Final Report to the Connecticut Department of Energy and Environmental Protection

on

Evaluation of Best Practices of Various State Cleanup Programs

December 15, 2011

Submitted to Support the Comprehensive Evaluation and Transformation of Connecticut's Cleanup Laws

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Workgroup Membership

Members of the work group are listed in Appendix A.

Executive Summary

The Workgroup's mission is to identify successful cleanup programs/systems in other states or countries, identify what makes them successful, and recommend whether they would lend themselves to adoption in whole or in part in Connecticut.

Given the time constraints of the September 28, 2011 deadline, the workgroup reviewed available state program comparison information, and selected five top rated states on which to focus the evaluation. Massachusetts, New Jersey, Pennsylvania, Michigan, and Wisconsin programs were reviewed in moderate detail, with some minor attention given to potential best practices from other states programs, provided by individual workgroup members. The selected states were evaluated based on an agreed upon set of criteria, to assess program structure, effectiveness, drivers, and overall success.

Consensus was reached on the following inter-related concepts that appear integral to success in the states we evaluated:

- Affirmative system
- Single cleanup system
- Set Timelines for achieving milestones and cleanup
- Early identification of higher risks, and obligation to quickly address
- Flexibility for closure
- Clear "all done" certainty and documentation
- Agency/Program Transparency

The Workgroup did not reach consensus on recommending any one particular state system as significantly better in producing results (sites cleaned up) than other states. Each of the 5 states reviewed have positive attributes that various members of the Workgroup identified. For example, some but not all states, offer a voluntary cleanup option.

The workgroup members generally recognize that these features are valuable and practical only as a "package". The systems that rely on licensed professionals, self-implementation, flexible risk-based standards, and few if any state reviews, are packaged with affirmative obligations, timelines, public participation opportunities, and appropriate checks and balances (audits, robust licensing board, etc).

We attempted to compare state to state and identify "which state systems are achieving great success", but did not reach any conclusions as a group.

Introduction

Evaluation Background

The cleanup of pollution and redevelopment of Brownfields and other environmentally-degraded properties is critical for Connecticut. The benefits of such cleanups are significant and include protecting human health and the environment from the effects of pollution, creating opportunities for economic development, and aiding in efforts to make our cities, towns and villages more sustainable.

While Connecticut was ground-breaking to initiate strong human health and environmental protections to address pollution, a significant top-to-bottom review of our current cleanup laws and the framework they create has never been conducted. Significant changes, additions, and improvements have been made to the cleanup laws since the late 1960s, but changes have been incremental and selective. This draft workgroup report is part of an on-going Comprehensive Evaluation of the cleanup laws for the State of Connecticut. DEEP intends to use this Comprehensive Evaluation to aid in the transformation of the cleanup laws. A successful transformation of the cleanup laws will create a system of cleaning up contaminated properties that is efficient and effective for the broad array of stakeholders that rely upon the safe reuse of Brownfields and other environmentally-degraded properties.

Scope and Deliverable

The Workgroup was provided with the following scope and deliverable by DEEP.

Scope: Evaluate best practices of successful state cleanup programs and states with a single remediation program. Compare the best practices from state cleanup programs and the single remediation programs to the Connecticut cleanup programs, and determine how these best practices and program structures address the needs of all investigation and remediation stakeholders.

Deliverable: Present information from this evaluation and suggest which best practices and program structures appear to be the easiest to implement, have the clearest requirements, and meet the needs of all investigation and remediation stakeholders.

DEEP explained that the Workgroup should strive to address the scope and deliverable, and other related topics could be address if time permitted. Further, DEEP stressed that all related topics requiring additional evaluation that were related to this scope and deliverable should be documented in this draft report

This workgroup interpreted its mission to identify successful cleanup programs/systems in other states or countries, identify what makes them successful, and recommend whether they would lend themselves to adoption in whole or in part in Connecticut. As required by Public Act 11-141, the evaluation must also include a review of states with a single remediation program.

Subject Matter Background

The cleanup of releases of hazardous substances is largely a state-by-state matter. Unlike air quality (the Clean Air Act) and surface water quality (Clean Water Act), there is no overarching federal law for hazardous substances released in the environment to provide a common framework among all 50 states. The federal cleanup laws that do have a footprint in the states – CERCLA/Superfund, RCRA Corrective Action, Leaking Underground Storage Tanks – address only a sliver of releases and release response in each state. As a result, each state has developed its own unique laws and programs. There is little if anything in common among the states – no common terms, liability rules, response action requirements, procedures, cleanup standards, document requirements, guidance or data. In addition, adding to the complexity, each state may have multiple, different cleanup laws or programs (*e.g.*, Connecticut has over one dozen), depending on the type, location, nature or timing of a release.

To avoid reinventing the wheel, we searched for existing comparisons of state programs. We found no comprehensive reliable analysis. Some sources compared narrow portions of state programs, *e.g.*, voluntary programs, which only represented a small number of sites within a state. The most likely reason for the lack of existing comprehensive evaluations is the difficulty in "normalizing" all the disparate information among 50 states to allow for a reasonable comparison. It would take a very significant investment of resources and time to do a fair job of obtaining data, normalizing, interviewing knowledgeable participants and comparing the success of cleanup programs among the 50 states. To make best use of the limited time allotted for the Workgroup, the Workgroup selected – after a screening process – 5 states cleanup programs to target for in-depth evaluation.

Workgroup Meetings and Format

Work Group 6 first met on September 1, 2011. At the September 1st meeting, the group confirmed its scope and the deadline for work group reports as September 28, 2011. The group also discussed the elements of a successful state program and established criteria to guide further evaluation. Those criteria are listed as "Areas of Evaluation" below.

The group next met on September 7, 2011. That meeting was devoted primarily to identifying state programs. After hearing brief reports from group members who had reviewed surveys of state programs and contacted individuals familiar with a variety of state programs, the group identified Massachusetts, Michigan, New Jersey, Pennsylvania and Wisconsin for further study. Teams were assigned to review each state's program in detail. Individual members were asked to research elements of other state programs as well as programs from other countries.

At its September 14th meeting, the group began to receive reports on the five targeted states. It also reviewed an outline for the final report.

On September 21st, the group heard further reports on the states. It also reviewed and discussed the criteria it had established. There was also a preliminary discussion of the pros and cons of certain program elements.

The workgroup met on September 23rd and 26th to evaluate state program elements and developed a draft set of recommendations. Those recommendations were refined and approved during a workgroup conference call on September 28th.

Areas of Evaluation

Identifying the criteria for "successful" state remediation programs was among the earliest tasks of the work group. Those criteria include (in no particular order):

- Effective protection of public health and the environment.
- The program must be "user friendly" for all stakeholders.
- A significant number (both in absolute number and percentage) of sites representing all sizes, types and levels of risk are captured by the program and completed under the program.
- The program facilitates public participation through timely notice, transparency and the availability of information.
- Timely progress through various clearly defined milestones, including an "Almost Done/Under Control" milestone, and the tools to address future risk.
- Multiple programs must be structured or coordinated to allow all stakeholders to understand and comply with requirements.
- The issuance of a clear and valuable notice of completion/no further action letter by a Professional or the State.
- Facilitates cost-effective closure, resolution or, at least, certainty with respect to liability.
- Timely identification and response to potential imminent hazards.
- Flexibility to address different situations.
- Financial and other incentives for more comprehensive clean-up (for example, to residential standards).

The group recognized a number of challenges inherent in the process. First, the time constraints limited the group's ability to pursue in depth all resources and information available. Second, the group needed to recognize the state-specific factors (land use, history, population density, etc.) reflected in each state program. Finally, the variety in approaches, terminology and other circumstances did not always allow for an "apples to apples" comparison. An effort was made to "normalize" the information received wherever possible.

As noted above, the group recognized early that the September 28, 2011 report deadline precluded the ability to perform an exhaustive review and comparison of all state programs. Consequently, the initial screening was undertaken based on the personal experience and knowledge of group members as well as a review of surveys conducted by governmental, education and regulated industry groups. A partial list of some of the surveys and reports reviewed is listed in Appendix B.

After a review of the screening information, the group agreed to focus on the state programs in Massachusetts, Michigan, New Jersey, Pennsylvania and Wisconsin. Each of these state programs received high ratings in a number of the surveys reviewed and individual group members' experience (including anecdotal experience) indicated a strong likelihood of valuable information emerging from these state programs. These states share long and varied industrial history. Also, NJ, MA, and PA are nearby states in economic competition with CT. Therefore, two or three group members were assigned to review the programs in each of these states in depth, including interviews with knowledgeable individuals. The views represented in this report do not necessary reflect the views of those individuals interviewed. The form in Appendix C was developed for use in these interviews. A comparative summary of the five states appears in Appendix D. There is also a narrative description of each state's program immediately following this section.

In the course of the discussions, individual group members identified other state programs or elements of those programs that might be beneficial in Connecticut. Members were encouraged to evaluate those program elements separately, without necessarily evaluating the entire state program. These best practices are summarized in Appendix E

I. MASSACHUSETTS

Data and Conclusions

As of January 2011, the cleanup program has received 40,780 release notifications ("sites"), of which 35,360 sites have been closed. 87% of the sites are closed. Each year approximately 1,400 sites enter the program. According to various reports, the number of cleanups completed each year in Massachusetts has surpassed the number of new notifications.

Structure

Massachusetts has a single, affirmative, self-implementing cleanup program. "Single" means that there is one statute (Chapter 21E) and one accompanying set of regulations (the Massachusetts Contingency Plan, or "MCP") that set forth a single system for entering, investigating, remediating, and exiting the system for all regulated releases of oil and hazardous materials in the state.

Chapter 21E is "affirmative", meaning the law requires certain categories of potentially responsible parties (PRPs) to initiate and complete response actions whenever a regulated release exists. The requirement to act is driven by law, and does not require prior government site-specific action to create a requirement to act. Action is mandatory if the law is triggered.

The Massachusetts program is also "self-implementing". Regulated parties can and must achieve endpoints on their own, without waiting for the government to instruct them on what, when and how to perform actions.

Entry Points

Massachusetts is a release-based system. A single release is considered a "site" meaning that a single parcel of land may include several "sites" (though multiple release notifications can also be merged into one "site" too). The crux of entry is that any PRP (see who is a PRP below) that knew or should have known of a release of any oil or hazardous material (OHM), must notify the state and address the release. The program regulates both new releases and historic contamination to the environment. There is no distinction made between old, new, commercial/industrial, residential, leaking tanks or other situations.

The MCP sets thresholds and time frames for notification (either 2 hour, 72 hour or 120 days, depending on the situation) for sudden spills, imminent hazards, historical releases, and threats of release. If one of these thresholds is exceeded, or conditions exist, the PRPs must notify MassDEP.

Notification and cleanup requirements are generally triggered when a potentially responsible party ("PRP") "knew or should have known" of the release. PRPs include: (1) current owner or operator; (2) past owners or operators; (3) persons who arranged for OHM to be transported, stored or disposed of at the site; (4) persons who cause or

contribute to the release; or (5) persons otherwise legally responsible. Exceptions exist for secured lenders, municipalities, and certain other persons in limited circumstances.

OHM is a broad term that includes both raw material and waste material. Certain products have been exempted from the definition of hazardous material or from notification requirement, including the normal application of pesticides, and when the contaminants are solely attributable to lead paint, emissions exhaust, coal, coal ash, and wood ash. For a list of all materials not regulated by Chapter 21E, see 310 C.M.R. § 40.317.

Remediation

The Massachusetts system is affirmative with clear deadlines for achieving milestones, and Licensed Site Professionals ("LSPs") typically make all of the cleanup decisions. The remediation process is comprehensively set forth in the MCP regulations. PRPs are required to meet the timing and procedural rules to demonstrate they are achieving key milestones on schedule. LSPs certify each PRP's submission to demonstrate that the milestone has been met. The agency thus knows quickly who is addressing releases and who is not, and where the higher risks are so they can be quickly addressed.

There is a single mandatory schedule and process to cleanup in 6 years, applicable to all releases.

- Immediately, hire an LSP and evaluate for potential imminent hazards (identify need for any Immediate Response Actions)
- By year one: within a year after notification the site must have an initial site assessment complete and be "tier classified" (scored by the LSP – low tiers are LSP lead, a high tier may receive more DEP involvement).
- By year three: the site must have a detailed site assessment submitted, clean up options must be evaluated and a cleanup plan selected.
- By year four: The complete design of actual cleanup must be completed.
- By year six: the PRP must have achieved a cleanup endpoint for the release.

Cleanup is overseen by a LSP. LSPs are licensed by the state Board of Registration of Hazardous Waste Site Cleanup Professionals (the "LSP Board"). LSPs must meet the professional standards established by the LSP Board or face a disciplinary action from the Board.

In most instances, the DEP has limited oversight. The DEP's role as an overseer mostly concerns time-critical situations at a site ("Immediate Response Actions"), emergency response to a sudden release, or where the DEP determines that a site is significantly complex and large (a few mega-sites around the state). LSPs are authorized to decide most remedy issues; PRPs rarely need to seek DEP approval. The system is designed to reveal the highest risk matters and have DEP resources brought to bear on those highest risk matters – Immediate Response Action scenarios (Imminent Hazards and Substantial Release Migration), as well as emergency response to sudden spills. LSP are generally

authorized to handle all other decisions – subject to transparency (submittal of milestone reports), and potential for audit and/or Licensing Board actions.

Incentives to proceed quickly through the process exist. "Annual Compliance Fees" exist for each year a site is in the system. So, fewer years means lower fees. Also, the fee can be avoided altogether if the cleanup is completed within the first year (as well as the need to spend time/money preparing a Tier Classification submittal (see above). Other incentives exist to get done fast. For instance, for releases subject to the 120-day reporting requirement, certain actions are allowed within the 120 days that would allow a site to be cleaned up and not have to enter the system.

Exit Points

The Massachusetts cleanup program is considered to be a risk-based regulatory program. The endpoint is achievement of a level of "no significant risk". A Response Action Outcome ("RAO") Statement prepared/submitted by the LSP indicates a cleanup is completed; the RAO is the closure documentation for the site.

The MCP provides several options for meeting the RAO standard. First, a cleanup may result in a permanent solution where no significant risks to human health remain. Second, where a permanent solution is not possible, a site is considered complete where there is no significant risk as a result of an Activity and Use Limitation ("AUL") or deed notices/restrictions on the property. AULs must be filed on the land records at the county land record offices (Registry of Deeds). Third, the MCP allows for temporary solutions (RAO Class C) when financial or technical limitations prevent a site from reaching a no significant risk condition. RAO Class C determinations must be reviewed every 5 years to identify whether a permanent solution is achievable. Finally, where a site has been cleaned, but a treatment system and monitoring must continue for a period of time longer than the 6 year deadline to complete, a site may be eligible for Remedy Operation Status – which in effect extends the six year deadline, but signifies the site in almost done and is under control.

Further, the MCP provides three methods for achieving a level of "no significant risk". First, a release may be cleaned to certain numeric cleanup standards, which are listed in the MCP by substance for groundwater and soil categories (called "Method 1"). Second, where appropriate, a release may be cleaned to modified risk-adjusted standards (called "Method 2"). Finally, a release may be cleaned based on site-specific conditions after a quantitative risk assessment is completed. All of these 3 methods are self-implementing by LSPs.

Significant checks and balances exist. To ensure that the state cleanup standards are met, the DEP must audit at least 20% of sites each year. Also, MassDEP has authority to issue notices of noncompliance, and if a PRP fails to come into compliance, then to assess civil administrative penalties to PRPs who violate the law. Also, the LSP Board (a separate entity from MassDEP), in addition to the Board members, has its own staff of investigators, attorneys and administrative staff to handle licensing and investigation of complaints. The LSP Board has issued approximately 42 sanction-type actions.

Public Participation

Massachusetts cleanup program requires public participation. PRPs must publish notices in local newspapers at major milestones, inform the public about their activities at the site, and provide an opportunity for public involvement. The public may also petition to make the site a Public Involvement Plan ("PIP") site. A PIP site must provide a local information repository, a site mailing list, and opportunities for public comment.

MassDEP has a Waste Site Cleanup Program Advisory Committee that meets quarterly to discuss program and policy development, and program implementation. There are 15 non-DEP positions representing environmental, neighborhood, public health, public water supplier, PRP attorneys, business, real estate, lending, and LSP sectors. Meetings are open forums for interested members of the public to attend.

Analysis and "Take-aways"

The Massachusetts cleanup program is a well-established program with close to a 20 year track record. The MA information collected by this workgroup portrays a program that has successfully achieved a continuous and reliable stream of statewide environmental benefits. The program is carefully balanced so that the package works as a whole: affirmative obligation on PRPs to act, clear expectations, annual milestones, flexible and self-implementing ways to achieve cleanup endpoint, and robust checks and balances. It provides a fast and certain path to cleanup, is practical, and transparent. Further, the self-implementing model has removed state approval as a potential source of delay while assuring state resources are targeted to address significant environmental concerns. Some are concerned that there may be a false sense of security that all releases have been cleaned up on a property just because some releases were identified and were cleaned up.

The MA program has achieved the cleanup of tens of thousands of releases (over 35,000 to date) while reportedly receiving generally positive feedback overall from stakeholders.

References

21E Program Report, Final Generic Environmental Impact Report (February 1999)
MassDEP Fact Sheet - Massachusetts Waste Site Clean Up Program – The basics
*www.**mass**.gov/dep/**cleanup**/laws/bhfs.pdf*
MassDEP Fact Sheet – Brown Fields and Waste Site Cleanup Programs
http://www.mass.gov/dep/cleanup/laws/policies.htm#facts
MassDEP Fact Sheet - Massachusetts' Approach to Waste Site Cleanup: Chapter 21E and the MCP
The Massachusetts Waste Site Cleanup Program: Measures of Program Performance 1993-2001
Massachusetts Brownfields Program: A Decade of Progress in Economic Development
www.mass.gov/dep/cleanup/progbf.pdf
The New MCP: Adequately Regulated Fact Sheet 1
Massachusetts Contingency Plan Fact Sheet: Public Involvement in Site Cleanup 310 CMR 40.1400
Generally, MassDEP website – Cleanup of Sites and Spills, and LSP Board website
Interviews with officials at MassDEP, Bureau of Waste Site Cleanup, as well as with LSPs

II. MICHIGAN

Introduction

Michigan's environmental programs are administered by the Department of Environmental Quality (DEQ). The Remediation Division of DEQ consists of approximately 230 people, plus another 40-50 in laboratory services, 30 in Compliance and Enforcement, 40 in Program Support, 160 in Field Operations (8 Districts).

Data

- There are 4100 open sites currently on the Part 201 (Environmental Remediation Program) database. These are mostly older sites that have been in the system for a while. There is a scoring system used to rank risk (numerical score out of 48). For most newly added sites, there is insufficient information for ranking due in part to changes in Baseline Environmental Assessments (BEA) process. Sites are very slow to get off the list – removal requires DEQ approved No Further Action ("NFA")Report (generally only about 10 – 15 received and approved per year).
- Total of 200 state-owned or operated sites on Part 201 list since mid 1990's: 46% closed, 28% in progress, 27% no funding or no state liability.
- 10,000 open (Part 213 Program) LUST sites; 12,000 closed. LUST sites are ranked on basis of short term vs. long term risk. Approximately 150 to 200 new LUST sites added and roughly 250 closed per year.
- Baseline Environmental Assessments (BEA): 14,000 submitted to date (average submitted around 80/month or 800-1000 per year). BEA process substantially changed in 2010 (see Entry Points below).
- MI DEQ stats for FY 2011 (note:3 qtrs only): 60 Response Activity Plans (RAPs) submitted, 9 No Further Action (NFA) reports, 786 BEAs.

Structure

- Michigan's environmental laws were consolidated into the 1994 Natural Resources and Environmental Protection Act, PA 451 as amended. Parts 201 (Environmental Remediation) and 213 (LUSTs) are the two main programs. The law offers essentially an "umbrella" program for closure under this or other state or federal regulations or mandates (spills, orders, LUSTs, voluntary actions, etc.). Sites enter programs with a notification, enforcement, voluntary action, confirmed release or LUST, etc. and are closed through procedures described in Parts 201 or 213. Both utilize site-use based remediation criteria, except that Part 213 also allows a risk-based cleanup action (RBCA) process (ASTM 1739-95/02).

- The program is not privatized (e.g., LEP program in CT), except that a state-certified UST Professional (CP) must conduct LUST response actions under Part 213. DEQ approvals can be obtained (but are not required) for response activities at a facility (e.g., Response Action Plan, No Further Action Report, post-closure plans and agreements). Sites cleaned up voluntarily outside of state programs are not tracked.

Entry Points

- Programs rely heavily on voluntary response actions to address conditions that make a property or a portion of a property a "facility" (*i.e.*, the existence of concentrations of oil or hazardous substances above unrestricted residential standards).
- Releases of oil or hazardous materials are reportable under 26 different state and federal regulations based on risk to human health or the environment, risk to safety, quantities released, imminent hazard situation, etc. Evidence of a confirmed release involving USTs is reportable under Part 213 within 24 hours.
- Discovery of historical contamination above residential standards is not reportable unless it triggers reportable quantities or other notification requirements in other statutes. Lists of reported sites and LUSTs are maintained, but there is no formal mechanism for tracking response activities following notification or regulatory submittal requirements or timelines, except for LUST sites.
- Self-implementing procedures under the "Due Care" provision of PA 451 require owners/operators of the "facility" to take measures to prevent exacerbation of the contamination, prevent human exposure, take reasonable precautions against third party actions, comply with and maintain any land and resource use restrictions, and provide reasonable cooperation, assistance, and access to persons conducting response actions similar to the Bona Fide Prospective Purchasers (BFPP) requirements under CERCLA. A Due Care Plan is required to be produced and implemented (optional review and approval by DEQ).
- Baseline Environmental Assessment (BEA) consists of AAI/Phase I ESA evaluation, plus sampling to identify or evaluate the extent and degree of releases of oil or hazardous materials above residential criteria (*i.e.*, to confirm site is a "facility"). A BEA affords a new owner/operator liability protection for existing contamination if completed within 45 days of the transfer and submitted to DEQ within 6 months of transfer Submittal of a BEA puts a site on the confirmed "facility" list.
- The transaction trigger is that an owner is obligated by law to provide a BEA (if available) or other knowledge of oil or hazardous materials above residential criteria (*i.e.*, a "facility") to prospective purchasers.
- State can pursue liens or other enforcement actions for investigation and cleanup under specific regulations (Parts 201/213).

Remediation

- Response actions are release area based rather than site-wide.
- The program covers a comprehensive list of oil and hazardous substances in soil, ground water, and vapor. Site-specific standards can be used (with DEQ approval) with a full blown human health and/or ecological risk assessment.
- Risk-based cleanup standards are based on future property use.
- Deed restrictions and institutional controls are required (state involvement) to maintain specified future land uses and activity restrictions if clean up is based on non-residential standards.
- The standards protocols that are set by Michigan follow the lead of EPA Region 5, which has done extensive research to establish reasonable concentration levels. Consequently, Michigan sets remediation standards that are not stricter than the EPA. Achieving some remediation standards is challenging, but generally possible for the labs.

Exit Points

- NFA report can be submitted for DEQ approval (but not required) for closure of sites in programs. Post-closure plan/agreement required as part of NFA Report if cleanup not to residential standards. Plans must include (as necessary) provisions for O&M, monitoring, notice to purchasers prior to sale, affidavits from owner/operator and environmental professionals, financial assurance.
- DEQ must approve the NFA report before the site is removed from the DEQ's list of open sites.

Public Participation/Communications

- An Environmental Justice Plan was enacted in December 2010. Michigan law requires that Brownfield Redevelopment Authorities must provide notice and requires the municipal governing body to hold a public hearing before adopting a Brownfields plan.
- Comprehensive annual reports on cleanup programs (state sites, Brownfields, etc.) are available on the web site.
- Michigan has a well organized, informative website. It contains a great deal of publicaly available information on contaminated and LUST sites (searchable lists), enforcement statistics, educational/guidance materials for the public, property owners, consultants, etc.

Analysis and "Take-aways"

- Certain releases of oil and hazardous materials in Michigan require notification and response actions/cleanup under 26 state and federal laws. However, historical contamination is not reportable unless it represents an imminent hazard or safety concern.
- Michigan's cleanup regulations are essentially covered under one "umbrella" statute passed in 1994 that contains several "Parts", the most frequently used of which are Part 201 (Environmental Remediation) and Part 213 (LUSTs).
- There are no regulatory timelines for cleanup of contaminated sites under Part 201, only for LUST sites under Part 213. Closure under Part 201 requires a state-approved No Further Action report. Closure of LUSTs requires a closure report prepared by a state-certified professional (CP). There is no privatized aspect of the program for non-LUST cleanups. In general, site cleanup is required by law, but there is little or no follow-up or tracking by the state (other than for LUST sites). Thus the program relies heavily on voluntary actions of liable parties.
- The two main problematic issues with the state environmental programs identified in discussions with DEQ personnel and others are: 1.) the lack of notification requirements for historical contamination, and 2.) the difficulty in identifying parties liable for cleanup following notifications due to lack of tracking, formation of LLCs, etc., and lack of sufficient staff for followup and enforcement.

List of Sources/References

- Michigan DEQ website: http://www.michigan.gov/deq/
    - Various regulations, guidance documents, reports
- DEQ personnel
- Other
    - Principal GZA GeoEnvironmental, Inc., Livonia, MI

III. NEW JERSEY

Introduction

New Jersey conducted a comprehensive evaluation of its cleanup systems between 2006 and 2009. New Jersey launched the review in response to a "perfect storm" of challenges – a growing backlog of contaminated sites with relatively few sites being closed, reduced staffing at NJ DEP, and an alarming instance where a day care center was located at a former industrial site contaminated with mercury. The evaluation, which included review of other states' programs and substantial public input, resulted in a dramatic overhaul of the cleanup system and enactment in 2009 of the NJ Site Remediation Reform Act. In short, NJ decided to adopt much of the Massachusetts system, including the core concepts of:

- Affirmative (requiring starting and finishing remediation without waiting for DEP),
- self-implementing (via licensed professionals similar to LSPs and LEPs) including filing completion reports,
- streamlined (a single process applicable to most types of sites for getting through and finishing), and
- early identification and speedy control of the highest risks.

Data

Active cases in 2009:

- Active cases as of 9/2011: 16,202.
- New cases in 2011 (as of 9/2011): 3,902
- Cases closed in 2011 (as of 9/2011): 2,766

Structure

Structure was significantly changed in 2009 but remains in transition until 2012. Starting in 5/2009, all persons responsible for conducting a cleanup are required to proceed with remediation and achieve endpoints. The 2009 law takes multiple existing programs for identifying releases and funnels them into a single process for completing remediation. Parties must use Licensed Site Remediation Professionals (LSRPs) (similar to LEP/LSPs) for the day-to-day management and decision making at contaminated sites.

Transition provisions exist until 5/2012 for sites that were already in a program prior to 2009 (prior to 5/2012, existing sites may choose to use an LRSP; if they are still in the system after 5/2012, they must use an LSRP). Since 2009, all new sites that enter must use an LSRP. NJ DEP's role shifts from direct supervision of cleanups to (1) focusing on highest risks, (2) ensuring responsible parties (RPs) comply, and (3) oversight of the work of LSRPs. An LSRP Board is established with authority to license, assess penalties and suspend or revoke an LSRP's license as needed.

Entry Points

Generally, NJ has 3 "entry point" statutes for adding sites, and these were kept in place as part of the new system. The 3 "entry points" are mandatory if triggered, and all funnel into the new single program for performing and finishing remediation. The 3 entry points are:

- releases/spills (new and old),
    - release-based
    - includes residential heating oil releases
- Industrial Site Remediation Act (similar to CT Transfer Act; triggers at transfer or cessation of operations),
    - Parcel-based, must investigate release areas on parcel as a whole
- Leaking Underground Storage Tanks (LUST)
    - Release-based

Remediation

Clean-ups are supervised by LSRPs, hired by the person responsible to complete the remediation. An LSRP must certify all remediation documents submitted to NJ DEP, and certify that the documents are consistent with DEP regulations. The RP (responsible party) and LSRP generally proceed with remediation without a need for prior NJ DEP approvals. Timeframes to achieve milestones and completion are set by regulation (these regulations have not been finalized yet).

The RP/LSRP must notify DEP of any site conditions that represent an "immediate environmental concern". RP must evaluate and address the IEC pursuant to process/timeline set in law.

The DEP must give direct oversight in cases where the party has a history of non-compliance and failing to meet deadlines. In such cases, DEP selects the remedy. Further, DEP may exercise direct oversight for sites where (1) contamination results from chromate production waste, (2) contamination injures more than one environmentally sensitive natural resource, (3) contamination of surface water sediments with PCBs, mercury, arsenic or dioxin occurs, or (4) the site is of the "highest priority" based on a ranking system to be developed by NJ DEP.

LSRP/RP must obtain DEP approval before proceeding with remediation under these conditions:

- IEC conditions (The RP/LSRP must notify DEP of any site conditions that represent an "immediate environmental concern").
- Alternative Presumptive Remedy
- Alternative or site-specific remediation standard that requires modeling.

- Bringing contaminated materials to a site above what is needed for grading.
- Landfill closures and disruptions
- Selection of a remedial action that will render the property unusable

Exit Points

To complete a cleanup, the RP must submit a "response action outcome" (RAO) to the DEP, signed by the LSRP – effectively certifying that the contamination has been remediated in accordance with law. It appears that NJ does not have an option for site-specific risk closure as an alternative exit ramp.

DEP retains authority to monitor the site cleanup progress, and can choose to review the LSRP's reports, including the RAO. DEP can, and must, invalidate the RAO if it finds that the selected remedy is not protective of public health, safety, or the environment. The DEP can review an RAO up to three years after it was filed, or beyond three years if new contamination is discovered or the LSRP who submitted it is investigated by the licensing board or has his or her license suspended or revoked.

The RAO serves as closure documentation. DEP issues no closure documentation. For a new owner unrelated to the contamination, the RAO severs any liability for the new owner. Also, a Covenant Not to Sue is provided as an operation of law, the details of which should be further reviewed (e.g. who receives it, when, conditions, etc).

Engineered and institutional controls such as deed notices and impermeable caps are allowed. Any party that uses such engineering or institutional controls needs to obtain a Remedial Action Permit, which involves the payment of both an application fee and an annual fee, and requires insurance or other financial assurance to guarantee operation, maintenance, and inspection costs.

For sites that are almost done and exposures/conditions are under control, NJ provides an endpoint status in the form of the Remedial Action Permit (mentioned above) for any long-term remedy that needs maintenance. The permit is recorded on the chain of title, and contains provisions in case of default. Applicant must show hydraulic control of any groundwater plume. An RAO may be filed after compliance with such permit for one year.

Public Participation

Through Executive Order #140 (2009), Governor Corzine directed NJ DEP to issue at least five Technical Assistance Grants per year to local community environmental groups. Also, as soon as the website capability exists, DEP must post electronically all LSRP document submissions.

New Jersey has established a Steering Committee of stakeholders to assist in the implementation of the new law. The Committee meets monthly.

Analysis and "Take-aways"

NJ is in year two of its new cleanup system, and little data is available to us at this time to evaluate how successful it is so far. Any results would need to consider the impact of the "startup phase" – new licensing board, many draft and new regulations and guidance, new rules, transition for all existing sites until 2012 – on the measures of success. Data for 2010 and 2011 may not reflect what the system will produce once it is fully up and running in 2012.

As may be expected with significant change, we heard some anxiety expressed by participants/stakeholders. This shows the hurdles that need to be overcome when implementing a new regulatory system – trust is a key component.

In short, NJ had a system that it believed wasn't working well enough. Its own comprehensive evaluation resulted in a legislation change to an affirmative system relying on self-implementation by the responsible party and site decision making by a LSRP.

References

- "NJ Site Remediation Benchmarking Study" report prepared by the NJ Chamber of Commerce.
- NJ DEP Annual Report to the Senate Environment and to Energy Committee on the Implementation of the Site Remediation Reform Act (SRRA), December 9, 2010
- Interviews with LSRPs
- Interviews with NJ DEP officials
- Generally, large amount of material on the NJ DEP website
- NJ DEP - Site Remediation Reform development process: powerpoints, White Papers, and Stakeholders Meeting Minutes (generally available via NJ DEP website)

IV. PENNSYLVANIA

Introduction

The State of Pennsylvania's environmental cleanup programs are administered by the Department of Environmental Protection (DEP). Voluntary Site characterization and remediation in Pennsylvania falls under the guise of the Land Recycling Program (a.k.a. "Act 2"). The purpose of the Act 2 legislation was to incorporate uniform cleanup standards, standardize the regulatory review process, provide a release from liability, provide incentives for Brownfield Cleanups, and provide mechanisms for financial assistance with site cleanup.

Although some programs are administered under separate regulation and contain different administrative components (*i.e.*, Storage Tank Act, and Hazardous Site Cleanup Program), Act 2 acts as an "umbrella" regulation, tying all other cleanup regulations and statutes to a single set of cleanup criteria.

Data

The PADEP tracks the number of sites completed and currently undergoing cleanup in accordance with Act 2 in real-time on their website. As of 21 September 2011, 4,008 sites have been closed in accordance with Act 2 regulations. This includes 8,919 individual release areas. Of those 8,919 releases, 5,641 have been cleaned up using the State Health Criteria; 2,375 using the Site-Specific (risk-based) Criteria; 274 using the Background Criteria; and 630 using the Industry Specific Area Criteria.

The number of sites currently undergoing cleanup in accordance with Act 2 is 2,877. A State Evaluation Report completed in 2008 noted that approximately 350 sites/releases are being closed per year under Act 2 regulations.

Structure

Pennsylvania passed the Act 2 statute in 1995 in an attempt to 1) encourage more voluntary cleanup; 2) the number of Greenfield sites being developed; and 3) promote the development of brownfield sites and community revitalization. Act 2 legislation attempts to accomplish these goals by providing uniform cleanup criteria, liability release, standardized review procedures, and financial incentives.

Site cleanup in Pennsylvania is administered under PA Code – Title 25: Environmental Protection. Chapter 250 is titled Administration of Land Recycling, and is the regulation that governs the administration of Act 2 – the Land Recycling Program. Although Pennsylvania's cleanup laws are not a true "single program" program, Act 2 creates an "umbrella" policy that ties all site clean up into a single set of cleanup criteria.

The Act 2 program is not privatized (*i.e.*, LEP program in CT). However, a Professional Geologist licensed in the state of PA is required to sign and seal investigation and remediation reports submitted under the Act 2 program.

Entry Points

Similar to Massachusetts, Pennsylvania is a self-implementing, release based system. Only those releases associated with a regulated underground storage tank or an immediate hazardous condition are required by law to be reported and remediated within specific time frames. Although the administrative requirements for cleanup of these releases are contained in separate regulations, the cleanup criteria set forth under Act 2 governs all.

Voluntary cleanup programs, such as the Brownfield Cleanup Program, also exist. In order for the "Volunteer" to obtain liability release and/or financial assistance under a voluntary program, they must complete investigation and remediation in accordance with the Act 2 regulations. It is important to note that a voluntary cleanup is not subject to any specific timeframe or deadline. The only set timeframes under voluntary cleanup are those that the PADEP has to review the Act 2 report submittals.

Remediation

There are prescribed remedial standards for soil and groundwater only. Screening levels are provided under the Statewide Health Remediation Standard for indoor air and soil gas. Surface water standards can be calculated under Chapter 93. PADEP does not have established cleanup levels for sediment but uses federal and other relevant sediment screening criteria for sediment investigations. The program looks at residential and industrial sites on their own merits.

Act 2 establishes three standards or options to remediate a site - Background Standard, Statewide Health Standard and Site Specific Standard. Act 2 also allows for a non-residential use of soils and groundwater with different standards and has a non-use determination of groundwater that can be issued by the PADEP. Each outlines criteria for different media, reporting, and public involvement. There are also Special Industrial Area Criteria targeted for the cleanup of qualified Brownfield sites.

Regulators allow for science based professional judgment. The Site-Specific Criteria offer a risk based corrective action approach that can drill down to specific media, compound, receptor, etc. Responses can be addressed by contaminant, media, release or site-wide. All regulatory driven responses require sign-off by a licensed PG, and in some cases a licensed Professional Engineer.

Imminent hazards are prioritized and it is the responsibility of the RP to address them in accordance with the regulations or risk violations/penalties. There are no specific notification requirements for imminent hazard conditions.

Sites remediated using engineering or institutional controls will require an Activity Use Limitation (AUL) in accordance with the Uniformed Environmental Covevant Act (UECA) The environmental covenant must be signed by that the RP, owner and DEP (in some cases the EPA will sign as well). Pennsylvania provides an online UECA Registry by which the RP/Owner must file the AUL for easy public access. The UECA is enforced by either the PADEP or the EPA.

All mandatory cleanups have scheduled time frames for submission of reports. For example, a related closure requires a Site Characterization Report 180 days from release notification. A Remedial Action Plan is required for proposed remedies within 45 days of submittal of the Site Characterization Report.

For all site cleanups, the PADEP has specific timeframes for review of submitted reports. If the DEP does not respond within the given timeframe, the reports are deemed complete and approved.

Exit Points

Completion of cleanup activities is achieved when one or a combination of, the Act 2 cleanup criteria are met for a specified site, release, and/or compound, and an approval of the Final Remedial Action Report is received from the DEP. If PA DEP fails to respond to the Final Remedial Action Report within 90 days, it is deemed approved. This holds true for both voluntary and mandated cleanup sites. Liability protection is provided to current and future owners, cleanup participants, developers, occupiers, successors and assigns.

Public Participation

Cleanup of most sites under the Act 2 regulations requires some form of public participation. Upon submittal of a Notice of Intent to Remediate (NIR), a site characterization report and remedial action plan are submitted to the PADEP for review and a 30 day public comment period is offered. The public comment period can be waived if remediation of an imminent threat is completed and closed within 180 days from discovery. If requested by the public (e.g. municipality) a public participation plan will be developed by the RP.

The Land Recycling Program has a Cleanup Standard Scientific Advisory Board that is made up of 13 members from across stakeholder groups. The role of the board is to assist the Department of Environmental Quality Board with respect to developing various standards and advising on technical and scientific items needed to implement the provisions of Act 2. Information on this board is easily accessed from the PADEP website.

Analysis and "Take-aways"

- The Land Recycling Program (Act 2) provided a good example of how a state can improve/increase the number of sites that are assessed, remediated and closed by creating an umbrella type program that establishes uniform clean up standards for all existing environmental statutes and regulations.
- Act 2 regulations provide flexibility for responsible parties to remediate and close sites through multiple risk based options. Options include; 1) establishing & comparing to Background Standard, 2) comparing concentrations to Statewide Health Standards, 3) establishing Site-Specific Risk Standards. A unique component to the Site-Specific Standard is the ability to implement a "pathway elimination" option for closure under Act 2.

- Pennsylvania has created an accessible and easily understood Technical Guidance Manual to provide suggestions and examples as to how to best approach site characterization and remediation. The state has also established a Science Advisory Board to help educate the regulated community and establish best practices.
- Act 2 does not establish clean up schedules or deadlines. Clean up seems to be driven by requirements in existing regulations (e.g. Storage Tank Regulations) or the desire to move a site forward due to redevelopment benefits.
- Imminent hazard conditions do have specific requirements in Act 2. The PA DEP will address them at the time of notice, on an individual basis, but there are not specific guidelines or requirements on how or when to address these situations.
- Overall, the Act 2 approach seems to be very successful and effective.

List of sources/references to produce the information (websites, people, documents, etc)

- Pennsylvania DEP website: www.depweb.state.pa.us
    - Links to various regulations, guidance documents, evaluation reports, PADEP metrics, etc.
- Pennsylvania DEP personnel
- Other Sources:
    - Senior Principal – Langan Engineering and Environmental Services, Inc. (Consultant – Philadelphia, PA)
    - Senior Principal – Langan Engineering and Environmental Services, Inc. (Consultant – Doylestown, PA)
    - Vice President - DLC Management Corp. (Private Developer)

V. WISCONSIN

Introduction

The State of Wisconsin Remediation and Redevelopment (RR) Program is a One Plan Program managed by the Department of Natural Resources (DNR) which covers all state clean up regulations. There is some oversight shared with other state agencies for agricultural releases and Leaking Underground Storage Tanks (LUSTs). All spills and historic releases are addressed by clean up standards and procedures through DNR regulations NR 100 series and NR 700 series rules.

Data

From 1996 to 2009 a total of 11,649 sites were required to perform assessments and clean ups as appropriate. Other sites were notified of their requirements prior to 1996. During the same 1996-2009 period 9,862 cases were closed. As of September 28, 2011 the RR database has records that indicate 27,741 sites have entered the RR clean up program. The agency has issued 24, 080 closure letters or certifications of closure.

- Wisconsin staff has advised us to not read too much into the data. The vast majority of cases are release specific and many were opened before 1996.

Structure/Communication

- DNR refers to the RR Program as a single program, though the triggers, entry points, technical and financial support, and liability differ for different types of releases and applicable statutes.
- The primary governing statute is the *Hazardous Substance Discharge Law*, s. 292.11 Wis. Stats., commonly referred to as the "Spill" Law.
- The RR program also oversees LUSTS, hazardous waste closure and corrective action under RCRA, Superfund, and PCBs.
- In 1994 the Voluntary Party Liability Exemption (VPLE) was created for Brownfield sites. This exemption provides liability relief for Volunteers who will bring an entire property into compliance.
- Chapter NR 700, Wis. Adm. Code provides a comprehensive set of rules and protocols for addressing releases of contamination.
- Wisconsin offers a very comprehensive website, with a wealth of information and guidance documents for the regulated community and environmental professionals.
- The contaminated Lands Environmental Action Network (CLEAN), offers on-line registries, databases, and GIS maps that track contaminated properties.

Entry Points

- The Spills Law sets a mandatory clean up response.
- It sets the response requirement for both new releases and historic releases when they are discovered.
- Once a "spill" is reported the agency reviews the information and notifies the responsible party they must investigate further and clean up as necessary. This action establishes a "case".
- Once a responsible party is notified by DNR of its obligations it must self implement the actions in accordance with the NR 700 rule. A Volunteer who enters the program in accordance with the VLPE must apply and then submit a Phase I report. After completing the Phase I report and submitting the findings to DNR, the applicant must receive DNR approval of the thoroughness of the environmental investigation. The applicant must then conduct additional investigation (Phase II and III) and a cleanup of the property, as well as any contamination that migrated off the property. Upon the completion of the cleanup, the applicant must request and receive a DNR Certificate of Completion.
- Entry is not triggered by a transaction.

Remediation

- The program covers hazardous substances, petroleum products, and PCBs. The Spills Law also covers agricultural wastes and refers oversight to another agency.
- The program covers soil, sediment, soil vapor and groundwater media.
- The RR program is release based. The VPLE exception is site based.
- Remediation criteria
    - The RR program uses state numeric or federal numeric criteria. Site specific criteria can be developed for the various media in accordance with methods prescribed in NR 700. Site specific criteria are widely used.
    - A wide range of remedial approaches are allowed, including engineered controls and in-situ treatment.
    - DNR can issue a case closure letter with ongoing natural attenuation as a remedy. The responsible party must demonstrate to DNR that the plume meets technical conditions. There are public notification requirements and the site is listed on a public registry until groundwater standards are achieved.
    - In order for a Volunteer to receive a Certificate of Completion for the site they also have to pay a one-time fee which covers an insurance premium for the DNR natural attenuation insurance coverage.

Exit Points

- All case closure letters (release based) and Certificates of Completion (entire site) are issued as a result of a Committee review of documentation of site conditions and remediation submitted by the responsible party or Volunteer.
- Receipt of a case closure letter provides liability relief from future state action for that release to the party completing the remediation.
- Upon issuance of a Certificate of Completion, the Voluntary party receives liability relief from the Spills Law as well as some other hazardous and solid waste laws. It provides assurance that no further investigation or remediation will be required regarding releases that occurred before the Certification even if: (1) environmental standards change; (2) the remediation fails, or (3) the contamination is found to be more extensive than originally thought. The liability relief is transferable to successor owners.
- There is a liability exemption provided under the Spill Statute for a lender engaged in certain enumerated lending activities. These liability exemptions for lending activities apply only to Spill Law liability and do not apply to other statutory cleanup liabilities under Federal and Wisconsin law.
- The Spills Law provides an exemption for property owners whose property is contaminated by hazardous substances that have migrated to the owner's property from an off-site source.
- Wisconsin is able to close out sites that are under control but still have residual soil and groundwater contamination. Wisconsin issues case closure letters and Certificates of Closure with documentation of the continuing responsibilities identified. Natural attenuation of groundwater plumes can be approved on a site specific basis. This is significant to getting sites through the program.

Public Participation

- The responsible party or volunteer must notify affected property owners of their intent to submit a request for closure to the DNR. The DNR has to wait 30 days from receipt of the notice, before they can render a decision on the request for closure.
- The RR program has the Technical Focus Group which consists of attorneys, consultants, and other state agencies working with program staff. The Focus Group reviews the rules and program outlines to evaluate the clarity and effectiveness of the program.
- The Brownfield Study Group is responsible for evaluating Wisconsin's brownfields initiatives and proposing changes to programs and incentives to stimulate brownfields redevelopment.

- The DNR regularly conducts Consultant Days when they invite consultants to either attend or provide training and discussion of topics of interest.
- The Contaminated Land Environmental Action Network (CLEAN) is an inter-linked system, available on-line, which provides information on contaminated land activities in Wisconsin. You can find the following information on the CLEAN network:

    - Cleanups still underway
    - Cleanups that are completed
    - Financial assistance (e.g. DNR loans and grants)
    - Liability incentives (e.g. liability clarifications and limitations)
    - Other redevelopment information (i.e. brownfields)
    - Continuing obligations (land use controls)

Analysis and "Take-aways"

- As of September 2011, the DNR has issued 24,080 case closure letters, including 101 Certificates of Completion. The 'one program" approach has been successful in Wisconsin. There are many reasons for success:
- The close out process of committee review within the department.
- The self implementing aspect of the response actions.
- The fee for service approach to DNR support
- Sixty day goal for all submittal reviews
- The use of natural attenuation as a remedial approach
- The Brownfields VPLE
- The natural attenuation insurance policy.
- The public databases, registry and GIS maps
- Documentation of Continuing Obligations, Administrative Controls, Closure and other conditions on the Registry.
- Tremendous use of online resources for general information, guidance, form letters, and request forms

List of sources/references to produce the information (websites, people, documents, etc.)

- Wisconsin DNR Remediation and Redevelopment website: http://www.dnr.state.wi.us/org/aw/rr/
    - Various regulations, guidance documents, reports
- DNR - Bureau of Remediation and Redevelopment personnel
    - Brownfield's and Outreach Section
    - Policy and Technical Resources Section
- Other
    - Senior Engineer - Leggette, Brashears & Graham, Inc., Madison, WI

VI. INTERNATIONAL

Review of International Programs

This work group expressed a desire to include programs in other countries as part of the evaluation of remediation regulatory programs. Because of the time constraints of this report, the time required for establishment of overseas contacts and that needed to gain useful information, it was determined that this exercise would be limited to the use of published literature. Internet literature searches were conducted and contacts were made to the Environmental Law Institute in an effort to find relevant information useful to the project. Unfortunately, the search yielded an older review of remediation program regulations conducted by EPA in 1987 (Nunno et al,1990) and a more recent review of developing programs in former soviet eastern block countries (Boyd , 1999). The EPA study reviewed the programs in 11 countries at a time when these programs were in their early development stages. The more recent work by Boyd, provided useful insight into the process of decision-making in developing a remediation regulatory system in countries where resources are not abundant. Thus, while interesting, the lessons from this study were not considered useful or applicable to the goals of this work group.

Other literature found on internet searches was perused, including general overview of cleanup laws for the European Union, though the material was not specific to results being obtained, nor to an evaluation of the level of success. One interview was made with an Environmental Health and Safety Manager for Europe and Africa of an international corporation, who has facilities throughout those continents. Information obtained indicated that each of the European nations have their own national laws that regulate cleanup of hazardous substances. It appears that potentially at least two different system types exist: England may have a more voluntary and site-specific approach, while nations such as Germany, Belgium and Italy have a more mandatory, methodical procedural system, including reporting of certain historic conditions.

The Workgroup also looked at Canada. In Canada, each Province has its own cleanup laws and system. Ontario and New Brunswick were reviewed on a preliminary basis. They use a risk-based approach to cleanup endpoints, though we did not have time to fully evaluate the programs and levels of success.

Overall, detailed analysis was not performed of other countries in order to devote time to the other states in the U.S. including the 5 state review. It was also noted that other countries, especially in Europe, have different legal systems than the U.S., which any future analysis would need to consider if evaluating the systems and success of cleanup programs and adaptability in the U.S.

List of sources/references to produce the information (websites, people, documents, etc.)

- International Technologies for Hazardous Waste Site Cleanup. Nunno, Thomas, et al. Noyes Data, 1990

- Environmental Remediation Law and Economies in Transition. Boyd, James. Resources for the Future. Discussion Paper 99-21. January 1999

Discussion

The Workgroup reached consensus on certain inter-related concepts that appear integral to success in the states we evaluated. These concepts are:

- Affirmative system – that is, obligation to clean up once you have entered the system
  - Entry points need to be defined

- Single cleanup system, whatever the method of entry with clear rules and process

- Timelines for achieving milestones and for achieving cleanup endpoint

- Early identification of higher risks, and obligation to quickly address

- Flexibility for closure
  - Risk-based alternatives to state's numeric cleanup standards

- Clear "all done" certainty and documentation
  - no consensus on details: some recommended self-implementing Licensed Professional (LEP, LSP, LSRP) approach; others recommended state review and approval approach

- Transparency
  - easy to use website
  - good guidance
  - cleanup reports and agency decisions on-line
  - opportunity for robust public/community involvement

The workgroup members generally recognize that these features are valuable and practical only as a "package". The systems that rely on licensed professionals, self-implementation, flexible risk-based standards, and few if any state reviews, are packaged with affirmative obligations, timelines, public participation opportunities, and appropriate checks and balances (audits, robust licensing board, etc).

Consensus was reached with respect to the recommendation that the States achieving success have a public advisory board. The boards assist with the implementation of the programs including technical guidance, policy choices, and public feedback.

The Workgroup did not reach consensus on recommending any one particular state system as significantly better in producing results (sites cleaned up) than other states. Each of the 5 states reviewed have positive attributes that various members of the Workgroup identified. For example, some but not all states, offer a voluntary cleanup option. Many of these attributes can be projected onto a single site scenario to demonstrate how the attribute facilitates the cleanup of the site – flexibility, clarity, ease of use, speed, certainty, etc.

Compared to the above, it is harder to identify whether a state's system for cleanup is achieving an overall high level of success both statewide and on a continuous basis. One way to evaluate "which state systems are achieving great success" is to compare the states to each other. We attempted this comparison, but did not reach any conclusions as a group. This effort required (1) setting standard evaluation criteria, (2) learning the state cleanup system's laws, metrics, procedures, structure and practical application, and (3) normalizing the information to be able to compare "apples to apples". The workgroup did not have sufficient time to complete all of these steps, and we recommend that the DEEP do so.

APPENDICES

Appendix A – Workgroup Members

Appendix B – References

Appendix C – State Evaluation Criteria Survey Worksheet

Appendix D – State Evaluation Criteria

Appendix E – Individual Suggestions for Potential Best Management Practices

Appendix F – List of Acronyms

Appendix A – Contact List

Co-Leads: Robert Bell & Jamie Barr

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David B.	Weeks	Shell Oil Products US
Herbert E.	Woike, LEP, LSP	Groundwater Environmental Services, Inc. 425B Hayden Station Road Windsor, CT 06095
John G.	Zbell, CPG, LEP	Leggette, Brashears & Graham, Inc. 4 Research Drive Suite 301 Shelton, CT 06484

Appendix B – Document References

"State Brownfields and Voluntary Response Programs: an Update from the States" U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Office of Brownfields and Land Revitalization. Washington D.C. 2011.

"Brownfields State of the States: An End-of-Session Review of Initiatives and Program Impacts in the 50 States" Fifth Annual Edition (C. Bartsch and R. Deane) Northeast-Midwest Institute. December 2002.

"Looking at State Voluntary Cleanup Programs in Perspective: Liability Relief, Flexible Cleanup Standards and Institutional Controls as Forms of Economic Development Subsides" Working Paper (P. Meyer) University of Louisville, Center for Environmental Policy and Management, Kentucky Institute for the Environment and Sustainable Development. Louisville, KY. 2000.

"WORKING DRAFT Catalyzing Redevelopment: Innovative Approaches and Emerging Best Practices in State Petroleum Brownfield Initiatives, Environmental Law Institute. Washington D.C. March 2011.

"State Performance-Based Environmental Cleanup Programs" National Governors Association, Center for Best Practices. September 2002.

"State of the States on Brownfields: Programs for Cleanup and Reuse of Contaminated Sites" (P. Blair, E. Govan, R. Atkinson, J. Linsenmeyer, L. Chapman, M. Fenn, G. Jackson, and T. Aikens), Congress of the United States, Office of Technical Assistance. Princeton June 1995.

"An Analysis of State Superfund Programs, 50-State Study, 2001 Update" Environmental Law Institute. Washington D.C. November 2002.

"The Cleanup And Reuse Of Brownfields: Key Issues And Policy Choices" (M. English and J. Rice) University of Tennessee, Waste Management Research and Education Institute. Knoxville, TN. April 1997.

"Long-Term Stewardship: Ensuring Environmental Site Cleanups Remain Protective Over Time, Challenges and Opportunities Facing EPA's Cleanup Programs" U.S. Environmental Protection Agency, Long-Term Stewardship Task Force. Washington D.C. September 2005.

"VAP Environmental Covenants Guidance, Developing Proposed Environmental Covenants with 'Activity and Use Limitations' for Properties under Ohio's Voluntary Action Program" U.S. Environmental Protection Agency,. Washington D.C. May 2005.

"EPA Brownfields Program – Issues and Opportunities, Petroleum/UST Brownfield Cleanups" Northeast-Midwest Institute and The National Brownfield Coalition. September 2007.

"Best Practices: Innovative Funding Mechanisms for Financing Lead Remediation Programs" The Ohio Urban University Program. Cleveland, OH. June 2008.

"State of the Environment" Third Edition, West Virginia Department of Environmental Protection. June 2008.

"State Approaches to Monitoring and Oversight of Land Use Controls" Association of State and Territorial Solid Waste Management Officials, CERCLA and Brownfields Research Center, State Superfund Focus Group. Washington D.C. October 2009.

Websites:

http://www.epa.gov/brownfields/index.html

http://www.epa.gov/landrevitalcization/ltstf_report/whatis_longterm_stewardship.htm

http://www.epa.gov/brownfields/state_tribal/moa_mou.htm

http://www.nemw.org/index.php/resources-a-analysis/reports

http://www.deq.state.or.us/lq/pubs/docs/cu/IndependentCUPathwayInfoPacket.pdf

http://www.tceq.texas.gov/

http://www.swrcb.ca.gov/water_issues/programs/ustcf/oscf.shtml

http://www.deq.state.or.us/lq/cu/orphans.htm

http://dec.alaska.gov/spar/csp/scp.htm

http://www.deq.state.or.us/lq/pubs/factsheets/cu/IndependentCleanupPathwaySteps.pdf

http://www.envirostor.dtsc.ca.gov/public/

Appendix C - State Evaluation Criteria Survey Worksheet

State: _____

Interviewer(s): _____

Personnel Interviewed And Title: _____

Date: _____/_____/_____

Criteria	Recommended Information	Comments/Responses
Metrics/Results	# total sites in state among all programs, including info on what sites get counted and which don't. Metrics each state has produced to measure their own results.	
Communications	clarity, transparency, "user-friendliness", availability of guidance documents and other information on website	
Entry points/Mechanisms	(how/whom)	
Degree of "affirmative", "lean"	Does the law require PRPs/RPs to conduct response actions without waiting for govt agency to notify them or act first?	
Scope and Flexibility of Response Actions	Release based vs. site-wide; one size fits all responses; treatment of industrial sites vs. homeowner sites). Do regulators and environmental professionals have the ability to use professional judgment, etc.? Are short-term, imminent hazards prioritized for fast control? How?	

Criteria	Recommended Information	Comments/Responses
Exemptions	Does the program recognize the need for exemptions related to historic fill materials, asphalt, preserved wood, normal application of pesticides, run-off from road and building materials, leaks from water supply lines, incidental vehicular releases, etc.?	
Program coordination	Extent cleanup laws are coordinated with other cleanup/notification laws in the state (same terms, procedures, rules, etc.).	
Degree of Privatization	(e.g., LEP, LSP; levels of responsibility). Number and types of situations requiring govt. review/approval; degree of state involvement.	
Roles/Relationships	of Practitioners and Regulators (i.e., partners, adversarial, professional, technical assistance, hands-off approach)	
Stakeholder Impacts	How do various stakeholders (e.g. Industry, gas stations, drycleaners, environmental groups, homeowners, regulators, legislators) view this program?	
Regulatory Agency Structure	Number of govt staff assigned to cleanup programs; # in front-end/emergency response; # in rest of cleanup program(s)	

Criteria	Recommended Information	Comments/Responses
Quality Control/Enforcement	Audits, environmental professional disciplinary actions, degree of state oversight, size of staff/budget/roles of Licensing Board where applicable	
Timelines/Milestones	Submittals, timelines, hard/soft hammers, incentives, etc. : o Certainty that results/milestones will be achieved (measured by # that achieve "good" milestone v. # of sites subject to the program) o Avg timeframe to achieve endpoint/milestone	
Timeliness	Program's ability to cleanup sites in a timely manner: o Spills o Historical contamination o Highly toxic releases o Small sites o Larger sites	
Cleanup Standards	o Comprehensiveness of list o Media (Soil, GW, SW, Sediment, Indoor Air) o Land Use based criteria (residential vs. industrial/commercial) o Stringency/Focus (soil, ground water, etc., does the program have a bias towards stricter standards in one media over others) o Laboratory analytical limitations o State laboratory protocols o Policy on additional polluting substances; need to derive standards if not established?	
Exit Points/Site Closure	Single or multiple exit points	
Risk evaluation methods	o Cleanup standard-based (Human Health and or Ecological Risk) o Human Health Risk Assessment options o Ecological Risk options	

Criteria	Recommended Information	Comments/Responses
Engineered and institutional controls	AULS/ELURs, engineered caps, etc	
Long-term stewardship requirements	Post closure care/Deed Restrictions/ Post closure development rules	
Liability protection	long-term: (This is a Brownfields legislation issue based upon being a eligible party who did not cause the contamination. Are there programs that grant this to responsible parties?)	
Costs	fees, etc. Do revenues go to the program?	
Financial incentives	Grants, loans, tax incentives, or incentives for more complete cleanup	
Ability to obtain insurance	(e.g., pollution insurance)	
Program Cost-Effectiveness	Does the his program wisely spend resources relative to the risks posed?	
Closure Documentation	Use of No Further Action (NFA) letters, Certificates of Completion (COC), Covenants Not to Sue (CNTS), Memoranda of Agreements (MOAs), etc.	

Appendix D – State Evaluation Criteria

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Program Structure	What is the structure of the Clean Up Program? Are there different methods and a different regulatory team for different types of sites?	Site cleanup in Pennsylvania is administered under PA Code – Title 25: Environmental Protection. Chapter 250 is titled Administration of Land Recycling, and is the regulation that governs the administration of Act 2 – the Land Recycling Program. Although Pennsylvania's cleanup regulations are not a true "single program" regulation, Act 2 creates an "umbrella" policy that ties all site cleanup into a single set of cleanup criteria. The Act 2 program is not privatized (i.e., LEP program in CT). However, a Professional Geologist licensed in the state of PA is required to sign and seal investigation and remediation reports submitted under the Act 2 program.	Single remediation system for all regulated releases old or new of oil/hazardous materials. Single system for entry (notification), addressing short-term risks, annual milestones, and completion in 6 years. LSP makes most decisions including remedy selection and achievement of endpoint (no significant risk). One statute (Ch. 21E). One set of regulations (MCP).	Most of Michigan's environmental acts were consolidated into the Natural Resources and Environmental Protection Act, 1994 PA 451 as amended. Parts 201 (Environmental Remediation), 213 (LUSTs) are the main programs. Other subparts for specific types of properties. Sites enter programs with a notification, BEA submittal, enforcement action, voluntary action, etc. and are closed through procedures described in Parts 201/213, etc.	In 2009, New Jersey revamped the process of site remediation under the Site Remediation Reform Act (SRRA). SRRA is largely based upon the Massachusetts program. The full implementation to SRRA will be complete in 2012. SRRA established a Licensed Site Remediation Professional (LSPR) program, where qualified individuals oversee investigation and cleanup in most instances . NJDEP monitors progress and compliance with regulations by requiring submittal of various forms or reports at specific milestones. An affirmative obligation exists on persons to remediate any discharge for which they would be liable pursuant to the Spill Compensation and Control Act, UST law and Industrial Site Remediation Act (ISRA - a law similar to CT Transfer Act). The voluntary cleanup program which utilized Memoranda of Agreement (MOAs), no longer exists. Newly proposed regulation amendments have partitioned commercial/industrial and homeowner cases in separate regulations. SRRA provides a "funnel" structure by which existing remediation programs flow into a single system for remediation process and completion.	The Remediation and Redevelopment program is Wisconsin's comprehensive one cleanup program, which follows the cleanup standards of DNR regulations NR 100 series and NR 700 series. This program covers all clean ups. The principal liability statute is the Wisconsin Spills Law. The person responsible is defined as one who "causes", possesses" or "controls the contamination, "Chapter 292 Wisc. Stats. The program also oversees LUSTS, hazardous waste closures and RCRA corrective actions, PCBs, superfund and closed solid waste landfills. Within Chapter 292 there is a Voluntary Party Liability Exemption (VPLE) that upon completion offers some liability protection. The "Spills" requirements are release specific. The VPLE program is for site-wide assessment and remediation.

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Metrics/Results	# total sites in state among all programs, including info on what sites get counted and which don't. Metrics each state has produced to measure their own results.	As of September 21, 2011 - 4008 sites has have been completed, with 2877 sites in progress. According to 2008 Annual Report ~300 sites are completed each year. Although some programs are administered under seperate regulations (i.e. USTs), the cleanups are governed by the Land Recycling Program (LRP) or "Act 2" as the cleanup program. Of the 4008 sites completed, 8919 individual release areas have been accounted for, with the following breakdown of release cleanup by standard: Background = 274; Site Specific = 2,374; State Health = 5,641; and industry specific area = 630.	(1) Total sites (1993 - 2011): 40,780. (2) Total sites closed (1993 to 2011): 34,367. (3) % total sites closed: approx. 85%. (4) Avg # new sites per year (2002-2010): 1,729. (breakdown avg per year: new spills - 887; releases from USTs - 317; old releases - 505). (5) Avg # sites closed per year (2002-2010): 1,853. MassDEP maintains statistics regarding sites in the cleanup program (see http://www.mass.gov/dep/cleanup/priorities/progeval.htm).	Limited metrics; data distributed throughout website. Most metrics are on state-funded brownfield sites and state-owned sites. 4100 open sites currently on Part 201 database ("facilities": contamination > residential standards present). Closure requires that response actions are completed and NFA or closure report submitted and approved by DEQ (including agreement for monitoring and restrictions as necessary). 10,000 LUST sites open; 12,000 closed (Part 213). LUST sites ranked as short term vs. long term risk. Last three years: average of 150 new LUSTs added per year and 250 LUSTs closed per year. Baseline Environmental Assessments (BEA): 14,000 submitted to date (currently around 80/month or 800-1000/yr.). MI DEQ stats (on web) for FY 2011 (3 qtrs only): 60 Response Activity Plans (RAPs) submitted, 9 No Further Action (NFA) reports, 786 Baseline Environmental Assessment (BEAs). Comprehensive report on cleanup programs (state sites, Brownfields, etc.) published annually on web.	Total Current Active Cases: 16,202. Data difficult to identify, particularly due to current transition phase, where some parts of new system are in effect while some parts of old system remain in effect until 5/2012.	• Wisconsin DNR tracks any spills where DNR has required additional investigation (includes most hazardous substances; however, both statutory and deminimus exemptions for petroleum products, agrichemicals, and federal reportable quantities) • From 1996 to 2009 - 11,649 sites entered 9,862 closed (85 %) • The data is difficult to evaluate one should be careful. The range of entry (1996) is not when all sites entered the program. • All programs run through one clean up program (same staff and requirements), - • No specific state superfund program; however, money is used to make people clean up sites • 1,000's of cleanup under traditional program, 100 to 105 under voluntary program
Communication / Agency Transparency	clarity, transparency, "user-friendliness", availability of guidance documents and other information on website	PA DEP developed Technical Guidance Manual when Act 2 program was initiated and has updated several times. Website contains the TGM and other tools to help the regulated community. There are 6 different regions in the state and the implementation of the Program is sometimes subject to interpretation by the PADEP Regional Office or PA DEP case manager. PA DEP also mantains an online registry for AULs throughout the state and is fully accessible to the public	MassDEP website contains a large number of guidance documents, policies and fact sheets, and is relatively "user-friendly" and easy to navigate. Massachusetts cleanup program requires public participation. PRPs must publish notices in local newspapers at major milestones, inform the public about their activities at the site, and provide an opportunity for public involvement. The public may also petition to make the site a Public Involvement Plan ("PIP") site. A PIP site must provide a local information repository, a site mailing list, and opportunities for public comment.	Well organized, informative website: http://www.michigan.gov/deq/ Numerous reports, guidance documents, publically available information, info on contaminated and LUST sites (searchable lists), enforcement statistics, educational/guidance materials for public, property owners, consultants, etc. Approx. 40 technical guidance documents related to site characterization, sampling and analysis, applying/deriving remediation standards. Many other FAQs, public guides, etc. "Who does what" list - helpful guide with contact info for wide variety of issues/items versus straight alphabetical listing or dept. listing. Help line available.	Current limited in-state guidance documents. Sixteen new guidance documents in process of drafting and/or finalization to support the new state program. Website is clear and easily navigable. Special areas of the website are assigned for various programs within the state, and provide a lot of information. Provide a "listserv" service that provides regular email updates and announcements. Listserv is easy to sign-up to and provides good notifications.	• Very comprehensive website with a wealth of guidance documents • Wisconsin's CLEAN network offers access to on-line registries, databases, GIS maps, and guidance

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Entry points/Mechanisms	(how/whom)	Sites are reported as spills under the UST Regs (Chapter 245) or responsible parties (RP) voluntarily remediate sites under Act 2 (Chapter 250). RP is obligated to report if release meets the "reportable conditions" (i.e. specified volumes or if doing due diligence sampling). Act 2 is a voluntary program, however all clean up is under the umbrella of the Act 2 statute.	Persons required to notify and clean up: (1) Current owner, operator; (2) Past owner, operator; (3) Person who arranged for "oil or hazardous material" (OHM) to be transported to, or stored or disposed at the site; (4) Person who caused or contributed to the release, and (5) Person otherwise legally responsible. All above are jointly and severally liable to do cleanup. Trigger: When a PRP "knew or should have known" of release. A "release" includes OHM, past or present, if it exceeds reporting thresholds for quantity or concentration, or is a reportable condition, set forth in regulations.	Oil and chemical releases are reportable under 26 different state and federal regulations (specified quantities, imminent hazards, etc.). Notice of Migration of Contamination form - required to be submitted within 30-45 days if contamination migrating or potentially migrating off-site. Owners/operators of a "facility" are liable for investigating and remediating contamination under Part 201 (Part 213 for LUSTs, etc.), which covers most sites. Cleanup actions required following knowledge of contamination ("facility") by owner or operator, but on strictly voluntary basis unless under order or other enforcement action, except for LUST sites under Part 213 that have specific timelines. BEA submitted to DEQ includes info on "facility" and gets site on list. However, no formal mechanism for tracking or followup at "facilities". No deadlines for cleanup or submittals except for LUST program (Part 213): initial assessment report in 90 days and final assessment report in one year.	Entry points include unregulated discharge to the environment (soil/groundwater/surface water/air). Operator of facility (may not be the owner) is responsible party (RP) for the cleanup. Industrial facility property sale or ownership transfer (ISRA). Current owner is RP for the cleanup (unless liability transfer is conducted). Due diligence assessment (Phase II) identification of discharge. RP may be determined immediately (owner or operator) or at later date during the initial assessment. Regulated facility (e.g. UST facility) non-compliance or monitoring indicators indicate possible unregulated discharge or a spill. Operator of facility (may not be the owner) is RP for the cleanup.	• RPs are required to report releases of hazardous substances/discovery of impacted media (Chapter 292.11, Wis. Stats.) • 24 hr notification requirement/submittal of Hazardous Substance Fax Notification Form) • Volunteers may apply to VPLE process • RCRA, LUST and Superfund all have mechanisms of entry. •Deminimus releases or releases that do not require further investigation do not enter program • Urban fill does not necessarily trigger entry • Obligation to clean up triggered by state - in response to report.
Degree of "affirmative", "lean"	Does the law require PRPs/RPs to conduct response actions without waiting for govt agency to notify them or act first?	UST closures with a confirmed release require an initial call to PA DEP, a 14-day report and then a Site Characterization Report within 180 days. There may be fines levied if the RP does not proceed. Notice of Intent to Remediate (NIR) FORM AND PUBLIC NOTICE 90 DAYS PRIOR TO REMEDY. - Don't believe there is a timing requirement for the NIR submittal. This form must only be submitted before the Act 2 Final Report is submitted. The form is not used under the tank program.	Affirmative statutory obligation for PRPs to start and finish on their own. System has "Lean" process, in that it is generally self-implementing by PRPs and LSPs. Application to MassDEP for review/approval is limited to high risk conditions. DEP selects where to target limited resources, instead of being required to review actions at lower risk sites. "Adequately regulated" approach in regulations: a site cleaned up under CERCLA, RCRA Corrective Action, or solid waste law may be deemed adequately regulated and not subject to compliance with most of MCP.	Due Care Obligations (Part 201 Sec. 20107a): requires owners/operators to take measures to ensure contamination does not cause unacceptable risk and is not exacerbated; similar to Bona Fide Prospective Purchaser under CERCLA. Could include things like vapor control for volatiles, non-use of contaminated ground water, etc. Due care not related to liability; applies to non-liable parties as well. Requires a Due Care Plan to be prepared (DEQ review optional).	Regulated parties must act without waiting. The New Jersey Site Remediation Reform Act (SRRA) imposes an "affirmative obligation" for RP (responsible party) to conduct remediation without NJDEP notifying RP first. Response action required to be conducted under supervision of Licensed Site Remediation Professional (LSRP). LSRP/RP must communicate with DEP before proceeding with remediation only under these conditions: IEC conditions, alternative or site-specific remediation standard that requires modeling, bringing contaminated materials to a site above what is needed for grading, landfill closures and disruptions, and selection of a remedial action that will render the property un-useable.	• RPs have responsibility to mitigate impacts that cause an immediate threat to health and environment. DNR informs RP by telephone and/or mail if any further actions are needed (responsible party letter that outlines legal responsibilities for addressing contamination).

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Scope and Flexibility of Response Actions	Release based vs. site-wide; one size fits all responses; treatment of industrial sites vs. homeowner sites). Do regulators and environmental professionals have the ability to use professional judgment, etc.? Are short-term, imminent hazards prioritized for fast control? How?	Act 2 establishes three options to remediate a site: Background Standard, Statewide Health Standard & Site Specific Standard. Each outlines criteria for different media, reporting and public involvement. Also have Special Industrial Area Standard geared for former industrial sites. Regulators allow for science based professional judgment. One of the most flexible programs within the US. Offers up both health and ecological criteria coupled with RBCA approach that can drill down to specific media, compound, receptor, etc. Responses can be addressed by contaminant, media, release or site-wide. All regulatory driven responses require sign-off by a licensed PG, and in some cases a licensed PE. Imminent hazards are prioritized and it is the responsibility of the RP to address them in accordance with the regulations or risk violations/penalties.	Generally, released based. LSPs generally make all cleanup decisions at a site. Regulations very comprehensive and heavy on procedure. Professional judgment allowed to determine end point achieved ("no significant risk"); especially use of "Method 2" approach for modifying regulatory numeric standards.Short-term risks are prioritized for transparency and action via the Immediate Response Action requirements; applicable to imminent hazards, and substantial release migration (these terms are defined in regs).	Release-based program ("facility," LUST, etc.). Scoring system to prioritize sites (numerical out of 48). Due Care provision and various notification triggers require actions for immediate hazard control and mitigation. Site-specific standards can be used with state approval, along with risk assessments. Part 213 (LUSTs) allows risk-based corrective actions. LUSTs prioritized with respect to risk and closure. LUSTs must be addressed by Michigan Qualified UST Consultants (QC). Homeowners exempt from typical household substances.	Release-based. Exception is ISRA (industrial sites), where AOCs are required to be investigated property-wide. Newly proposed regulation amendments, have partitioned homeowner cases in separate regulations. Prior to November 2009, regulators and environmental professionals did not have the ability to use professional judgment. After November 2009, with the LSRP program, short-term, imminent hazards prioritized for fast control to a limited degree.	• Release based investigation/remediation (exception is VPLE sites where entire site needs to be investigated) • Spill law does not differentiate between spills at residential vs. industrial sites; however, remediation at these sites is treated differently • Regulatory involvement will differ based on site setting and degree of impacts • Priority based on initial report of release • Residual contamination can be left in place with controls • Site specific standards are commonly developed
Exemptions	Does the program recognize the need for exemptions related to historic fill materials, asphalt, preserved wood, normal application of pesticides, run-off from road and building materials, leaks from water supply lines, incidental vehicular releases, etc.?	Act 2 Program allows for establishing Background conditions and has special standards for industrial use areas (Specialized Industrial Areas located within designated "Enterprise Zones").	Exemptions from the notification requirement for certain materials, including normal application of pesticides (see list at 310 Code Mas. Reg. 40.317).	Certain exemptions for types of solid waste. None with respect to cleanup standards or procedures.	There are no exemptions for listed items. The program still requires investigation when any of listed processes/items above are identified. The program does allow alternative actions/conclusions for historic fill/diffuse anthropogenic pollutants (DAP) and others.	• None found; however, case could be made in Phase III report

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Program coordination	Extent cleanup laws are coordinated with other cleanup/notification laws in the state (same terms, procedures, rules, etc.).	Different regulations may require cleanup in the state but most if not all sites are remediated in accordance with Act 2. The UST and Landfill regulations detail some administrative differences (ie. report titles and submission schedules), but the attainment standards are all governed under Act 2. Determining "Clean Fill" is a point of contention within the PADEP, currently falling outside of the Act 2 jurisdiction, however the Science Advisory Board is working with Land Reclamation to bridge the gap.	One program for all regulated releases. Soup to nuts coordination - all aspects addressed in one comprehensive set of regulations - the MCP (early exit ramps, communications with local government, documentation of transportation/disposal of excavated soil/waste, fees, risk assessment (including eco), institutional controls (deed notices and easements/restrictions), etc.		Significantly improved coordination as result of 2009 overhaul. Transition process still underway between 2009-2012 to further coordinate among what previously had been largely stand alone programs. NJ has proposed regulations in process to improve coordination.	• DNR and U.S. EPA Region 5 have a One Cleanup Program MOA. First EPA-state MOA to address cleanup requirements across several environmental media, including CERCLA, RCRA, TSCA, LUSTs, and PCBs. • Cleanups where the contaminants are agrichemicals (fertilizer, pesticides) are overseen and approved by the Wisconsin Department of Agriculture, Trade and Consumer Protection. • Medium and low priority petroleum cleanups are approved by the Wisconsin Department of Safety and Professional Services.
Degree of Privatization	(e.g., LEP, LSP; levels of responsibility). Number and types of situations requiring govt. review/approval; degree of state involvement.	All reports submitted to PA DEP are to be signed and stamped by either a Licensed PE or PG, depending on the report. All reports are reviewed by PADEP, within a prescribed schedule to avoid delays. If Act 2 submittals are not reviewed within prescribed timeframes they are deemed approved.	Privatized. The PRP hires a licensed site professional (LSP) to oversee most cleanups (with limited DEP oversight) to ensure compliance with the Massachusetts Contingency Plan (MCP).	Not privatized similar to LEP Program in CT, except that state-Certified UST Professional (CP) required for assessment and response actions at LUST sites under Part 213. DEQ approvals for RAPs, NFA reports, post-closure plans and agreements can be obtained but are not required for response activities at a facility. Sites voluntarily cleaned up outside of formal program are not tracked.	As of 5/2012, all sites must be supervised by LSRP, hired by the responsible party. Until 2012, sites in the system prior to 2009 may opt-in and use LSRP; all sites/releases entering system after 2009 must use LSRP. DEP must give direct oversight at sites where the party has a history of non-compliance and failing to meet deadlines. In cases where DEP gives direct oversight, an LSRP is still required but DEP selects the remedy.	• State is involved on some level with all sites with a reported release. • No privatization; however, some reports need to be stamped by a PE or certified professional hydrogeologist.
Roles/Relationships	of Practitioners and Regulators (i.e., partners, adversarial, professional, technical assistance, hands-off approach).	Regulators are generally helpful and would like to be involved in the project especially in the beginning and if site is a technically challenging site. For Act 2 sites, the PADEP is paid a fee for each report submitted.	• LSP has primary management, with limited MassDEP oversight. • MassDEP may take direct oversight at highest risk/highest public interest sites (Tier 1A sites), or when a PRP cannot or will not perform required work. DEP closely monitors sudden releases and potential short-term risk conditions. Audits at least 20% of RAOs. Robust enforcement program for violations of time deadlines or MCP requirements. Enforcement tools include civil administrative penalty authority. Significant amount of guidance documents. Bureau staff at headquarters provide full-time support for education, guidance, policy and regulatory development.	Responsible parties may submit a Response Action Plan (RAP) for review. DEQ approval of NFA reports required. Review board established ($ 3500 fee) to seek ruling on dispute with NFA report. Anecdotal: DEQ helpful with technical assistance, help line, guidance. Most response actions are voluntary, thus predominantly a “hands off” approach.	The LSRP program is brand new for NJ. The former NJDEP direct oversight/review approach is slow to change for some. Technical assistance from NJDEP higher level management staff is forthcoming and they engage on a very professional basis.	• Fee-based involvement (fees based on type of request, i.e., work plan, closure, technical feedback) • DNR has staff of approximately 85 people in the RR program, including 60 spread throughout the regional offices • The standard spill or release remediation is mandatory and self implementing. The final request for closure and report is reviewed for a fee • RP may request review of other reports, DNR will provide for a fee • DNR staff provide step-by-step oversite of complete VPLE, process fees charged • Department target is 60 days for reviews which they say they meet more than 90%.

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Stakeholder Impacts	How do various stakeholders (e.g. Industry, gas stations, drycleaners, environmental groups, homeowners, regulators, legislators) view this program?	General impression is stakeholders find the program favorable because it is risk based allowing alternatives, provides flexibility and allows sites to be closed. Sometimes program is viewed as onerous.	Generally viewed favorably by stakeholders.	Environmental Justice Plan enacted December 2010. Michigan law requires Brownfield Redevelopment Authorities to provide notices and requires the municipal governing body to hold a public hearing before adopting a brownfields plan. Numerous public notice, comments, etc. requirements in various statutes. Anecdotal: BEA program prior to 2010 changes was "bogged down"; revisions do not allow for DEP approval of adequacy of BEA reports - only filed now, but not approved by state. Revised program is new and the effect of these changes has not yet been determined.	Current transition period - impacts not clear yet. Some industry concern for LSRP approaches being conservative (in fear of their license), and concern DEP will not allow enough flexibility to LSRP. Note that original stakeholders for remediation review included EJ and environmental groups as well as business and professional reps. Environmental groups/EJ communities ended up boycotting the new law, but gradually becoming more engaged. DEP is maintaining a Steering Committee as NJ implements the new law, which meets monthly.	• Favorably viewed by most stakeholders • No one private entity is exempted from the cleanup laws • Regulatory agency encourages stakeholder involvement (Technical Advisory Group) • Technical newsletters •Redevelopments, more of a concern for smaller business owners
Regulatory Agency Structure	Number of govt staff assigned to cleanup programs; # in front-end/emergency response; # in rest of cleanup program(s)	Not sure how many staff resources are available. The entire "clean up" program is governed under the umbrella of Act 2, although there are separate statutes for USTs and landfills.	As of 2011, 160 full-time program staff in the Massachusetts cleanup program (Bureau of Waste Site Cleanup). Includes policy/program development, cost recovery, emergency response, site management, audits, enforcement, risk reduction, and federal/CERCLA unit.	Remediation Division ~ 230, plus another 40-50 in laboratory services: 30 in Compliance and Enforcement, 40 in Program Support, 160 in Field Operations (8 Districts). Grant and loan programs are administered by the Remediation and Redevelopment Division (RRD) of the DEQ. The RRD also provides technical oversight for the grant and loan programs and administers the hazardous substance cleanup program.	As of 2011, approximately 400 personnel, of which approx 220 are case managers. Remainder include cost recovery, IT (about 20), community relations, administrative, policy/program development, and other units. The 400 number does not include Emergency Response personnel.	• Air Management Bureau, Bureau of Cooperative Environmental Assistance, Bureau of Waste and Materials Management, Remediation and Redevelopment Program, Bureau of Drinking Water and Groundwater
Quality Control/Enforcement	Audits, environmental professional disciplinary actions, degree of state oversight, size of staff/budget/roles of Licensing Board where applicable	All sites are reviewed by PA DEP and issued a relief of liability protection letter. PA DEP may bring action against PG or PE if they are identified as repeat offenders. The State has created a Cleanup Standard Science Advisory Board to assist the PA DEP with the Standards, Guidance Documents, and regulatory issues.	DEP conducts audits and has the authority to reopen cases (past audit window) not complying with the MCP. 2 years allowed to conduct random audit. 5 years allowed for targetted audit. DEP enforcement against PRPs for violation of deadlines: LSP Board reviews LSP behavior, and may take disciplinary action against an LSP. LSP Board consists of volunteer Directors, and paid staff of 5 (investigators, attorneys, admin staff). LSP Board data: License Suspended/ Revoked/ Voluntarily surrendered = - 34 Public Censure – 13	State oversight and review not required for a voluntary cleanup, but necessary for sites in a program and for formal closure. Technical or scientific disputes in NFA reports can be reviewed by an appointed board ($3500 fee). “Super lien” process under Part 201 for unpaid costs or damages when state conducts cleanup. The DEQ Remediation Division has perfected over 150 liens on properties pursuant to Section 20138 of Part 201. State enforcement actions at approximately 200 sites since 1999.	DEP may takeover lead oversight in certain circumstances for example if responsible party (1) recieves at least two enforcement actions concerning remediation in any five-year period, (2) fails to meet a timeframe. The DEP may also undertake direct oversight (1) for sites contaminated by chromate production waste, (2) where more than one environmentally sensitive natural resource is contaminated, (3) where contamination from the site has contaminated sediments with PCBs, mercury, arsenic, or dioxin, or (4) for sites in the “highest priority” category under a ranking system. DEP retains authority, and is sometimes obligated, to inspect or review documents submitted by LSRPs , to audit their performance, and audit an RAO. DEP can invalidate the RAO if it finds that the remedy is not protective. DEP can audit an RAO up to 3 years after it was filed, or beyond 3 years in limited situations.	•DNR involved on some level with all sites. • Submit closure request to DNR • PM goes before closure committee • All closure approvals are reviewed by Closure Committees comprised of senior technical staff within each regional office

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Timelines/Milestones	Submittals, timelines, hard/soft hammers, incentives, etc. : o Certainty that results/milestones will be achieved (measured by # that achieve "good" milestone v. # of sites subject to the program) o Avg timeframe to achieve endpoint/milestone	All submittals have scheduled time frames. For example a storage tank-related closure requires a Site Characterization Report 180 days from release notification. A Remedial Action Plan is required for proposed remedies within 45 days of submittal of the Site Characterization Report. The following PADEP report review timeframes are in place: All final submittals under Statewide Health or Background Remediation Standards (60 days), Remedial Investigation submittals under Site-Specific Remediation Standard (60 days), final submittals under Site-Specific Remediation Standard (90 days).	6 year timeline to complete cleanup. Short deadlines to address potential short-term risks and sudden releases.	No specific timelines for remedial activities or submittals, except for required notices for migration of contamination (30-45 days) and LUST sites under Part 213, which have specific timelines and requirements. Response Activity Plans and No Further Action Reports (if submitted - not mandatory) are required to be reviewed by DEQ within 150 days or presumed approved. BEA reports must be submitted within 6 mos. of completion. Part 213 (LUST): initial assessment required in 90 days, final assessment report within one year.	The details are hard to pin point, due to the relative newness of the program.	• High priority sites likely to be placed on a timeline by the regulators • DNR can become involved at anytime time and enforce a schedule if site goes dormant
Timeliness	Program's ability to cleanup sites in a timely manner: o Spills o Historical contamination o Highly toxic releases o Small sites o Larger sites	Timeframes seem consistent regardless of the size of the spill or site. However, if the regulator is involved from the beginning the schedule can be revised.	6 year timeline to complete cleanup. Short deadlines to address potential short-term risks and sudden releases.	No specific data from state website, except for statistics on sites in various programs. Timeliness getting through programs appears generally slow and no deadlines except for LUST sites. Cleanup actions appear to be based largely on responsible party's willingness and ability to complete. NFA can take up to 150-180 days to get reviewed and approved by DEQ.	The details are hard to pin point, due to the relative newness of the program.	• Timeliness generally associated with priority of sites, generally related to degree of impacts • VPLE sites generally cleared up more rapidly due to liability exemptions provided by program • Target of 60 days for report reviews

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Cleanup Standards	o Comprehensiveness of list o Media (Soil, GW, SW, Sediment, Indoor Air) o Land Use based criteria (residential vs. industrial/commercial) o Stringency/Focus (soil, ground water, etc., does the program have a bias towards stricter standards in one media over others) o Laboratory analytical limitations o State laboratory protocols o Policy on additional polluting substances; need to derive standards if not established?	There are prescribed remedial standards for soil and groundwater only. Screening levels are provided under the Statewide Health Remediation Standard for indoor air and soil gas. Surface water standards can be calculated under Chapter 93. PADEP does not have established cleanup levels for sediment. Program looks at residential and industrial sites on their own merits. However, if the site is remediated using engineering or institutional controls then it will require a land use restriction that the RP, owner and DEP must approve. Must use state certified labs following the parameter list outlined in the technical guidance.	Cleanup endpoint for a site is to attain a level of "no significant risk". Numeric cleanup standards for oil and hazardous materials are set forth in regulations (MCP). Standards are risk-based - separate standards for residential, recreational and commercial/industrial uses. Institutional controls (deed notice or restriction) are permitted to "lock in" assumptions regarding future use and activities at site.	Very comprehensive list of criteria; multiple categories for soil and ground water based on site use. Several soils categories based on direct contact, ground water protection, and indoor/ambient air. Risk-based cleanup standards: set by how property will be used in the future, potential for human health or ecological risks. Five soils categories: unrestricted residential, unrestricted site-specific, restricted residential, restricted non-residential, and restricted site-specific. Future land use assumptions are made based on probability of continued current use, current zoning, and future zoning or intended use as indicated by local governments. Deed restrictions and ordinances as institutional controls required to maintain specified future land uses if clean up based on non-residential standards. DEQ may also approve site-specific criteria. State certification of labs only for drinking water analysis.	Very comprehensive list. Media (Soil, GW, SW, Sediment, Indoor Air)- GW/Soil: numerical & comprehensive list; SW : limited number of numerical standards and descriptive standards; Sediment: limited number of numerical standards; Indoor Air: currently using screening levels (not promulgated) but applied by DEP as standards; Land Use based criteria (residential vs. industrial/commercial): ; Soil: separated into Residential/Non-residential standards; GW: single standards applicable to any property usage. Stringent and prescriptive standards in both soil and GW and indoor air screening levels; laboratory analytical limitations: ;State laboratory protocols: ;Policy on additional polluting substances; need to derive standards if not established: New Jersey uses generic standard for additional polluting substances if they are organics: i.e. individual synthetic organic compounds (SOCs)/tentatively identified compounds (TICs) in GW – 100 ppb; total SOCs/TICs in GW – 500 ppb.	• Currently regulate soil/gw/sw/indoor air (guidance) • Use EPA web site to determine generic residual contaminant levels • Public Health Groundwater Quality Standards (NR140) • Residential and industrial standards based on land use • Labs generally meet criteria • Analytical Technologies, Analytes, and Analyte Groups for Certification and Registration in the Aqueous and Solid Matrices Some Urban fill addressed under solid waste regulations - require an exemption and investigation of fill to not address • Groundwater standards - treat all groundwater as potable water source (comply directly with criteria or use an evaluation to show standards will be met) • Can receive an exemption from enforcement standards and only be required to meet preventative action limits • Soil standards are risked based standards (evaluate in terms of direct contact and source for groundwater impact)

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Exit Points/Site Closure	Single or multiple exit points	Multiple exits through Act 2. Compare to Background, use Statewide Health Standards or establish Site Specific Standards as outlined in the guidance manual. Multiple exit points and ways to site closure via media, compound, release, pathway elimination, etc.	Generally 3 methods to establish an endpoint: (1) Method One - numeric standards in MCP; (2) Method Two - site-specific adjustment to numeric standards (self-implement); or (3) Method Three - site-specific full risk assessment (self implement). Averaging allowed to determine site concentration. Temporary Solution (Class C RAO) allowed if legal/technical/financial impossibility to achieve permanent remedy. Remedy Operation Status - for long-term operational of remedy - extends deadline to achieve RAO. Deed notice - allowed as instituttional control option - locks in assumption re future acticity/uses of the site - allows risk determination to be based on current use.	NFA report required for closure of sites in programs. Need post-closure plan/post closure agreement where necessary (if cleanup not to residential standards) that includes provisions for O&M, monitoring, notice to purchasers prior to sale, affidavits from owner/operator and environmental professionals, financial assurance. DEQ has 150 days to approve or reject. Regulatory mandate to process 90 % NFA reports submitted each year. However, stats show only 9 NFA reports submitted in FY 2011 (3 qtrs only), along with 60 RAPs.	Attainment of GW Remediation standard (unrestricted use). Attainment of soil Remediation standard (unrestricted use). Attainment of ecological screening standard. Attainment of contaminant levels for groundwater and/or soil allowing restricted use with institutional and/or engineering controls.	• Single exit point is the submittal of a case closure request (meet numerical criteria established for site; use of closure restriction and/or ICs); sites closed with residual contamination are listed on a registry (MNA); Voluntary Party Liability Exemption (VPLE) • One set of standards that allows site specific standard calculation and engineered controls. • Exit through standard NR 700 process receive a ch. NR 726 Case Closure Letter. • For VLPE process, after approval of environmental assessments and remediation of entire property, the voluntary party receives a Certificate of Completion ("COC") and is protected from future liability. Voluntary parties can use natural attenuation to get a COC if they pay a mandatory one time insurance fee through the state program.
Risk evaluation methods	o Cleanup standard-based (Human Health and or Ecological Risk) o Human Health Risk Assessment options o Ecological Risk options	Technical Guidance Manual outlines the health risk options and ecological risk evaluation steps recommended for closure under "Act 2". PA also has a pathway elimination option where risk is assessed by looking at various exposure pathways.	The MCP requires contamination to be cleaned up to a level that protects people and the environment based on how the site is being or will be used, such as for housing or commercial purposes.	Default: comparison to cleanup standards. Site-specific criteria can be proposed. Human health risk assessment option.	A Cleanup standard-based (Human Health and or Ecological Risk) includes for Soil, GW, and Indoor Air since it concerns human health, while Sediment/SW is considered ecological. Human Health Risk Assessment options do not include utilizing RBCA, since it is not allowed in NJ. Ecological Risk options include an ecological risk assessment, which is allowed.(New Jersey reported that its program allows participants to choose a risk based method, however anecdotal evidencefrom the survey suggests that risk based approaches to setting clean up standards are not perceived to be available or used in New Jersey).	• Cleanup standards appear to be human health based

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Engineered and institutional controls	AULS/ELURs, engineered caps, etc	AULs are allowed and used. AULs required RP, owner and PA DEP approvals. RP must establish an environmental covenant to document the AULs. DEP maintains an online registry of AULs available for public viewing	* Activity and Use Limitations (AULs), and deed notices/restrictions are used and are filed at county land record offices (Registry of Deeds). * Through June 2011, 7% (2,085) of sites include an Activity and Use Limitation (AUL) as part of the final remedy.	Deed restrictions (Declaration of Restrictive Covenant) and institutional controls. Capping (asphalt, concrete, landscaping materials, or engineered cap) are allowed. No default requirements for "cap" (e.g., 2 ft/4ft rule); could be suitable asphalt.	DEP's Technical Requirements for Site Remediation (sometimes called the Technical Rules), govern the actual conduct of investigation and remediation activities, from preliminary assessment and site investigation through the investigation, selection, and implementation of a remediation plan. As authorized by the statute, the Technical Rules allow for engineering and institutional controls such as deed notices and impermeable caps. Parties that use such engineering or institutional controls need a permit, which in turn involves the payment of both an application fee and an annual fee and requires insurance or other financial assurance to guarantee operation, maintenance, and inspection costs.. There are types of Engineered and institutional controls that are allowed to be considered close-out sites. For example, concerning GW, there is a Classification Exception Area (CEA) and a GW remedial action permit , both of which are institutional controls. One type for soil is a Deed Notice (DN) & Declaration of Environmental Restriction (DER), which is used as institutional control. The DN/DER can be applied with or without an engineering control as applicable. For soil, there's a soil remedial action permit , which is institutional control (applied in conjunction with DN/DER).	• Use restrictions, and instiutional controls are allowed. Use restrictions are included in registry.
Long-term stewardship requirements	Post closure care/Deed Restrictions/ Post closure development rules	Post-Remediation Care Plans are sometimes required after Act 2 attainment is met. Specific plan details are developed on a case-by-case basis.	Depends on end point (certain sites will require post closure care/restrictions).	Institutional controls are accepted and, with respect to cleanup grants to communities, encouraged as cost saving as well as protective action.	Monitoring and maintenance of engineering and institutional controls. Engineering controls require posting of financial assurance.	• Continuing obligation requirements are identified in Case Closure Letters and Certification of Completion. These requirements are listed in an on-line registry. DNR no longer uses deed restrictions.

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Liability protection	long-term: (This is a Brownfields legislation issue based upon being a eligible party who did not cause the contamination. Are there programs that grant this to responsible parties?)	Through Act 2 a release of liability protection can be provided if all requirements are met. Can be associated with release area, site, or compound. Liability protection is provided to current and future owners, cleanup participants, developers, occupiers, successors and assigns.	Exempts certain owners and operators from liability for contamination that has migrated onto their property provided statutory requirements are met. Owners and operators are eligible if they have had no connection with the property that contains the source of the contamination and they did not cause or contribute to the contamination. If the source is unknown, the owner or operator has a defense to liability rather than an exemption.	Completing a Baseline Environmental Assessment (BEA) provides an exemption from liability for existing contamination. A BEA allows people to purchase or begin operating at a facility without being held liable for existing contamination. BEAs are used to identify existing contamination and to distinguish it from any new releases after the new owner or operator takes over the property. BEA includes AAI study (ASTM E1527-05 Phase I), plus sufficient sampling to confirm that site is a "facility", i.e., contamination present. As of Sept. 2010, roughly 14,000 BEAs received by Dept.; approximately 83/month. DEQ report notes significant improvement over pre-1995 CNTS process.	There is a program where a non-polluting party can conduct a cleanup as a developer utilizing a developer's certificate.	• DNR can reopen cases closed within the traditional program • Areas closed under traditional program do not need further evaluation under VPLE program.
Costs	fees, etc. Do revenues go to the program?	There are fees for each Act 2 report submittal but no fees for UST report submittals.	All sites are assessed a fixed annual compliance fee each year until an RAO is filed. Fee can be avoided by finishing cleanup in first year. *Revenues provide resources for DEP to review permit applications, make timely determinations, and perform audits.	$ 3500 fee to have Review Board consider technical or scientific dispute on NFA report. Anectodal: reportedly new program and not widely used yet. Fees, penalties, oversight costs go to program.	Revenues go into the program. Licensing fees (LSRPs) are utilized to pay for licensing board operations. There are also Annual site remediation fees , ranging from $450 to $13,200 annual fee depending on number of AOCs and number of media impacted (GW, SW, sediments). Annual site remdiation fees are used for NJDEP operations to run the program.	• Money stays within a fund dedicated to the DNR-Remediation and Redevelopment Program • Current fees are $100/hr. for review • Money stays within a fund dedicated to the DNR-Remediation and Redevelopment Program as well as other DNR programs
Financial incentives	Grants, loans, tax incentives, or incentives for more complete cleanup	Pennsylvania offers numberous financial incentives for cleanup and redevelopment to both the public and private sectors, including: o Industrial Site Cleanup Fund o Municipal and Private tax abatement programs o Low interest cleanup loan programs	Massachusetts has a number of financial incentives, including: o Brownfields tax Credit Program; o Municipal tax Abatement Program; o Economic Development incentive Program (EDiP); o State Historic tax Credit www.mass.gov/dep/cleanup/brtxinc.htm	Brownfield Redevelopment Grants and Loans, Tax-increment financing (TIF), Michigan Business Tax (MBT) credits, Brownfield Redevelopment Assessment Program. Renaissance zones are virtually free of all state and local taxes for businesses located within their boundaries (over 150).	Grant/Loan programs available for USTs and Brownfields. Spill fund to cleanup unknown discharges with no RP. Tax credit for brownfields - % of sales tax generated by new use can be credited back to person who performed cleanup at brownfield.	• Grants are available through EPA, DOC and RR for Brownfield cleanup; UST Cleanup program

Criteria	Recommended Information	Pennsylvania	Massachusetts	Michigan	New Jersey	Wisconsin
Closure Documentation	Use of No Further Action (NFA) letters, Certificates of Completion (COC), Covenants Not to Sue (CNTS), Memoranda of Agreements (MOAs), etc.	All options mentioned are available.	LSP submits RAO. The RAO is the final closure documentation. New/innocent owners/operators receive liability protection (not responsible for any further response actions for the releases in question) after an RAO is filed for the site. In small # of cases, a Brownfields Covenant Not to Sue Agreement is entered between AG and owner for some sites not addressed by the automatic liability protections.	No Further Action (NFA) report approved by DEQ required for formal closure. NFA reports prepared by consultants for liable party and require affadavits from both liable party and environmental consultant. Reviewed and approved by DEQ. Disputes can be brought to appointed review board for ruling.	LSRP submits RAO. DEP will cease issuing the No Further Action letters after transition ends in 2012. The Covenant Not to Sue for certain parties is triggered upon the submission of the RAO. The covenant insulates a party (as well as its successors in ownership, lessees, and those who operate on the property) from "all civil liability to the State to perform any additional remediation, to pay compensation for damage to, or loss of, natural resources, for the restoration of natural resources in connection with the discharge on the property or for any cleanup and removal costs," and may cover not only the areas of concern that have been remediated but the rest of the property as well. A covenant not to sue does not, however, cover new discharges, and does not afford any protection from Spill Act liability for cleanup costs.	• Receive case closure letter or if VPLE certificate of completions, registry, databases • If voluntary party applies for COC with natural attenuation they must pay reasonable premium to be insured site on state's natural attenuation insurance policy • Once regulatory requirements are satisfied, Case Closure Letter is issued with continuing obligations requirements. This information is posted on the DNR registry and data bases • Volunteer with VPLE receives Certificate of Completion with continuing obligation requirements which are posted in DNR registry and databases.

Appendix E – Individual Suggestions for BMPs

Potential Best Management Practices:

1. **Financial Incentives**
    - Provide special incentives such as tax relief and loans to program participants who can prove they are liable for the contamination of site or where the release was not caused by a violation by state regulations.
    - Brownfields Bonus or tax refund availability to companies that create jobs.

    States: FL, GA, ID, IL, IN, MD, MA, MI, MO, NH, NC, OH, OK, OR, PA, RI, SC, TX, WI

    Data source(s): "Compendium of State Land Revitalization Indicators" by ASTSWMO's State Response and Brownfields Program Operations Task Force, May 2009 AND "The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997 AND "Brownfields State of the State -2002, What's Happened in the 50 States this Year?" Northeast-Midwest Institute's Charles Bartsch and Rachel Deane, December 2002

    Workgroup personnel: Dermont Jones and Allison Forrest

2. **Good Education Practices**
    - Stakeholder education for owners, prospective owners, abutters, local officials, developers.
    - Address concerns about contamination, cleanup process and lack of understanding of redevelopment benefits.
    - Eliminate the lack of understanding about process (about contamination, redevelopment impacts and remediation plans)that leads to missed opportunities (i.e. when developers think the process is too cumbersome and other stakeholders feel overwhelmed)
    - Have a group from the state that provides advice and directions to the stakeholders, other state agencies, and municipal government personnel. Complete and continually updated list of state guidance documents, available services, and other available resources.

    States: MA

    Data source(s): "WORKING DRAFT Catalyzing Redevelopment: Innovative Approaches and Emerging Best Practices in State Petroleum Brownfield Initiatives", Environmental Law Institute's, March 2011 AND "The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997
    Workgroup personnel: Dermont Jones

2a. Use of University Programs

- Northern and Southern Borwnfield Assistance Centers are located at West Virginia University and Marshall University. These centers educate the general public and local communities on the Brownfields and environmental job training. They also help groups find funding and grants for preliminary actions such as site assessment and legal planning.
- Use of state-university based assistance and advisory programs to help educate and assist local government.

States: WV

Data source(s): "State of the Environment, third edition" West Virginia Department of Environmental Protection, June 2008 AND "The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997
Workgroup personnel: Dermont Jones

3. Community engagement practices

Fostering community engagement and decision–making frameworks; for gaining community input and support toward efficiently and effectively cleaning up sites and creating area-wide and corridor redevelopment:

- To consider socio-economic variables in redevelopment – brownfield sites generally located in low-income urban and suburban areas, blighted and depressed.
- To consider wide range of local planning programs with respect to redevelopment.
- To consider local economic and real estate market conditions, and local economic development practices and policies which may promote or impede redevelopment.
- To consider zoning changes.
- Local involvement in redevelopment develops sense of empowerment, ownership and investment in redevelopment. There is an opposite effect without a robust community involvement. Community involvement essential to good outcomes.
- Controversial projects should have more extensive public involvement and should start as early into the project as possible.

States: Various

Data source(s): " WORKING DRAFT Catalyzing Redevelopment: Innovative Approaches and Emerging Best Practices in State Petroleum Brownfield Initiatives", Environmental Law Institute's, March 2011 AND "Brownfields State of the States: An End-of-Session Review of Initiatives and Program Impacts in the 50 States" Northeast-Midwest Institute's Charles Bartsch and Rachel Dean, December 2002 (pgs 78-7) AND Kentucky Institute working paper 2000 (pg 2) AND "The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997

Workgroup personnel: Dermont Jones

4. Voluntary Cleanup Programs

Texas Voluntary Cleanup Program:

- Through December 2009 the VCP has accepted 2,156 applications representing dry cleaners, manufacturing facilities, shopping centers, warehouses, auto-related businesses and other commercial and industrial enterprises. Of these sites, 1,372 have been issued final certificates of completion and 155 have received conditional certificates of completion. Based on the large number of sites in their VCP and the high closure rate over that three year period, this program seems to be utilized much more than CT's VCP. Under their VCP program, the state approves a work plan and reportedly works with the party to come up with solutions on a site-by-site basis, which could include a risk evaluation in addition to comparison to their standards.

States: Texas

Data source(s): http://www.tceq.texas.gov/

Workgroup personnel: Mike Ainsworth

5. Liability Programs

Innocent Owner/Operator Program:

- Provides "innocent owner" status to an owner operator whose property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the property, and they did not cause or contribute to the source or sources of contamination. Like the Texas Voluntary Cleanup Program (VCP), the IOP can be used as a redevelopment tool or as a tool to add value to a contaminated property by providing an Innocent Owner/Operator Certificate (IOC).
- Orphan Sites Programs to encourage cleanups of sites where the responsible party is unknown or unwilling to cleanup.
- Letters of "no associations" and "convents not to sue" to owners of sites were cleanup was "completed".

States: Texas, Oregon, California

Data source(s): http://www.tceq.texas.gov/; AND

http://www.swrcb.ca.gov/water_issues/programs/ustcf/oscf.shtml AND

http://www.deq.state.or.us/lq/cu/orphans.htm AND "The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997

Workgroup personnel: Mike Ainsworth and Allison Forrest

6. Flexibility with cleanups and Institutional Controls

- Uncontrolled Hazardous Waste Site program where you do not have to clean up everything.
- Limited cleanup when cleanup to standards are not technically or economically feasible to enable site closure without the risk of future hazards.

States: AZ, FL, GA, IN, IO, KS, KY, LA, ME, MD, MI, MN, MS, MO, MT, NE, NV, NH, NM, NY, NC, ND, OK, OR, PA, RI, SC, SD, TE, TX, UT, VT, VA, WA, WI, WY

Data source(s): Mike's colleagues AND "The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997 AND "Brownfields State of the State -2002, What's Happened in the 50 States this Year?" Northeast-Midwest Institute's Charles Bartsch and Rachel Deane, December 2002

Workgroup personnel: Mike Ainsworth and Allison Forrest

7. **Expedite Cleanup Programs and Self-reporting of for low risk sites and post-remedial monitoring**

    - Alaska, California, Kansas, and Oregon have some cleanup programs that depend solely or partly on self-reporting. Notably, Alaska's Streamlined Cleanup Program Application (http://dec.alaska.gov/spar/csp/scp.htm) requires a only that a work plan along with schedule of activities and for completion of program a final reports be submitted for the state to review. Similarly, Oregon's Independent Cleanup Pathway (http://www.deq.state.or.us/lq/pubs/factsheets/cu/IndependentCleanupPathwaySteps.pdf) requires only the submission of an application and an initial meeting regarding the site, and then DEQ waits for the final report on remedial actions to review. There are restrictions for the types of site that can apply to the both AK and OR's programs sites that have extensive contamination will not be accepted into this program. Other State Programs require more oversight during the assessment and remedial actions process, but once the remedial actions have been completed the site owners are required submit quarterly or annual post-remediation groundwater monitoring data.
    - Alaska's Streamlined Cleanup Program Application had 156 sites enrolled in and 99 sites closed in January 2011. Alaska's Streamlined Cleanup Program Application had 1,405 sites enrolled in and 797 sites closed in January 2011.

    States: Alaska, California, Kansas Oregon, Georgia

    Data source(s): "State Approaches to Monitoring and Oversight of Land Use Controls" ASTSWMO's State Superfund Focus Group, October 21, 2009, http://astswmo.org/Files/Policies and Publications/CERCLA and Brownfields/LUC-Paper-2009/2009-Land Use Controls Final.pdf AND "Streamlined Cleanup Program Guidance" Alaska's Department of Environmental Conservation, November 2003 AND Draft "50 State Review of Environmental Liability Laws and Relief Therefrom" McCarter &English's Jane Warren, September 15, 2011 AND Mike's colleagues

    Workgroup personnel: Allison Forrest and Mike Ainsworth

8. **State Transparency**
    - Single user friendly on-line data management systems: one database/database management system for all contaminated sites for multiple remediation programs.

    States: California

    Data source(s): http://www.envirostor.dtsc.ca.gov/public/

    Workgroup personnel: Allison Forrest

9. **Single program for Brownfields and/or single coordination of all programs**
    - One stop program or contact for brownfields that integrates services and oversight provided by the state.

    States: MA

    Data source(s): The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997

    Workgroup personnel: Allison Forrest

10. **Timeframes**
    - Fines for failure to cleanup sites in a timely fashion

    States: MA

    Data source(s): The Cleanup and Reuse of Brownfields: Key Issues and Policy Choices" University of Tennessee's Mary English and James Rice, April 1997

Workgroup personnel: Allison Forrest

Appendix F – List of Acronyms

LSP	Licensed Site Professional
BEA	Baseline Environmental Assessment
LUST	Leaking Underground Storage Tank
MCP	Massachusetts Contingency Plan
RCRA	Resource Conservation Recovery Act
SRRA	Site Remediation Reform Act
NFA	No Further Action
TGM	Technical Guidance Memo
LRP	Land Recycling Program
MOA	Memorandum of Agreement
AUL	Activity Use Limitation
VPLE	Voluntary Party Liability Exemption
LEP	Licensed Environmental Professional
LSRP	Licensed Site Remediation Professional
ELUR	Environmental Land Use Restriction
RP	Responsible Party
OHM	Oil or Hazardous Material
PADEP	Pennsylvania Department of Environmental Protection
WIDEP	Wisconsin Department of Environmental Protection
NJDEP	New Jersey Department of Environmental Protection
MADEP	Massachusetts Department of Environmental Protection
CTDEEP	Connecticut Department of Energy and Environmental Protection
MIDEQ	Michigan Department of Environmental Quality
NIR	Notice of Intent to Remediate
RBCA	Risk Based Corrective Action
AOCs	Areas of Concern
VPLE	Voluntary Party Liability Exemption
RAO	Remedial Action Outcome