility	solid waste landfilled and recycled (no incineration in RI)	solid waste from all municipalities is weighed at facility and recorded; no out of state waste is brought into RI; point of disposal/separation weighing at same facility since 1991	RI Resource Recovery maintains a database of waste landfilled and recycled
Vermont	VT ANR maintains a database of solid waste landfilled, incinerated, and recycled	solid waste from permitted facilities statewide and haulers (for waste taken out of state)	incomplete data collected for 1994-96, more complete for 1997-98; quality of data reported by facilities varies	electronic database

## SCREENING RESULTS: Interview Results

### WASTE: INDICATOR 11 EPA-NEW ENGLAND

- Database** EPA-New England and EPA Headquarters do not collect solid waste data from state environmental management agencies or maintain solid waste databases. EPA-New England cited the annual *BioCycle* magazine survey of solid waste conditions and trends as a possible source of data to support the indicator. EPA Headquarters uses a consultant to produce an annual number for waste generation per capita nationally.
- Coverage** The *BioCycle* survey is conducted annually since 1989 and includes the 50 states and the District of Columbia.
- The EPA Headquarters survey is undertaken annually and cannot be disaggregated to the state level.
- Quality/  
Methodology** For the *BioCycle* survey, figures for a particular year are derived from estimates of prior years because of timing of the survey (printed in April and May) and frequency of state data compilation. There is also no set of criteria used for deciding which materials are included in municipal solid waste meaning some states may be counting different materials than others.
- The EPA Headquarters survey uses production and economic models to isolate municipal solid waste from industrial waste and recycling data.
- Availability** *BioCycle* reprints of “The State of Garbage in America” articles are available for a fee.
- EPA produces national reports characterizing solid waste that are running two years behind.

**WASTE: INDICATOR 11**  
CONNECTICUT

- Database** Connecticut DEP collects and maintains a database containing information on solid waste landfilled, incinerated, and recycled.
- Coverage** Connecticut has been collecting data (tons) on an annual basis since 1990, but the data set is more reliable and consistent since 1992 after passage of the Mandatory Recycling Act in 1991 established a reporting requirement. The municipal solid waste data (excluding bulky waste defined as land clearing or demolition debris) can be aggregated to the statewide level drawn from municipalities, facilities (except scrap metal dealers), and waste haulers (concern expressed that they are not reporting accurately or at all).
- Quality/  
Methodology** Using definitions consistent with EPA, reporting forms organized by type of material with definitions and conversion information are sent to municipalities annually. Municipalities report information on commercial solid waste entities within the towns. Facilities are required to report quarterly. Difficulties in compiling the data include out of state waste and Connecticut waste that goes out of state and comes back in.
- Availability** In addition to electronic availability, annual reports are generated and sent to municipalities used internally for planning purposes.

## WASTE: INDICATOR 11

### MAINE

- Databases** Maine DEP collects and maintains landfilling and incineration data.
- Maine State Planning Office collects and maintains recycling data.
- Coverage** Maine DEP has collected landfilling and incineration data (tons) by type of waste on an annual basis consistently since 1993 from disposal facilities. Licensed waste haulers are not required to report.
- Maine SPO has collected self-reported recycling data (excluding sludge, waste oil, and asphalt) from municipalities (90% return rate) since 1993 and sponsors a biennial consultant-based survey of commercial sector recyclers. 1993 and 1995 are the last completed recycling reports and contain an aggregated state recycling number in tons (raw survey data is destroyed as proprietary).
- Quality/**  
**Methodology** Landfilling and incineration facilities are required to report annually. Municipalities are asked to self-report recycling information annually.
- Availability** In addition to electronic data, landfilling and incineration data are available in summary reports for an active solid waste stakeholders group and for legislative requests. Recycling reports are summarized for the legislature and used for planning purposes.

## WASTE: INDICATOR 11

### MASSACHUSETTS

- Database** Massachusetts DEP collects and maintains statewide data (tons) on landfilling and incineration.
- For recycling data, Massachusetts has periodically surveyed municipalities, but does not maintain a database.
- Coverage** Landfilling and incineration data have been collected consistently since 1990 and are most consistent for the period calendar 1994-96 with 1997 pending. A standardized chart comparing total generation and total disposed; MSW and non-MSW (e.g., biosolids and sludge) are generated. Recycling surveys are based on a 1992 comprehensive survey and have not been updated since calendar year 1996. Incinerator data is characterized as accurate; landfills data as less reliable; and recycling as still less reliable.
- Quality/  
Methodology** Self-reports from landfilling and incineration facilities are requested every February, but are not complete before April (Massachusetts waits for some numbers from some of its waste that goes to New Hampshire for disposal). Some estimation is undertaken using a productivity index and employment data. Recycling surveys involve staff and contractors to survey transfer stations or other points where the recyclables are first consolidated.
- Availability** In addition to electronic data, annual reports are generated for master planning and projection of future disposal capacity. A recycling report card ranking the municipalities rate of recycling has been developed.

**WASTE: INDICATOR 11**  
NEW HAMPSHIRE

**Database** New Hampshire DES collects and maintains a database covering information on solid waste landfilled, incinerated, and recycled.

**Coverage** New Hampshire has been collecting data on an annual basis since 1991 based on municipal and facility reports for 95% of the state.

**Quality/**

**Methodology** Annual calendar year reporting from municipalities is due by the end of March every year. Towns own transfer facilities. Annual reports from point of disposal facilities are also requested. Data from weighing scales is amended with estimated conversion data from dump truck loads and cubic yards measurements. The data is characterized as good for municipal solid waste with commercial solid waste data being not as reliable. Data entry is by facility and service area. The 5% missing data is due to short staff. Some out of state waste figures can be broken out due to a \$1 per ton surcharge on out of state waste.

**Availability** In addition to electronic data, a legislatively mandated report is generated to support a six-year solid waste plan.

**WASTE: INDICATOR 11**  
RHODE ISLAND

- Database** Rhode Island DEM maintains data on a small amount of solid waste from three small municipal landfills. The vast majority of waste is tracked by Rhode Island Resource Recovery, a quasi-public state-owned corporation that operates the state's central landfill and materials recovery (recycling) facility. There is no incineration facility in Rhode Island.
- Coverage** Since 1991, Rhode Island Resource Recovery has collected weighing scale data on waste to be landfilled. It is assumed that all waste is in-state as there is a ban on out-of-state waste disposal in Rhode Island. Recycling data has also been collected by type using the scales since 1991 at the facility that nearly all municipalities in the state use for municipal/residential waste.
- Quality/  
Methodology** Rhode Island Resource Recovery scales are electronically connected to an accounting system. The data represents approximately 90-95% of all solid waste disposed, and 98% of waste recycled, in the state. A significant amount of commercial waste is processed or transported by transfer stations, so RIRRC's data is representative of the state's residential waste and recycling, but not commercial waste.
- Availability** On request, Rhode Island Resource Recovery can generate reports from their data.

**WASTE: INDICATOR 11**  
VERMONT

- Database** Vermont ANR collects and maintains a database containing information on solid waste landfilled, incinerated, and recycled (tons or cubic yards). This information is obtained from facilities permitted by the agency and entities required to report to the tax department.
- Coverage** The data covers facilities permitted by ANR, facilities required to pay taxes, and waste haulers (if direct hauled out of state). Partial sets of data are available for calendar years 1994-96 and more complete data is available for 1997-98.
- Quality/  
Methodology** Facilities are required to report quarterly and the quality varies by facility and method of measurement. In previous years reporting was either by tonnage or by volume, but is now required to be by tonnage. Potential problems may include double counting (waste transferred from a transfer station or recycling center to another with both required to report).
- Availability** In addition to electronic data, a 1997 summary report is available.



**WASTE**  
**INDICATOR 12**

*“Percent of non-product outputs reduced, including TRI waste; percent of non-product outputs reduced, including TRI waste, normalized for production; percent of non-product outputs, including TRI waste, attributable to pollution prevention; percent of non-product outputs reduced, including TRI waste, attributable to pollution prevention, normalized for production; percent of facilities that have implemented pollution prevention practices as a result of technical assistance.”*

**CONTACTS**

EPA – New England	Dwight Peavey
CT DEP	Joe Pulaski
ME DEP	Ron Dyer, Barbara Herman
MA DEP	Cynthia Chavez
NH DES	Karen Way, Vince Perelli, Sharon Yergeau
RI DEM	Barbara Morin
VT ANR, DEC	Paul Van Hollebeke

## Screening Results: OVERVIEW

This indicator includes several distinct elements:

1. percent of non-product outputs reduced, including TRI waste
2. percent of non-product outputs reduced, including TRI waste, normalized for production
3. percent of non-product outputs, including TRI waste, attributable to pollution prevention
4. percent of non-product outputs reduced, including TRI waste, attributable to pollution prevention, normalized for production
5. percent of facilities that have implemented pollution prevention practices as a result of technical assistance

In slightly more general terms, the data requirements of this indicator are: the amount of waste produced (reduced), amount of waste that can be attributed to pollution prevention (P2), some factor by which these first two numbers can be normalized for production, and the percent of facilities that have done P2 because of technical assistance they received. The primary data source implicated is the Toxic Release Inventory (TRI). The TRI (as discussed in the *Air Section: Indicator 4*) is a national database of toxics release and transfer data from a group of manufacturing facilities required (by SIC code and toxics use thresholds defined in the Emergency Planning and Community Right to Know Act (EPCRA)) to report to EPA on standardized forms annually.

EPA compiles this information annually (1996 is the most currently released data). The TRI tabulates the amount of waste (of listed chemicals/compounds) released to various media, transferred off-site (for treatment or disposal), and managed on-site. This data supports the first part of the indicator. EPA also requests production ratios from facilities on their TRI forms. This number, by using an established formula, enables the waste figures to be “normalized” for production, thus supporting the second part of the indicator. The TRI forms, in accordance with the Pollution Prevention Act of 1990, also include two data fields requesting codes that correspond to source reduction activities and methods implemented at facilities.

The TRI data can support the first two elements in this indicator. The third element – waste reductions attributable to pollution prevention – can potentially be derived using TRI data, but there is not an established and reliable method for such a calculation. The TRI does include codes under “source reduction methods” which correspond to pollution prevention and technical assistance (one code each for: federal, state, trade association, vendor, and other). Forms reporting these codes could be counted (multiple counts for facilities submitting multiple forms would have to be reconciled) and a total divided by the total facilities reporting. This information could support the fifth element in this indicator. However, the reporting of these codes and their reliability are seriously questioned by both EPA and state agencies.

EPA, agencies, and industry, among others, have raised many concerns regarding the reliability of the TRI. These cannot be described in detail here, however some general concerns include:

- The group of facilities reporting to the TRI has been criticized as being a relatively narrow class of industrial facilities comprised of manufacturers
- The reliability of the estimation of waste quantities and reporting has been challenged

- The consistency and utility of information reported on pollution prevention activities has been challenged
- The normalization of waste data for production has been criticized for a) its distortion of actual emissions quantities, and b) the reliability of production ratios submitted by facilities

Some state-level sources of waste information that might help support this indicator were described during the data screening interviews. Maine maintains a database under a Toxic Use Reduction law. This database includes TRI facilities and some large quantity hazardous waste generators that are not required to report to the TRI. The database tracks the same chemicals as the TRI. The Maine database could be used to calculate waste reductions annually, and does include a normalization factor. While the database tracks pollution prevention activities, waste reductions cannot necessarily be attributed to them. Massachusetts maintains a similar database, but includes numerous facilities not included in the TRI, and tracks a list of chemicals which includes both TRI and CERCLA listed chemicals. Facilities in Massachusetts also report a production ratio, and pollution prevention activities. Outside of the TRI, New Hampshire maintains a database of annual reports from RCRA facilities. These reports include the amount of waste generated, information allowing for normalization, and the type of, and reason for, pollution prevention activities. NH DES contacts suggest that this information could be used to calculate waste reductions attributable to pollution prevention activities. Facilities implementing pollution prevention, listing technical assistance as a primary source of information for pollution prevention, could be calculated as a percentage of total facilities. Rhode Island maintains a toxics inventory limited to a small group of air toxics emitters. Vermont requires TRI-covered facilities (though at a lower qualifying threshold) to produce pollution prevention plans, and to submit annual progress reports to the state. These reports are intended to include progress in waste reduction. The state produces a summery report describing the progress of its pollution prevention program, which includes waste reductions, but this is not maintained in a database. Connecticut does not maintain a state-level toxics/waste inventory.

In summary, the TRI contains data, although incomplete and of questionable reliability, for facilities in each state. This data may be used to characterize the amount of waste produced/reduced annually, this number normalized for production, and possibly the number of facilities implementing pollution prevention as a result of technical assistance. Some states maintain data on facilities or wastes beyond the TRI. A few states are able to quantify pollution prevention activities. The ability to attribute waste reductions to pollution prevention proves difficult for facilities, as well as for those relying on these data sets.

Screening Results: SUMMARY MATRIX

(see results of individual interviews in next section for more detail)

State/Entity	Database	Coverage				Quality/ Methodology	Availability
		Facilities	Wastes	Parameters	Temporal		
<b>EPA - NE</b>	TRI	all facilities listed in EPCRA section 313: SIC 20-39, have >10 employees, either manufacture, process, or import >25,000 lbs of any listed chemical, or otherwise use >10,000lbs of any listed chemical	approximately 650 reported chemicals are listed by EPA	releases, transfers, etc. of waste, production ratio, pollution prevention activities and sources	1988-1996 annual reporting; changes in chemicals and facilities over time	facilities self report emissions to EPA; EPA does QA; many concerns have been expressed about the scope of facilities and chemicals reported, as well as with reporting/estimation methods	the TRI is widely available annually: CD-ROM, internet, electronic, published reports annually
<b>Connecticut</b>	no state toxics database						
<b>Maine</b>	state toxics inventory	all TRI facilities and large hazardous waste generators	all TRI wastes	waste quantities, production factors (for normalization), pollution prevention activities	biennial reporting to ME DEP	self-reporting by facilities	electronic database, and annual reports in hard copy and World Wide Web
<b>Massachusetts</b>	state toxics inventory	all TRI-reporting facilities and other not reporting to TRI	TRI and CERCLA listed chemicals in all process uses at facilities	waste reductions, production ratio, pollution prevention activities	annual reporting, 1996 recent	facilities report data along with methods for estimations; DEP uses inspectors to verify accuracy during some site visits	electronic database, and annual reports in hard copy and World Wide Web
<b>New Hampshire</b>	database of annual reports from RCRA facilities	all RCRA generators	all RCRA hazardous waste	waste generated, normalization information, pollution prevention activities and sources	annual reports; has submitted data for several federal reporting cycles; began using new survey form containing detailed pollution prevention information in 1997	DES considers data accurate and reliable	electronic database
<b>Rhode Island</b>	Rhode Island maintains a limited inventory of air toxics emitters; no state-level toxics inventory is maintained						
<b>Vermont</b>	VT requires TRI facilities to prepare pollution prevention plans; annual reports on these plans are submitted to VT ANR; VT ANR produces biennial progress reports	all TRI facilities, but at lower reporting threshold	all relevant wastes	facilities are expected to describe pollution prevention activities and progress; VT ANR reports on waste reductions in describing the progress of the pollution prevention program	progress reports are submitted to ANR annually; ANR produces a report biennially (1997 recent)	VT ANR is not confident of the reliability of the trends described in facility progress reports	facility P2 plans are kept on site or submitted to ANR voluntarily; progress reports are prepared annually

## SCREENING RESULTS: Interview Results

### WASTE: INDICATOR 12

EPA – NEW ENGLAND

**Database** Nationally, EPA maintains the toxics release inventory (TRI), an inventory of toxic emissions, releases, and transfers from facilities, by media, along with other information on manufacturing processes and pollution prevention measures.

**Coverage**  
*Facilities* Sources are described in Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA). Reporting facilities are those which conduct manufacturing operations (SIC 20-39), have 10 or more full-time employees (10 FTE), and use a listed chemical(s) as follows:  
 Manufacture, process, or import any chemical or group in quantity over 25,000 lbs  
 or,  
 otherwise use any chemical or group in quantity over 10,000 lbs.

*Wastes* Approximately 650 listed chemicals and compounds (EPCRA).

*Parameters* The TRI contains data on facilities' releases, transfers, etc., as well as quantities of wastes managed (recycled, energy recovered) on-site, a production ratio (can be used to normalize waste outputs), and codes corresponding to source reduction (pollution prevention) activities and methods implemented.

*Temporal* TRI data is available from 1988-1996. The TRI is published annually, with a 1-2 year lag time. Listed chemicals and reporting facilities have changed over that time.

**Quality/**  
**Methodology** Facilities self-report estimates of releases, on standardized forms, using extensive EPA guidance and mandated protocols. EPA compiles and performs quality assurance of this data.

Numerous issues have been raised regarding the quality of TRI data. Constant changes in guidance, listed chemicals, and covered facilities have improved the representativeness of the data, but at the expense of consistency over time. The TRI has been criticized for its methods, including: the limited range of facilities required to report (only manufacturing), the methods used for estimating releases, and the accurate identification of facilities and locations. EPA considers (and states concur) that coding information for pollution prevention activities and

methods listed on facility TRI forms is often incomplete and difficult to quantify with any representativeness or relationship to waste outputs.

**Availability** The TRI is widely available in electronic format, on CD-ROM, via the Internet, and in hard copy reports. The 1996 data is available electronically, and will soon be available in hard copy and on CD-ROM.

## WASTE: INDICATOR 12

### CONNECTICUT

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p.51).

Connecticut does not maintain a state toxics inventory.

#### **Coverage**

*Facilities* N/A  
[See EPA – New England].

*Wastes* N/A  
[See EPA – New England].

*Parameters* N/A  
[SEE EPA – NEW ENGLAND].

*Temporal* N/A  
[See EPA – New England].

#### **Quality/**

**Methodology** N/A  
[See EPA – New England].

**Availability** N/A  
[See EPA – New England].

## WASTE: INDICATOR 12

### MAINE

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p. 51).

Under a Toxics Use Reduction law, Maine maintains a database of facilities and their wastes generated, as well as details of their required toxics use reduction plans.

### Coverage

*Facilities* All TRI reporting facilities are included in ME DEP database. Additional facilities required to report include all large quantity hazardous waste generators (includes some beyond those in the TRI group).

*Wastes* For facilities reporting to the TRI, the ME DEP database tracks the same waste information reported to the TRI (releases, transfers, etc.). Other generators submit similar information on individual reports.

*Parameters* The database tracks quantities of wastes (non-product outputs) for facilities annually. These figures could be compared to calculate % reductions.

Maine's Toxics Use Reduction law requires facilities to submit reduction plans every two years. Information from these plans is recorded in the database. The plans describe efforts taken to reduce toxics use, such as pollution prevention activities, control equipment, and process changes/chemical substitutions, but waste reductions are not necessarily attributable to these activities.

Facilities also submit production levels in the form of a ratio, as in the TRI.

As part of the Toxics Use Reduction program, all facilities receive some form(s) of technical assistance. These activities are not recorded in the database and pollution prevention activities are not necessarily attributable to them.

*Temporal* Facilities submit toxics reduction plans and other information to the agency every two years (including those facilities that report to the TRI annually).

### Quality/

**Methodology** Standard information on waste products is self-reported by facilities. Waste data reported to the state database from TRI facilities is the same as that reported to the TRI, however, the production ratio reported by a facility to both databases often differs.

**Availability** ME DEP maintains an electronic database and summarizes toxics information in an annual report (hard copy and on the World Wide Web).

## WASTE: INDICATOR 12

### MASSACHUSETTS

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p. 51).

MA DEP maintains a database including information included on facilities' TIR forms and additional data from facilities, such as that required by the state's Toxics Use reduction law.

#### **Coverage**

*Facilities* All TRI reporting facilities report to MA DEP. Also, numerous other "service" facilities beyond the TRI SIC group report.

The reporting threshold for MA DEP's TUR inventory is the same as that for the TRI, however, if a facility exceed the 25 ton threshold for any chemical, all chemical are subject to the 10 ton threshold.

*Wastes* Facilities report use and release of all TRI chemicals, in addition to all CERCLA chemicals, approximately 1400 in all.

Again, once a facility reports over 25 tons for one pollutant, all are subject to a 10 ton threshold, thus more chemicals per facility may be reported to the state TUR database, than to the TRI alone.

State requires reporting of chemicals in all process uses.

*Parameters* The TUR database reports reductions in by-products (non-product outputs, including releases) from a 1990 baseline for each facility. This number could be calculated as an annual reduction.

Facilities report a production ratio (for normalizing waste quantities) to the TRI and to the MA DEP.

Facilities report pollution prevention activities using codes corresponding to methods, equipment, etc. implemented.

*Temporal* Facilities report to DEP annually. Data is compiled for 1990-1996.

#### **Quality/**

**Methodology** Facilities use and describe standard methods for calculating wastes and emissions. MA DEP has multi-media trained inspectors who provide assurance of accuracy during some site visits.

**Availability** MA DEP maintains an electronic database and summarizes toxics information in an annual report (hard copy and on the World Wide Web).

## WASTE: INDICATOR 12

### NEW HAMPSHIRE

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p. 51).

New Hampshire maintains databases for its RCRA programs, including a database of annual reports submitted by RCRA generators on their activities.

#### **Coverage**

*Facilities* All RCRA generators.

*Waste* All hazardous waste under RCRA.

*Parameters* Generators submit annual reports to NH DES. These reports are supposed to include the amount of waste generated, information to allow normalization for production, any pollution prevention activities undertaken (coded for type), and the source of any pollution prevention activities (coded by type: e.g., agency assistance, vendor literature). Waste reductions attributable to pollution prevention are not reported, but rough estimates could potentially be calculated from the database.

*Temporal* NH DES has been responsible for maintaining RCRA information since 1981, and has reported to the biennial reporting system (BRS) and the Resource Conservation and Recovery Information System accordingly. Annual reports from generators have been recorded for several years. In 1997, DES began using a new survey form for reporting of pollution prevention activities, which includes more detailed information on the source of pollution prevention activities (e.g., reason for implementation, source of information).

#### **Quality/**

**Methodology** NH DES considers their current hazardous waste tracking, and information submission from generators to be detailed and reliable. The forms currently used request an extensive amount of information about facilities' processes, wastes, and activities, and are quality assured by DES. By contrast, TRI data from NH facilities receives little quality assurance before being forwarded to EPA, for entry into the national database. NH DES raised some concerns regarding "double counting" in this indicator if TRI wastes and RCRA wastes are combined – some facilities may be required to report the same wastes to both TRI and to RCRA. An expanding group of facilities required to report under TRI may exacerbate this problem.

**Availability** NH DES maintains databases of annual reports from facilities, as well as standard biennial reports required for their RCRA program. [See EPA – New England for TRI availability].

**WASTE: INDICATOR 12**  
RHODE ISLAND

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p. 51).

Rhode Island maintains an inventory of facilities emitting air toxics [see Air: Indicator 4, Rhode Island]. No comprehensive inventory of state toxics/wastes exists.

**Coverage**

*Facilities* [See EPA – New England].  
[See Air: Indicator 4, Rhode Island]

*Wastes* [See EPA – New England].  
[See Air: Indicator 4, Rhode Island]

*Parameters* [See EPA – New England].  
[See Air: Indicator 4, Rhode Island]

*Temporal* [See EPA – New England].  
[See Air: Indicator 4, Rhode Island]

**Quality/  
Methodology** [See EPA – New England].  
[See Air: Indicator 4, Rhode Island]

**Availability** [See EPA – New England].  
[See Air: Indicator 4, Rhode Island]

**WASTE: INDICATOR 12**

## VERMONT

**Database** TRI data is reported by facilities to EPA. For description of the TRI database, see EPA-NE form (p. 51).

Under the state's 1991 Pollution Prevention Planning law, facilities must prepare pollution reduction plans, and submit certain information to VT ANR.

**Coverage**

*Facilities* All TRI reporting facilities (same SIC codes and chemicals) are covered under the law, but by a lower reporting threshold of 1,000 pounds of any listed chemical used. All hazardous waste generators are required to develop pollution reduction plans.

*Wastes* All relevant hazardous waste products are covered under the law.

*Parameters* Facilities are required to prepare a toxics use reduction plan, which must be updated every three years. The plans describe the facilities activities intended to reduce toxics use and pollution.

The facilities also submit annual progress reports. These describe activities implemented to reduce wastes, and compare trends in waste generation for the previous and current years.

VT ANR produces a summary report of this program, which describes the success of pollution prevention efforts, in terms of toxics/waste reductions (i.e., estimates reductions from participating facilities attributable to pollution prevention planning activities).

*Temporal* Facilities began submitting annual progress reports to ANR in 1993. ANR produces biennial reports on the program's progress.

A subset of these facilities submit TRI data to EPA annually.

**Quality/**

**Methodology** Facilities' pollution prevention plans are intended to describe their efforts and plans for reducing hazardous waste and toxic chemical usage. They may contain information on the facilities current practices or waste production, but not likely in such a way as to support this indicator. ANR described the annual progress reports from facilities as merely updates on the plans. While they often do report progress, this is not presented in a comprehensive, standardized, or reliable

fashion. The agency's biennial reporting on the program's progress describes estimated reductions in waste attributable to pollution prevention planning efforts, but does not clearly discern the source of these efforts (i.e., agency technical assistance vs. other motivations).

[See EPA – New England for description of TRI].

**Availability** Facilities' pollution prevention plans may be kept on site, or can voluntarily be submitted to ANR. Facilities' annual reports are submitted directly to ANR. The ANR biennial report is produced in hard copy and is available.

[See EPA – New England for availability of TRI].

**APPROXIMATE TIMELINE FOR NEGIP DATA SCREENING WORK, 1998**

May 21	NEGIP SC meets to agree on indicator language Discuss sample screening tool and considerations
May 28	GMI distributes draft screening survey tool to SC to share with data managers and other staff
June 5	SC reports back to GMI with revisions to screening tool design, and lists of data contacts
June 15	Screening tool sent to data contacts identified by SC
June 22 – August	GMI conducts phone interviews with data contacts
August – September	GMI compiles data catalog
September – October	GMI distributes data catalog to contacts for feedback
October – November	GMI revises data catalog incorporating feedback from contacts and SC



**SAMPLE DATA SCREENING SURVEY**

(sent to agency contacts identified by Steering Committee, in advance of phone interviews)