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## SECTION I. OVERVIEW

### A. What the Land Recycling Program Has to Offer

#### 1. Benefits of Involvement Through the Land Recycling Program

The Land Recycling Program is the result of a bipartisan effort to solve the problem of unused and abandoned industrial sites within the Commonwealth. The program has three purposes: to clean up contaminated sites based on sound science, to return these sites to productive reuse, and to preserve farmland and greenspace. The Land Recycling Program promotes voluntary partnerships among local businesses, government, financial institutions and the Department of Environmental Protection (hereafter “Department” or “DEP”).

The four cornerstones of the program are uniform cleanup standards based on health and environmental risks, standardized review procedures, relief from liability, and financial assistance. The establishment of uniform standards enables the remediator to clearly understand the extent and cost of site cleanup. The selection of standards assures that a site is protective of its reuse. A site which will be used for an industrial development need not be as clean as a playground or residential site. Consistent reporting requirements and standardized review procedures provide a definite time frame for remediation. Relief from liability, which extends to future owners, addresses the concerns that previously inhibited site redevelopment and sale of properties. Financial assistance, available to those who did not cause or contribute to contamination at the site, reduces the cost of site assessment and remediation.

#### 2. How to Use this Manual

The Department has developed this manual to assist you in satisfying the requirements of Act 2 and the regulations, Chapter 250. The manual provides suggestions and examples of how to best approach site characterization and remediation. The manual is divided into five sections:

- Section I provides an overview for determining which standard or which other statutes may be applicable to your site.
- Section II outlines the procedures for meeting the requirements of each standard. As each standard is discussed, you will be referred to other sections for additional information or clarifications.
- Section III discusses the appropriate interfaces with other applicable statutes.
- General technical guidances which augment the information in Section II are provided in Section IV.

- Other documents which may be helpful are listed in Section V.

The manual is available online at web site [ LIST WEB ADDRESS ], as an entire downloadable document, or for online use with ease use by way of links to the section of interest, and cross links to other parts of the manual, or sections in the regulations, or statute.

The Department of Environmental Protection's staff is another valuable resource available to assist you. We can clarify information provided herein or address any questions regarding issues specific to your site. Regional office contacts are provided in Section V.K.

## B. Applying Land Recycling to Your Property

### 1. Classifying your Site and Considering Options for Remediation

Act 2 establishes environmental remediation standards for cleanups. In order to select a standard for your site, a site assessment is needed to determine site conditions which may require remediation. This site characterization includes the identification of specific contaminant concentrations throughout soil and groundwater media, discharges to surface water and air, and any other conditions which may pose a risk to human health and the environment. The site characterization may reveal that the remediator needs to interface with other environmental laws and/or Act 2. Under Act 2, the appropriate standard or combination of standards (*i.e.*, background, Statewide health or site-specific) must be determined. A person with a property which has multiple distinct areas of contamination may submit a Notice of Intent to Remediate (NIR) for a single area, or multiple areas individually; with the Department's concurrence the individual areas are appropriate for separate NIRs. A "distinct area of contamination" includes the volume of all media affected by the release causing the contamination. For example, if soils were contaminated and that contamination migrated to groundwater, both the contaminated soil and groundwater would be part of the distinct area of contamination. In some cases, the Department may agree that including ~~both the soil and groundwater~~ all contaminated media as a distinct area is not practical and therefore approve that they may be considered separately. Unless the remediator has such an approval from the Department, the remediator must consider all media and volume part of a "distinct area of contamination", or "site". The Department will accept NIRs for properties on which a release of regulated substances can be documented, or for properties affected by off-property releases of regulated substances for which the remediator is not responsible. The background, Statewide health and site-specific standards may be used at any site. Only certain sites qualify as special industrial areas.

It is important for the remediator to understand that the liability protection afforded under Chapter 5 of Act 2 is for contamination identified in the approved final report. Therefore, *the more extensive and thorough site characterization is, the more extensive the liability protection*. This is true in terms of both size of area included as the "site", and in the listing of regulated substances which are a part of the site. For example, if a remediator pursues an Act 2 cleanup for a release to 10 acres of soil of a mixture of 50 regulated substances, he may choose to characterize his "site" as the soil which is contaminated by ~~any of~~ the 50 substances above the practical quantitation limit (PQL). Upon approval of the final report, that remediator has liability protection for that release over that 10 acre area for those 50 substances. If on

the other hand the remediator chooses to define his “site” as the 5 most prominent regulated substances over an area, for example, 1 acre of the property, in which ~~they~~ their concentrations are equal to or exceed above the standard, say 1 acre, then upon final report approval, he has liability protection for those 5 substances over that 1 acre. Note that the Department has the authority to require assessment of additional substances if it determines that significant human health and environmental threats exist.

The Department will specify details of the site, in the final report approval letter along with and attachments, for which describe the liability protection is covered provided under Act 2. ~~Such~~ Attachments may include plan and/or cross-section drawings and summary tables of attainment concentrations of regulated substances taken from information such as contained in the final report summary.

**a) Background**

A person cleaning up a site to the background standard must document that the concentration of any contaminants remaining are at a level not related to any release of contaminants at the site. Samples are required both in the area shown to be contaminated by onsite releases (*e.g.*, the “site”) and in an appropriate background reference area to demonstrate attainment of the background standard. This standard is useful in cases of releases migrating from off-property, widespread and naturally occurring contamination.

**b) Statewide Health**

The regulations, Chapter 250, establish Statewide health standards for contaminants in each environmental medium. These standards are referred to as medium specific concentrations (MSCs) that must be achieved in order to demonstrate attainment of the Statewide health standard. In addition to demonstrating that a site is protective of human health, an ecological screen is part of the Statewide health standard to provide protection of ecological receptors.

**c) Site-specific**

Cleanup levels may be developed which pertain specifically to the unique exposure pathways at a site. This is a more detailed process, both technically and administratively. The human and ecological receptors at the site need to be addressed either through the elimination of the exposure pathways or a risk assessment. A site-specific cleanup also provides an opportunity for public participation.

#### **d) Combination of Standards**

A cleanup may be performed by using any combination of the three standards. The remediator may select any one or a combination of standards by regulated substance, by medium of concern, or by distinct area of contamination (see Section I.B.1). Combinations must satisfy the requirements of each standard used. For example, in using any combination of standards which includes the site-specific standard, the risk assessment should include only those regulated substances for which site-specific numeric standards are being developed, and for these substances, the cumulative risk requirements of Section 304 of Act 2 must be met. Attainment of these site-specific numeric standards must be demonstrated in the final report. In addition, all of the requirements of the site-specific standard, including the reporting requirements, apply. All of the regulated substances, media, or distinct areas of contamination meeting another standard (*e.g.*, the Statewide health standard) must meet the requirements of that standard. Therefore, in addition to a combination of numerical standards there will be combinations of requirements for reporting, attainment tests, and points of compliance.

#### **e) Special Industrial Areas**

The special industrial area designation was created by Act 2 to provide special remediation requirements for a distinct set of sites which were used for industrial activity. These sites are properties where there is no financially viable responsible party, or where the property is located within an enterprise zone. Enterprise zones are designated by the Department of Community and Economic Development. The remediator and the reuser afforded these special requirements must demonstrate that he/she did not cause or contribute to releases of regulated substances at the property. In order to make use of the special industrial area designation, the remediator must enter into a consent order and agreement with the Department.

### **2. Immediate Response**

If an immediate hazard exists or is discovered at a site, prompt action is necessary to abate the hazardous condition and prevent future or further release of contamination. Leaking tanks or drums, conditions presenting a fire or explosion threat, or a situation involving a threat to human health or the environment warrant a prompt response. Act 2 does not prevent or impede an immediate response to such emergencies. Section 307 of Act 2 provides that the provisions under Chapter 3 of the statute, relating to remediation standards and review procedures including special industrial area cleanups, shall not prevent or impede applicable emergency or interim responses. Final remediation shall comply with that chapter, which will not be prejudiced by the mitigation measures (emergency or interim response) undertaken to that

point [See Act 2 Section 307(a) and (b)]. It is the responsibility of the appropriate person to act in a timely manner to abate immediate threats. The remediator still needs to follow the notification requirements of the Clean Streams Law or Solid Waste Management Act. However, if the final report demonstrating attainment of a standard is submitted within 90 days of the release, the Notice of Intent to Remediate is not required to be filed, and no public notice is required.

### **3. Regulated Storage Tank Release Sites**

Storage tank cleanups conducted pursuant to the Storage Tank and Spill Prevention Act (Act 32 of 1989, as amended) which meet one or more of the standards under Act 2 are Act 2 cleanups. Section 904(c) of Act 2 preserved the corrective action process for the remediation of releases from storage tanks regulated by Act 32. Regulated storage tanks include a wide range of underground and aboveground tanks containing petroleum products and hazardous substances.

The corrective action process applies to releases from regulated tanks for which remediation (anything beyond notification) was initiated on or after August 5, 1989, the effective date of Act 32. Persons who take corrective action under Act 32, and can demonstrate attainment of one or more of the standards under Act 2, will qualify for liability protection. Where Act 32 applies, persons cleaning up these releases are not subject to the notice, fee and Department approval provisions contained in Act 2. Likewise, the mandatory Department review times and the “deemed approved” provisions of Act 2 are not available for cleanups involving these releases.

Those persons who initiated cleanup prior to their tanks becoming deregulated by Act 16 of 1995 (which amended Act 32) should continue to implement the corrective action process, along with use of the Act 2 remediation standards, to receive liability protection.

Where the tank is not governed by Act 32, adherence to the Act 2 administrative process and cleanup standards will be required in order to receive liability protection. When releases of petroleum products occur at sites with both Act 2 and Act 32 storage tanks, the remediator may elect to address the tanks together, or to address them separately on a dual track of the Act 2 and Act 32 processes. If the person elects to address the tanks together, combined reports and notices that satisfy the requirements of each statute, as they apply to the particular tanks, may be submitted. ~~The same kind of document that is now generated under the corrective action process is contemplated for the requirements of Act 2 tank sites.~~ Department reviews will also be conducted to satisfy the requirements of both statutes.

For example, a person may submit a combined site characterization/remedial investigation report that contains the information required under the corrective action process and under Act 2, and it will serve a dual function under both Act 2 and Act 32. It should be submitted on a time frame that meets both statutes; thus if there is no specified time required to submit the remedial investigation report under Act 2, but a site characterization report under Act 32 is required within 180 days of reporting the release, the site characterization/remedial investigation report should be submitted within 180 days. Compliance with Act 2 notice and public participation requirements will be necessary for liability protection for tanks governed by Act 2.

#### 4. Short List of Petroleum Products

Attachment C contains abbreviated list of regulated substances for specified products (e.g. gasoline). This short listing maybe used under any standard as long as conditions are met.

- Use of the short list is limited to remediations resulting from releases of the listed petroleum products that are uncontaminated from other sources
- For soil media attainment, there must be no free liquids left in the soil based on visual inspection, and the soil should not create any odor nuisance.
- For groundwater media attainment, there must be no measurable free floating product (0.01 ft-[EPA]) at the point of compliance. (Usually the property line)

The rationale for the last two conditions is that, presuming the remediator chose to analyze for all regulated substances in the mixture (e.g. several hundred) for the Statewide health standard which is capped at saturation and solubility limits, then the result would be soil with no visible product and groundwater with no measurable product.

What is the difference in using the short list, say for gasoline (which lists 8 substances) as opposed to the remediator choosing a list of 24 substances to represent the gasoline release?

If a remediator does not utilize the short list but rather chooses a subset of 24 substances in the gasoline (which actually has over 400), the release-of-relief from liability is relevant to those 24 substances where the soil was contaminated by the gasoline spill.

If all eight substances from the short list were included, and all three conditions of the short list were documented, then beyond the Act 2 liability coverage, the remediator will have satisfied Department's concern with the spill of the gasoline product as a whole.

If the conditions of the short list are not met, then only the Act 2 liability [relief](#) covering the 24 substances applies.

If the remediator chooses to utilize the short list directly, and meets all the conditions, then the final report approval will stipulate that Act 2 liability coverage is for the 8 substances, and the DEP will require no further remediation for the spill of gasoline product documented in the final report.

### **5. [Separate Phase Liquids \(SPL\)](#)**

~~Separate phase liquids within a medium, such as soil or groundwater, will be considered as part of the contaminated medium. However, demonstration of attainment under one or more standard may be made without removing all SPLs.~~

~~Under the background standard the attainment demonstration is made comparing the concentrations of contaminated media on the site with the background reference point. The pure product concentration at the background reference point may then be the background concentration.~~

~~Under the Statewide health standard, the calculated MSCs are “capped” at the saturation or solubility limit, thus controlling the presence of SPLs at the compliance points. Since groundwater compliance points are normally the property line, SPLs may exist within the property (see Section IV. [C](#) [D](#) for requirements for post remediation care).~~

~~Under the site specific standard, exposure pathways are considered as well as risks associated with that exposure. Given some circumstances, attainment might be demonstrated with SPLs present throughout the site.~~

~~In the special case where a remediator chooses (as his option) to utilize the “short list” of substances in Attachment C, the conditions of the short list do include removal of SPLs to the extent that there are no odor nuisances or visible free liquids in soils, or measurable free floating product (0.01 ft [EPA]) in groundwater at the point of compliance.~~

### **6.5. [Solid Waste Facilities](#)**

If your site includes a solid waste facility see Section III.A of this manual.

### **7.6. [HSCA/CERCLA Sites](#)**

The Hazardous Sites Cleanup Act (HSCA) is the state cleanup law that provides for the remediation of sites contaminated with hazardous substances. Certain sites are designated by the Department as HSCA sites. This is a limited set of sites that has been officially designated by the Department as meeting the criteria for response action under HSCA. Before any site is designated as a HSCA site, the site undergoes a review and approval process that officially

documents senior management approval of the HSCA designation. The Department notifies all known responsible parties associated with a site prior to listing it on the Pennsylvania Priority List (PPL). To determine if the site under Act 2 consideration has been designated by the Department as a HSCA site, contact the Environmental Cleanup Program Manager in the Department's regional office where the site is located. Additional information about the relationship between Act 2 and HSCA is included in Section III of this manual.

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA) is the federal Superfund law. Sites may come under the jurisdiction of the EPA CERCLA program, in which case, the Department's approval of a final report demonstrating attainment of an Act 2 standard cannot provide release-automatic relief from CERCLA liability. To determine if the site under consideration is a CERCLA site, contact the EPA regional office in Philadelphia, Office of Superfund Programs, at 215-566-3120. Additional information about the relationship between Act 2 and CERCLA is included in this document in Section III.

## **8.7. Site Characterization**

### **a) Importance of Site Characterization step**

Site characterization under Act 2 is a description of contaminated media, including geometry, chemical and physical characteristics that affect movement of the contaminants. It is the process for determining the "site" under Act 2; i.e., the volume of contaminated media resulting from an environmental release of regulated substances within which attainment of one or a combination of standards will be demonstrated. The "site" is, in turn, the basis for the Act 2 Chapter 5 liability protection when the final report is approved. In brief, the liability protection is only as good as the site characterization. This can be illustrated by the example at the end of this section.

~~The goal of the site characterization is to define the extent of contamination by regulated substances.~~ The site characterization activities conducted must result in a thorough investigation which meets the requirements of 250.204 and which provide information in sufficient detail to support decisions in remediation and documenting attainment ~~the using the~~ selected Act 2 standard. **A complete and accurate site characterization, including fate and transport analysis, and its documentation in the final report is very important, as it is the basis for determining making remediation decisions and is used later in identifying the appropriate area for demonstrating attainment. Without a proper site characterization, attainment requirements cannot be met and the final report will be disapproved by the Department.**

A remediator must keep in mind the definition of “site” in the Land Recycling Program. As defined in Act 2, a site is “[t]he extent of contamination originating within the property boundaries and all areas in close proximity to the contamination necessary for the implementation of remediation activities to be conducted under the act.” Thus, a site often does not coincide with a property...a site may occupy several properties, and conversely, a property may contain more than one site. In this manual, whenever the term “site” is used in connection with the Land Recycling Program, it is used strictly in the sense as defined in the Act.

DEP Regional Office staff are a valuable resource and want to assist as needed in evaluating your site characterization information. Although not required, working with the Department in many cases can help to facilitate approval of the submitted reports. Always feel free to contact the Department’s Regional Environmental Cleanup Program staff when you have a question about the requirements of site characterization of a property for the Land Recycling Program.

#### **b) Scope of Characterization**

The scope of the site characterization should be designed to help the person conducting the cleanup select an appropriate remedy that will meet the attainment requirements of the selected Act 2 standard. The requirements that a full site characterization must meet are described in the regulations at Section 250.204. At this phase, it is also suggested that the remediator be aware of possible interfaces with other regulatory programs (See Section III of this manual), since information required by other programs may best be collected during the site characterization phase. The reporting requirements for the standard selected (background, Statewide health or site-specific in Act 2 and Chapter 250 of the regulations) must be met by the person conducting the cleanup. Section II of this Guidance describes in detail the reporting requirements for each of the standards available under Act-Act 2. **Use only those items which apply to the site needed to attain the standard of the Land Recycling Program.** The procedures documents, and required fees for each standard are included in Section I.B.7. (Notification Requirements and Procedures).

Characterization of sites which may require remediation begins with an evaluation of any existing historical ~~and existing~~ information that identifies specific contaminant concentrations in environmental media, and identifies site conditions that may pose an unacceptable health risk or make remediation more difficult.

**i) Soils**

In soils, the characterization must be at least to a concentration sufficiently below the standard to insure that all areas containing regulated substances at or above the selected standard have been adequately characterized, and that is sufficient to support a fate and transport analysis which shows where the contamination is currently located and those areas to which it is moving. The remediator determines the concentration level for characterization below the minimal level stated above. The remediator must state what factors were used in determining the level used to define the site boundaries

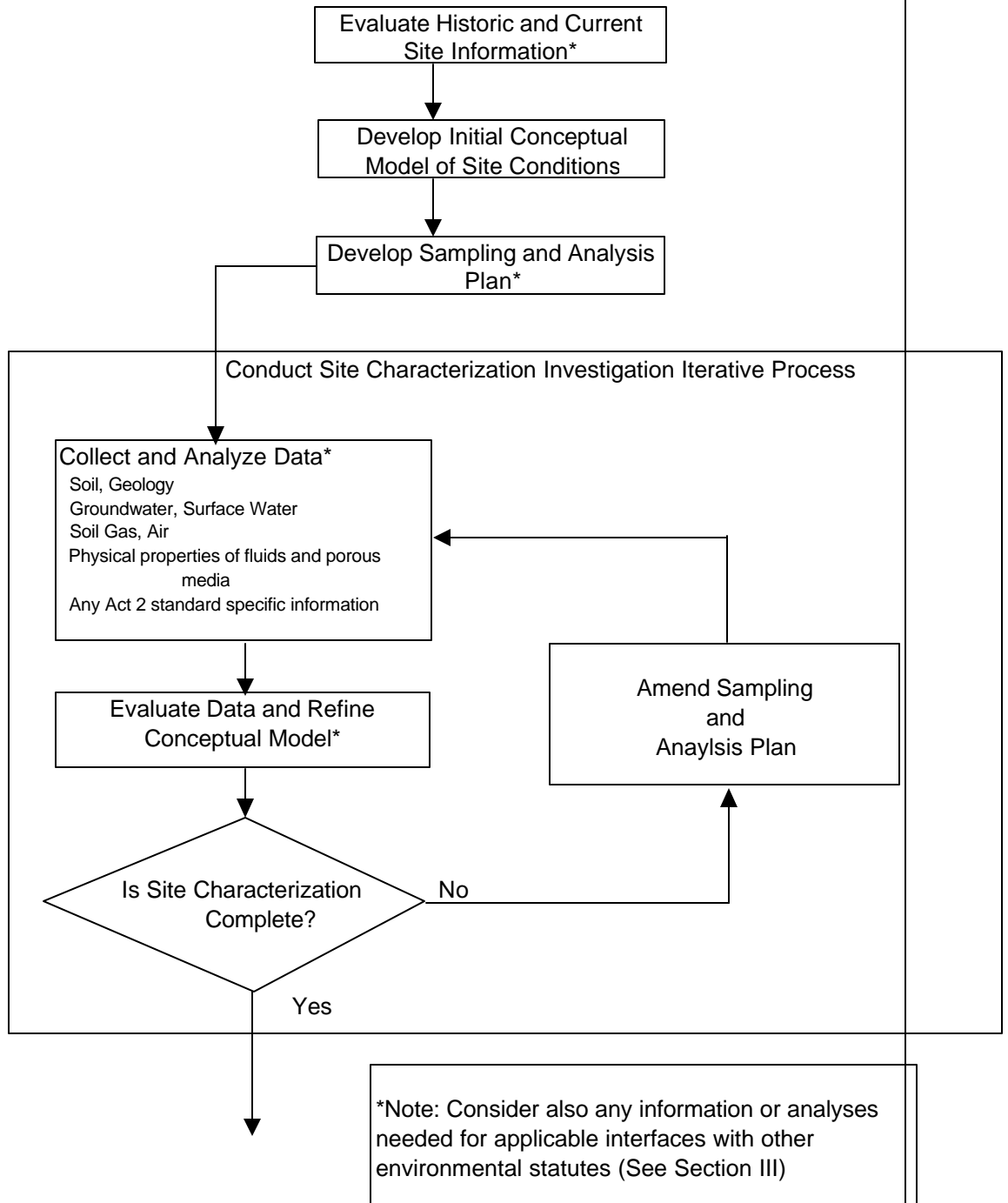
**ii) Groundwater**

In groundwater a common mistake made is to take a limited set of a single sampling event and conclude that since the concentrations were below the State-wide health standard that no further work is needed to obtain Act 2 liability relief. This is not true. Proper characterization requires more than one round of sampling (250.204 (e)). In addition, attainment sampling and demonstration is required even if characterization samples are below State-wide health Standard (250.704(a)). For further guidance, see Section IV B. Attainment.

**iii) Conceptual site model including soil and groundwater**

When complete, the characterization should enable the development of a conceptual site model. The conceptual site model is a written and graphical representation of the site environmental system and the processes that determine control the transport and movement of the regulated substances through the environmental media and how they interact. Depending on the size and complexity of the site, the investigation portion of the site characterization typically is an iterative process which expands and builds as the information is gathered (see Fig I-1). The DEP Groundwater Monitoring Guidance Manual, EPA guidance or American Society for Testing Materials (ASTM) guidance appropriate for the site may be used as a source for general guidance when conducting the site characterization investigation.

**Figure I-1  
Site Characterization Flow Chart**



appropriate for the site may be used as a source for general guidance when conducting the site characterization investigation. The DEP Groundwater Monitoring Guidance Manual (Attachment V.H) is also appropriate.

The data objectives of the site characterization will differ somewhat depending on whether soil or groundwater is being investigated.

A good site characterization where the soil is a medium of concern should be able to provide the following information derived from field investigations:

- The types of contaminants that are present, the concentration of the contaminants and the spatial variation in concentration of the contaminants both horizontally and vertically.
- The physical characteristics of the soil in which the contaminants are present and through which they may be moving. These include the soil type (texture), dry bulk density, permeability, organic carbon content, porosity, and possibly moisture content. Documentation of these properties and any significant variability over the site may be very important later in developing a fate and transport analysis.

Where groundwater is a medium of concern, the following information at a minimum should be provided by a good site characterization:

- The direction of groundwater flow,
- The hydraulic gradient,
- The permeability of the aquifer material(s) through which the groundwater moves,
- The porosity of the aquifer, and
- The types of contaminants present, the concentration of the contaminants and the spatial variation in concentration of the contaminants both horizontally and vertically.

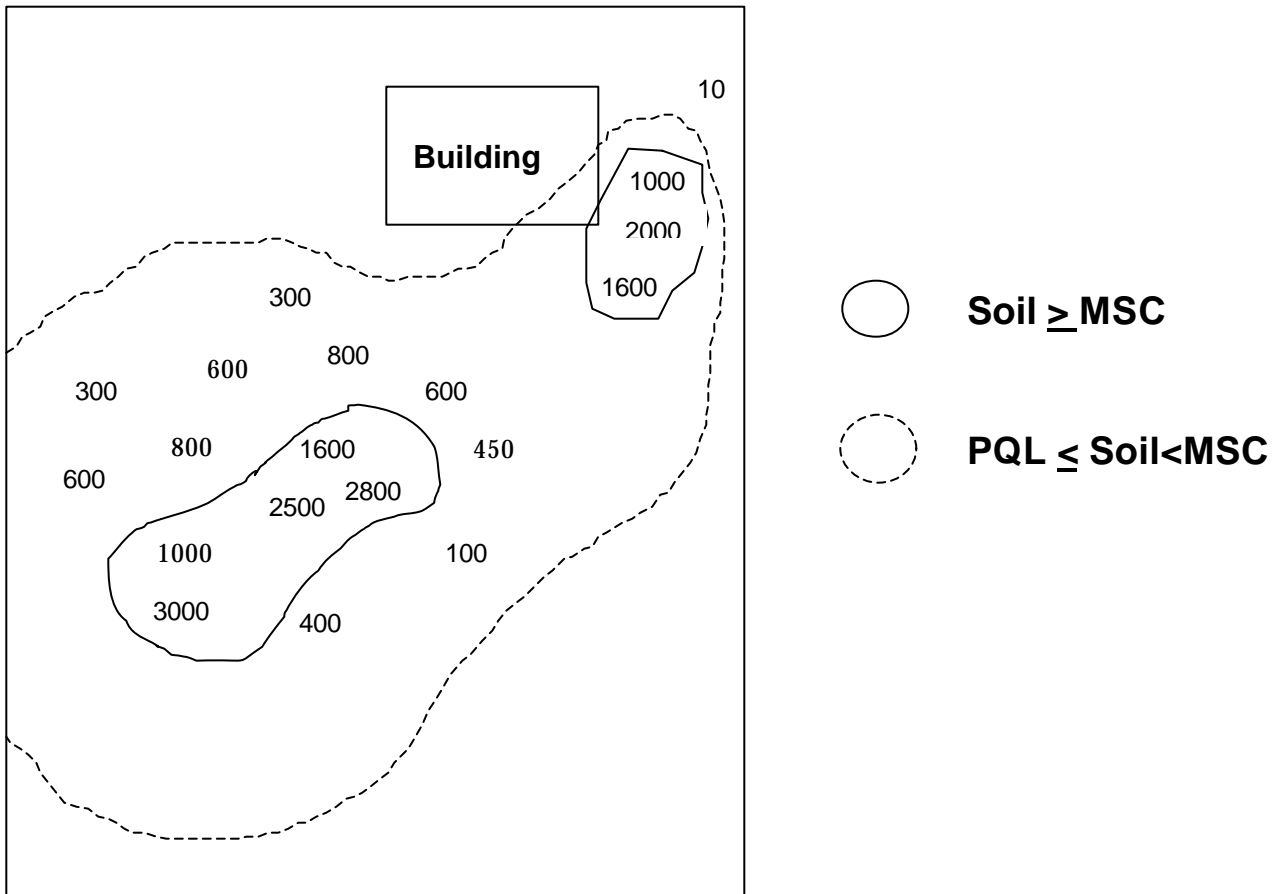
This information is not only necessary to describe and evaluate conditions at the site. It is often vital to fate and transport analysis, especially when it requires a quantitative approach.

Fate and transport analysis is part of site characterization as well as demonstration of attainment and is required under all three Act 2 standards. Failure to have fate and transport analysis in any final report is reason for disapproval based on this deficiency. See Section V.A for guidance for conducting fate and transport analyses.

a)c) Applying Site Characterization to an Act 2 NIR – Example

The true characterization of soil contamination is shown in Figure I-2. This example considers a large property with several smaller environmental releases. There are two general areas where environmental releases occurred. The remediator has initial results which suggest these two areas of concern for further study. Furthermore, the remediator of this property wished to obtain Act 2 liability relief for this release so that the property can be more easily -

**Figure I-2  
Site Characterization**



sold. With this objective in mind, he plans a site characterization and weighs his options. The following are considerations that must be made.

In addition to factors that will help to characterize the hot spots, the remediator must consider, first in designing further investigations, and later in finalizing the site characterization, what is the concentration of regulated substance(s) in soil that will represent the boundary of the site. It is technically more difficult and more expensive to define the extent of the contamination to lower concentrations than it would be to define hot spots. However, the Act 2 liability protection only applies to the site, and if the extent of the site is very limited, so is the liability protection.

In order to apply attainment in soils, the remediator must at a minimum define the volume which exceeds the selected standard [Section 250.703(b)]. Sampling beyond the initial phase indicates two areas exceeding the Statewide Health standard MSCs. The remediator reasons that, by choosing the boundary of the site to be concentrations much lower than the standard, the area of the liability protection is increased. He considers 25% of the standard, 10% of the standard and the Practical Quantitation Limit (PQL) of the substance(s) as resolution objectives. He finally decides that the extra cost of characterization is in his interest so he can maximize the site area (and consequently the liability protection) by choosing the PQL and applying it across the entire property. Within this site area, he also characterizes factors of the media and regulated substance(s) which affect movement (See Section IV.A, Fate and Transport Analysis). Another remediator may have made a different choice and ended up with several smaller areas of liability protection.

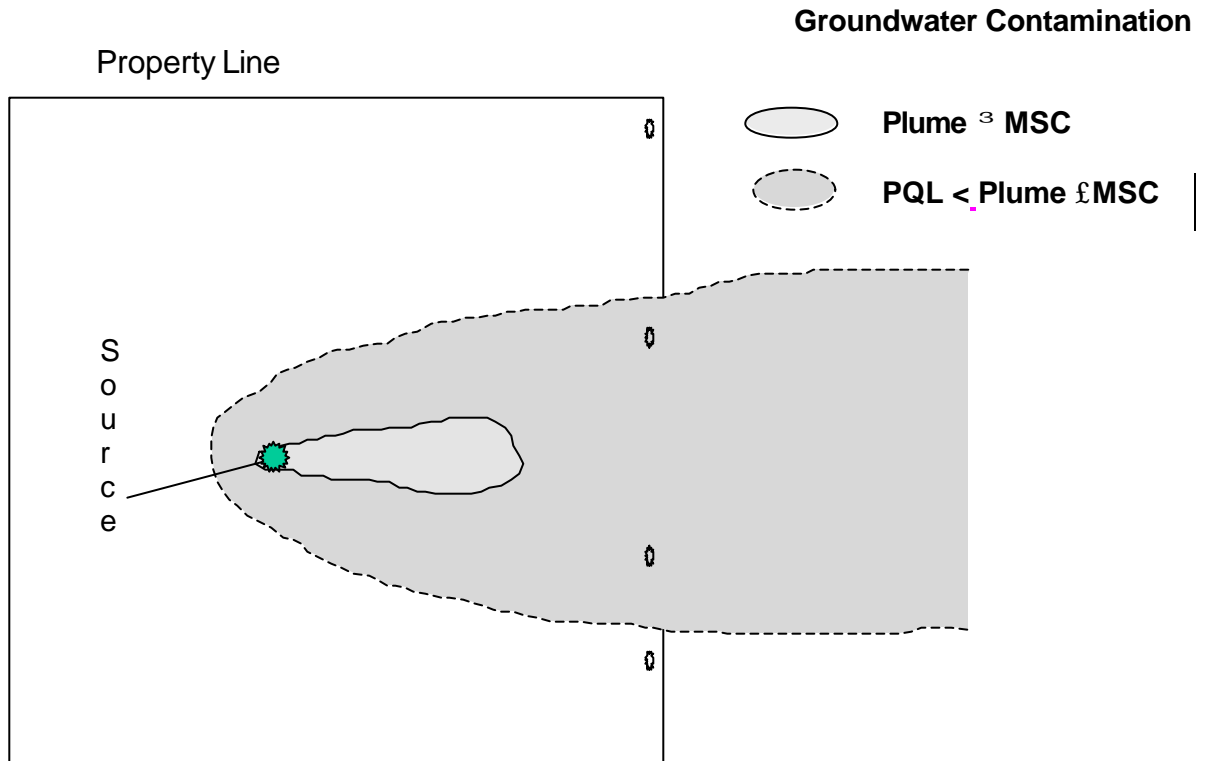
In considering the definition of the site in groundwater (i.e., the plume), some phase of the assessment must determine if the contamination extends beyond the property boundary at levels exceeding the selected standard [Section 250.704]. If the determination is that levels off the property do not exceed the standard, then the remediator determines all areas that equal or exceed the concentration found at the Point of Compliance (POC). He may choose to define the plume to lower levels for purposes of liability protection. Figure I-3 illustrates this situation.

If the contamination extends beyond the property boundary at levels exceeding the selected standard, then the boundary of the site in groundwater must include the contamination exceeding the appropriately selected standard off the property. Figure I-4 illustrates this situation. A remediator must remember that if the plume exists on both residential and nonresidential properties, different numeric standards would apply at those properties in most cases. In cases of organics and many inorganics, this generally means defining the

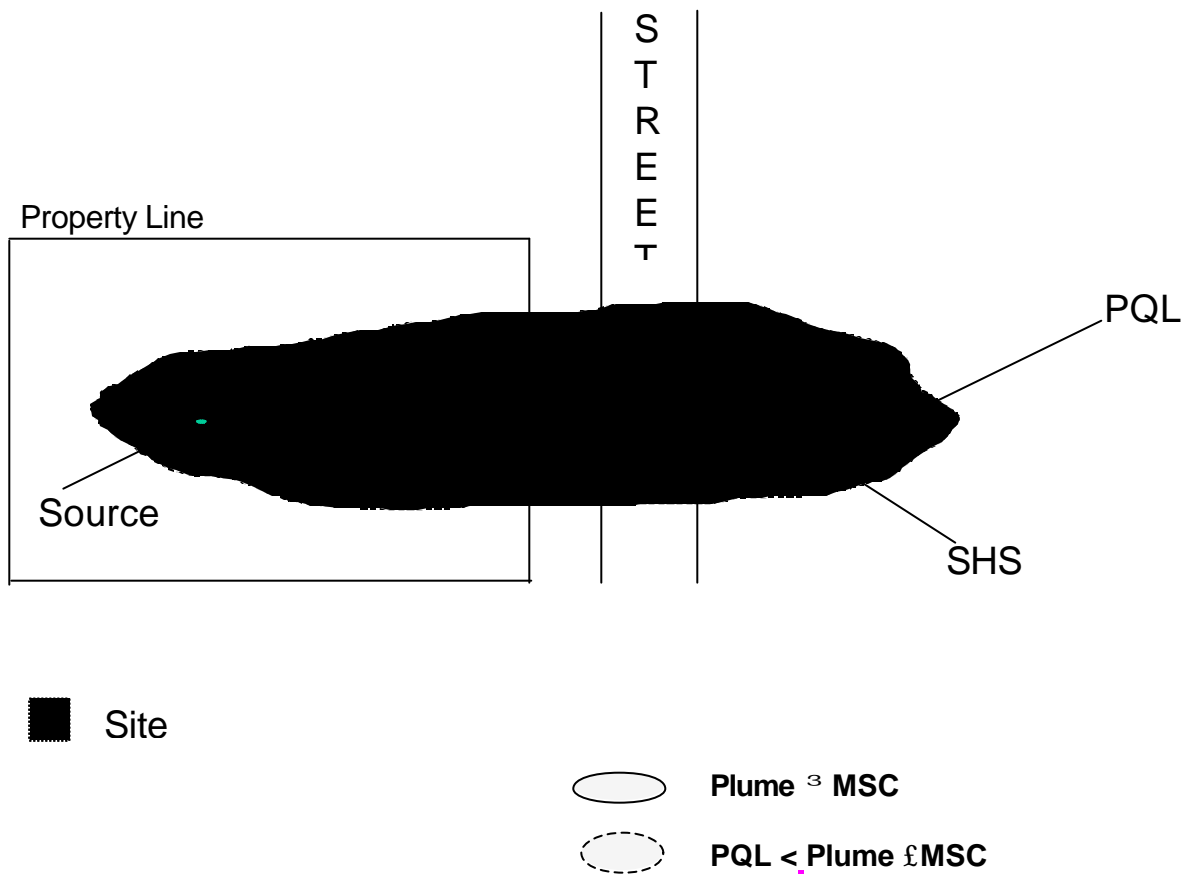
plume to the PQL of the substance(s). Background values may also be determined [Section 250.707(a)(2)].

Once the extent of contamination in groundwater is established utilizing properly constructed monitoring wells [Section 250.204(e)], then two or more rounds of sampling and analysis must be performed [Section 250.204(e)].

**Figure I-3**  
**Groundwater Characterization**  
**No off-property Levels > MSC**



**Figure I-4**  
**Groundwater Contamination**



If no groundwater remediation is needed (e.g., both rounds of sampling are below the selected standard), the remediator may use the site characterization sampling as part of the required attainment demonstration. With justification under Section 250.704(d), the Department may approve a reduction in the number of quarters of sampling needed to demonstrate attainment from eight quarters to four quarters, or less.

#### **8. MANAGEMENT OF SEPARATE PHASE LIQUID (SPL) UNDER ACT 32 (The Storage Tank and Spill Prevention Act of 1989) and Act 2**

The presence of Separate Phase Liquids (SPL) at contaminated sites does affect the responsibility of the remediator and limit the standards under which he may remediate.

When a pure liquid such as gasoline is released to the environment at a sufficiently high rate, accumulations of the liquid as a separate phase may occur within soil or bedrock. Depending on the density of the liquid relative to water, the liquid will migrate under gravity through the unsaturated soil and/or bedrock column and either floats on the water table or sinks through the water column and accumulates on impermeable surfaces lower in the aquifer. -Substances that are less dense than water, like most petroleum products, tend to float on the water table and are called Light Non-Aqueous Phase Liquids or LNAPLs. Substances such as chlorinated solvents which sink through the groundwater column are called Dense Non-Aqueous Phase Liquids or DNAPLs. SPL is encountered primarily where concentrated sources of the regulated substance are released into the environment such as at leaking tank sites.

-The presence of SPL in soil, on or within the aquifer, on surface water, or in sediments, if not removed, is a serious long term management concern at sites undergoing remediation. SPL, if not removed, constitutes a continuing source of contamination, may result in explosive, toxic or irritating vapors, will greatly increase the time and cost for post closure care monitoring, and introduces complex fate and transport issues and uncertainties regarding the future impact and migration of contamination at a site.

#### **a) Interim Remedial Actions under Chapter 245, Subchapter D (relating to releases from storage tanks regulated by Act 32 of 1989) and Interim Response under Chapter 250**

ChapterSection 245. 306(a)(3)(ii) requires that SPL recovery resulting from releases from regulated storage tanks be initiated immediately upon its discovery. Chapter 245.306(b)(1) requires that SPL removal be conducted in a manner that prevents the spread of contamination into uncontaminated areas.

These requirements apply to releases from regulated storage tanks where SPL is present regardless of ~~the Act 2~~ whether the Statewide health or site-specific standard is selected for remediation of the site. SPL should be recovered to the maximum extent practicable with the minimum objective of preventing its migration into uncontaminated parts of the site, and eliminating threats to human health, safety, and the environment.

While Act 2 and Chapter 250 do not specifically mandate SPL recovery within the property, ~~the, the~~ Department encourages removal of SPL within the property to the maximum extent practicable for many reasons as an immediate or interim response under Act 2. In cases relying on natural attenuation, removal of SPL will simplify and shorten requirements for post-remediation care monitoring, fate and transport analyses will be simplified, and therefore, the time to attain a standard and eliminate post remediation care is likely to be greatly shortened at many sites.

#### **b) Maximum Extent Practicable**

Generally, for Act 2 remediations using the Statewide health standard, the Department urges removal of SPL throughout the plume to the maximum extent practicable. For sites being remediated under Chapter 245, the Department will require ~~The DEP~~ urges the removal of SPL throughout the SPL plume to the maximum extent practical. The Department recognizes that the amount of SPL that can be removed will depend on the hydrogeologic framework of the site, the type of product, the remediation technology employed and the effort put into it. Following EPA, the Department has not quantified the term “maximum extent practicable. For sites being remediated under Act 32, remediators are referred to the publication EPA 510-R-96-001, “How to Effectively Recover SPL at Leaking Underground Storage Tank Sites”. This publication provides general criteria for ~~when~~ terminating recovery operations. ~~may be terminated, and~~ The Department will recognize these guidelines in determining compliance with the SPL removal requirements ~~of~~ under Chapter 245.

For sites being remediated under Act 2, the Department considers the extent of SPL removal to be a determination of the responsible party in accordance with the standard the remediator wishes to attain and demonstrate, after immediate threats to human health and ~~safety~~ safety and the environment have been mitigated by SPL removal as a interim remedial response.

**c) RELATIONSHIP OF SEPARATE PHASE LIQUID TO COMPLIANCE WITH ACT 2 STANDARDS**

**i) Background Standard**

The Background Standard is available at sites where SPL is migrating onto the property from an off-site source. Responsible parties will be required to demonstrate through the use of monitoring and fate and transport modeling that their sites are contributing no additional mass of the chemicals migrating off their property than that which are contributed by the off-site source.

**ii) Statewide Health Standard**

Groundwater-

The Department has determined by policy that the Statewide Health standard is not available where SPL, as LNAPL or DNAPL, is present in property line compliance wells at sites being remediated under Act 2 or Act 32. The reason for this policy decision is that the rationale behind development of the saturation and solubility caps under the promulgated Statewide Health MSCs was that no SPL should be present at the point of compliance at attainment. Given that assumption, the DEP feels it is more forthright to have a policy prohibiting the presence of SPL at the POC rather than provide the means for a person to analyze a sample, which DEP already presumes, will fail the attainment test.

Soil-

In addition, within the property, the lesser of the direct contact number to a depth of fifteen feet for chemicals of concern and the soil-to-groundwater pathway number throughout the entire soil column must be attained in soil that is saturated with the SPL. This soil requirement applies to all sites including both those where the SPL has been removed and those where some amount remains.

At sites where applicable soil standards have been attained, and the responsible party has determined that unrecoverable SPL remains, the responsible party will need to establish through monitoring and fate and transport modeling that any remaining SPL will not migrate to compliance points before a release of liability under the Statewide Health Standard will convey Monitoring will be required until SPL has either dissipated or the Department concurs that monitoring and fate and transport modeling has established that any remaining SPL is stationary and diminishing. Since it is so difficult to adequately determine the fate & transport of SPL by analysis, the DEP feels it is even more important for a remediator to remove the SPL to the point the remediator feels is the maximum extent practical

### iii) Site-specific Standard

~~Sites, which cannot~~The site-specific standard is an important option when the remediator has determined that, for technical or economic reasons, attainment of either the Statewide health standard or the background standard ~~because of SPL may use the site-specific standard~~is not feasible because of the presence of SPL. Attainment under the site-specific standards ~~s~~ when SPL is present at the POC is permissible as long as there is no exposure or permissible ~~(based on risk)~~ exposure ~~(based on risk)~~ to the contamination by humans, and there is no violation of the Clean Streams Law or other environmental statutes.

## 9. Notice Requirements and Procedures

### a) Notice of Intent to Remediate

Performance of a site remediation under the provisions of Act 2 requires municipal, public, and Department notification. The intent of notification is to make the municipality, public, and Department aware that a person intends to remediate a site. The formal process for conducting remediation under Act 2 is initiated with submission of the Notice of Intent to Remediate (NIR) to the Department. An NIR and instructions are ~~included in Attachment V.I to this manual~~available at [\[insert web address\]](#). Submission of the NIR will initiate the notification procedures.

The Act provides that any person, firm, corporation, or other entity who proposes, or is required, to respond to the release of a regulated substance at a site, shall comply with public notification requirements in order to qualify for liability protection under Act 2. All remediation activities are conducted to attain compliance with one or more of the three remediation standards or special industrial area criteria.

The NIR shall provide basic information on the applicant and the site. The NIR shall include a brief description of the site, ownership information, a listing of the contaminants involved and media affected, proposed remediation (if applicable), and the proposed future use of the site. ~~The NIR should be submitted to the Department's regional office where the site is located following site characterization when the remediation standard(s) have been selected.~~ The NIR may address all of the affected property or may only address those distinct areas of contamination which the remediator chooses to address, which then become sites. In order to obtain sufficient site information to determine the scope of any site contamination and the remediation standard selection, some site characterization is likely to be appropriate prior to submission of an NIR. Communication with the Department staff in the region where the site is located to discuss procedures, assessment and remediation aspects is

encouraged. The following are the procedures for a Notice of Intent to Remediate:

- Complete the NIR and submit it in duplicate to the Department's Regional Environmental Cleanup Program (ECP) office in the region where the site is located. Submission of site characterization reports with the NIR is encouraged. Provide the name and address of a contact person to which correspondence or communication can be addressed. Include the newspaper name and anticipated date that the NIR submission notice will appear. Provide a copy of the NIR to the owner of the property if the NIR is being prepared and/or submitted by someone other than the property owner. Liability protection is provided to owners of property. If the area of contamination includes more than one property, all owners of the properties affected should be included.
- At the same time the NIR is submitted to the Department, provide notice of submission of the NIR to the municipality and to the public. Municipal notice is accomplished by:
  - Sending a copy of the NIR to the municipality, or municipalities, where the site is located. Submit a copy of the NIR to the municipality with an accompanying cover letter.
  - Publish a summary of the NIR in a newspaper of general circulation in the area of the site. This summary should be a legal notice and developed following the model format in this manual.
- Provide the Department proof of the public and municipal notification of the NIR by submitting a copy of the newspaper proof of publication document (or a photocopy of the published notification showing the publication date) and a copy of both the municipality certified mail receipt card and cover letter. These are required to be submitted with the plan and reports required for remediation.
- If remediation is pursued by use of a site-specific standard or at a special industrial area, a 30-day period following submission of the NIR is required during which the municipality can request to be involved in the development of remediation and reuse plans for the site [Act 2, Section 304(n) and 305(c)]. The applicant shall inform the municipality of the 30-day comment period when submitting the NIR above. Also inform the municipality of the provision of Act 2 for requesting a public involvement plan. If the municipality requests involvement in the remediation, the person seeking remediation must implement a public involvement plan. The newspaper notice shall also provide a statement about the 30-day comment period and the right of a municipality to request involvement in the

development of the remediation and reuse plan for the site. The municipality will have received notice prior to publication. The publication date of the NIR notice in the newspaper starts the 30-day comment period. If the model format previously mentioned is used, it will ensure the 30-day comment period and public involvement plan information has been provided. The DEP will not accept reports until after the 30-day comment period. Comments received from the public or a public involvement plan, along with the remediator's responses to the comments must be submitted with the appropriate final report. A public involvement plan is described below in Section I.B.7.b.

- If an NIR is submitted for a combination of standards, the municipal and public notification requirements of each standard used apply.
- Persons submitting an NIR for background, Statewide health, or a combination of these standards, who later decide to pursue cleanup to a site-specific standard or as a special industrial area, must renotice the cleanup according to the appropriate notice provisions.
- The Department Regional ECP office may acknowledge receipt of the NIR and will publish acknowledgment of receipt of the NIR in the *Pennsylvania Bulletin*.

~~The Department may comment on an NIR if the form is incomplete. An incomplete NIR may not have sufficient information to initiate the Act 2 process. The Department does have enforcement authority to require assessment and remediation on sites for which a person does not voluntarily initiate a cleanup under Act 2. The Department may comment on the content of the NIR if significant concerns are raised by the review of information contained in the NIR. An NIR is inadequate if it does not indicate that it will remediate or effectively address all media known or suspected to be contaminated in a distinct area of contamination. An inadequate NIR does not serve to initiate the Act 2 process for permit waiver purposes.~~

Public notification of submission of the NIR to the Department, the municipality, the public via the newspaper notice, and publication in the *Pennsylvania Bulletin* is not required for background or Statewide health standard remediations if the final report demonstrating attainment of the standard is submitted within 90 days of the release.

**b) Notice of proposal for non-use aquifer determination**

Anytime a person is proposing to the Department that a site be eligible for a non-use aquifer determination, notice must be given to the associated municipalities and local water suppliers servicing that area. The notice is

similar to that of an NIR in that it is a letter format and identifies “who” and “where” the proposal is associated with. In addition a copy of the actual proposal, as being sent to the Department for approval, should be attached to these notice letters. Under general conditions, the municipalities and community water suppliers will have 45 days to review this material and if desired provide the Department with any information relative to the non-use aquifer determination requirements specified in Section 250.303(c). These conditions will be those which the Department will bases it’s approval decision on. In the specific case where a municipality has in place an ordinance meeting the performance criteria of TGM Section II C.(9) (relating to institutional controls), the 45 day review period is waived.

### **b)c) Public Involvement Plan**

Persons selecting to use the site-specific standard or the provision of special industrial areas, must provide a NIR to the Department, municipality and to the public (through notice in a newspaper serving the general area of the site). A 30-day comment period is to be included as part of the initial notice to solicit comments on whether the municipality wishes to be involved in the development of the cleanup and reuse plans for the site. If the municipality requests involvement during the comment period, the person performing the remediation of the property shall prepare a public involvement plan which meets the provisions of Section 304(o) of Act 2. All persons doing cleanups are encouraged to develop programs with a proactive approach to involving communities in their plans. This plan shall propose measures to involve the public in the development and review of the remedial investigation report, risk assessment report, cleanup plan, and final report for site-specific standard remediation; and the baseline remedial investigation for special industrial areas. Public involvement measures may include:

- Development of a proactive community information and consultation program that includes door step notice of relevant activities.
- Public meetings located within the county where the site is located.
- Roundtable discussions.
- Public access ~~at convenient locations~~ for document review and discussion, and designation of a single contact person to address questions from the community. Such access should be at locations adjacent to primary highways for the convenience of the public wishing to review the material.
- Formation of a community based group to solicit suggestions and comments.
- Where needed, retention of a qualified independent third party to facilitate meetings and discussions and to perform mediation services.

The person can use these or other appropriate methods to ensure the community has ample notice of intended remedial/reuse actions and the appropriate public concerns are properly addressed. The reports and plans submitted to the Department must include the comments received from the public and the municipality, as well as responses to those comments. The Department will consider the comments as part of review of the plans and reports .

## **e)d) Remediation Report Notification Requirements**

### **i) Background and Statewide Health Standards**

Under the background and Statewide health standards, when a final report is submitted, the remediator should provide two copies of the final report and three separately bound copies of the final report summary portion of the report to the Department's Environmental Cleanup Program regional office where the site is located. A complete submission consists of the report, a Transmittal Sheet (see Attachment V.J), the checklist (see Attachment V.M) and the appropriate fee. The name and address of a contact person to which correspondence or communication can be addressed shall be provided. The Department will acknowledge receipt of the final report. When the final report is submitted to the Department, the remediator shall provide municipal and public notification that a final report has been submitted. This notification is accomplished by:

- Sending a notice to the municipality that a final report has been submitted to the Department. A model format is provided in Attachment V.J to this manual.
- Providing a notice of submission of the final report to a newspaper of general circulation in the area of the site. This notice shall be a legal notice and developed following the model format in Attachment V.J or other appropriate format provided by the newspaper which will provide the required information.
- Providing the Department proof of the public and municipal notification by submitting a copy of the newspaper proof of publication document (or a photocopy of the published notification showing the publication date), and proof of municipal notification of submission of the final report by submitting a copy of the certified mail receipt card and cover letter of the municipal notice to the Department.

The Department has a 60-day review period for the final report and shall notify the remediator of deficiencies. It is the intent of the Department to notify the remediator of both approvals and deficiencies of the final report. Should

the Department not respond within 60 days, the final report shall be deemed approved.

The Department Regional ECP office will publish acknowledgment of receipt of the final report in the *Pennsylvania Bulletin*.

Public notification of submission of the final report to the Department, the municipality, the public via the newspaper notice, and publication in the *Pennsylvania Bulletin* is not required for background or Statewide health standard remediations if the final report demonstrating attainment of the standard is submitted within 90 days of the release. ~~This notice exception applies only to releases occurring after July 18, 1995.~~

## ii) Site-Specific Standard

Under the site-specific standard, when a remedial investigation report, risk assessment report, cleanup plan, or a final report is submitted, the remediator should provide two copies of the document ~~and three separately bound copies of the final report summary~~ to the Department's Environmental Cleanup Program regional office where the site is located. A complete submission consists of the document, a Transmittal Sheet (see Attachment V.J), ~~the checklist (see Attachment V.M)~~ and the appropriate fee(s). The name and address of a contact person to which correspondence or communication can be addressed shall be provided. The Department will acknowledge receipt of the submission. When the plan and/or reports are submitted to the Department, the remediator shall provide municipal and public notification of the submission. This notification is accomplished by:

- Sending a notice by certified mail to the municipality that a specific plan and/or report has been submitted to the Department. A model format is provided in Attachment V.J to this manual.
- Providing a notice summarizing the findings and recommendations of the plan or report, along with the comments and responses, to a newspaper of general circulation in the area of the site. This notice shall be a legal notice or other appropriate format provided by the newspaper which will provide the required information.
- Provide the Department with proof of the public and municipal notification by submitting a copy of the newspaper proof of publication (or a photocopy of the published notification showing the publication date), and proof of municipal notification of submission of the plan and/or report by submitting a copy of the certified mail receipt card and cover letter of the municipal notice to the Department.

Remedial investigation reports, cleanup plans, and risk assessment reports may be submitted together or separately.

The Department has a 90-day review period for the plan and/or report and shall notify the remediator of deficiencies. It is the intent of the Department to notify the remediator of both approvals and deficiencies of the final report. Should the Department not respond within 90 days, the plan and/or report shall be deemed approved.

### iii) **Special Industrial Areas**

Municipal and public notification is required for submission of an NIR to the Department, but is not required for submission of a baseline environmental report.

#### **d)e) Fees**

The Department is required to collect fees to cover some of the costs of the Land Recycling Program. Section 703 of Act 2 specifies the appropriate fees involved for submission of plans and reports. Section 250.7 of the regulations provides further specification on fees.

A fee of \$250 is required for the review of final reports for the background and Statewide health standards; and \$250 for each remedial investigation, risk assessment report, and cleanup plan for the site-specific standard. A fee of \$500 is required at the time of submission of the final report for site-specific standard remediations. No fee is required for submission of work plan or baseline environmental report required for special industrial area remediation.

Resubmission of any of the above required plans and reports will require payment of the above fee upon resubmission. The Department will disapprove a plan or report that does not have the appropriate fee.

Checks are to be made payable to the **Commonwealth of Pennsylvania**.

A Transmittal Sheet for Plan/Report Submission (2500-FM-LRWM0023) is available for submission of the appropriate fee with the submittal and should be used with all plan/report submissions to the Department. The form may be copied from Section V.J of this manual or a copy may be requested from the Department's Regional office where the site is located or from the Department's Central office. See Section V.K for the regional contact or central office address.

## **C. Resources and Assistance**

### **1. Program Contacts**

Information on contacts within the Department of Environmental Protection and the Department of Community and Economic Development are listed in Attachment V.K. This attachment provides a good source of general information and **is** a good starting point for finding specific information on any DEP program. In addition, Section V.K provides a listing of contacts for the various enterprise zones that have been established across the Commonwealth by the Department of Community and Economic Development. Section V.K. also identifies sources for obtaining technical publications cited in this manual.

Also, various attachments in Section V of this manual also provide information on contacts that are particularly applicable to the technical area being discussed.

### **2. Financial Assistance**

Act 2 established an account known as the Industrial Sites Cleanup Fund. The purpose of this fund is to provide financial assistance to persons assessing and remediating property used for industrial activity, and who did not cause or contribute to the contamination. Act 4, titled the Industrial Sites Environmental Assessment Act, was created concurrently with Act 2 and provides money for environmental assessments of industrial sites.

Act 2 provides financial assistance to municipalities, authorities, development agencies, and eligible members of the public for assessment and remediation of contaminated sites. Applicants may be eligible for a grant and/or loan from the fund up to 75% of the site characterization and remediation costs, subject to additional eligibility requirements established by Act 2 and the Department of Community and Economic Development. Act 4 provides grants to municipalities, local authorities, and economic development agencies for sites located in distressed communities, and specified classes of cities for environmental assessment of industrial sites. The maximum amount of any assessment project under Act 4 will be up to 75% of the total cost of assessment, or \$200,000, in a single fiscal year, whichever is less. To qualify, a party must not have caused or contributed to the contamination on the property and be performing a voluntary cleanup. For the purpose of administrating these funds, the requirements of the two acts were combined by the Department of Community and Economic Development (DCED) into the Industrial Sites Reuse Program (ISRP) and this program is administrated by DCED. Grant and loan eligibility requirements are specified in Chapter 7 of Act 2, in Act 4, and eligibility and application procedures are also specified in the Industrial Sites Reuse Program guidelines in Section V.G of this manual.

