



FREQUENTLY ASKED QUESTIONS (FAQ) & ANSWERS

Use of site-specific alternate concentration limits at solid waste landfills in areas with public water supplies

Division of Land Protection and Revitalization
629 East Main Street
Richmond, Virginia 23219

V.1 – December 2014

Introduction

Once a landfill owner/operator has recognized an exceedance of natural site background in the facility's point of compliance, groundwater monitoring network, the facility must enter the Assessment or Phase II sampling programs. After entering the applicable program, the Virginia Solid Waste Management Regulations (VSWMR) require owner/operators establish Groundwater Protection Standards (GPS) which may be risk-based alternate concentration limits (ACLs) if no Federal Safe Drinking Water Act Maximum Contaminant Level (MCL) has been promulgated or if site-specific (background-based) concentrations are either not available or have not been established. Plume delineation and remediation of impacted groundwater will be required under 9 VAC 20-81-260 when a GPS exceedance is recognized and the exceedance cannot be tied to a source other than the landfill or be shown as caused by an error in sampling, laboratory analysis, or statistical evaluation.

Consistent with EPA's comments in Appendix F (56 FR 51086) to the Preamble to the Subtitle D rule (40 CFR 258), risk-based ACLs for carcinogens are calculated using a lifetime cancer risk level due to lifetime exposure of 1×10^{-6} . However EPA additionally noted that a variety of site specific factors may allow deviation from this standard risk level as long as the risks to the individual not exceed 1×10^{-4} and the ACL is established in a manner consistent with EPA guidelines for assessing health risks.

In the more than 20 years since implementation of the Subtitle D Rule, increasing areas of the Commonwealth are now provided with municipal water supplies and/or local prohibitions against groundwater use. These factors lessen or eliminate the potential exposure to landfill contaminated groundwater. With this in mind, it may be appropriate to set groundwater ACL's at the less stringent 1×10^{-5} risk level at certain sites.

This Frequently Asked Questions (FAQ) document is provided as a reference for owner/operators who may have questions on the process of demonstrating potential eligibility for use of 1×10^{-5} based ACLs as groundwater protection standards on site and the issues that need to be addressed. As required under 9 VAC 20-81-250.A.6.b.(4), Director approval is required for use of any ACL as a groundwater protection standard and this includes 1×10^{-5} based ACLs.

If you need further assistance with corrective action related groundwater issues, please contact the Solid Waste Groundwater Program Coordinator, Mr. Geoff Christe at (804) 698-4283 or Geoff.Christe@deq.virginia.gov or your Regional Office groundwater contact. If you have a site-specific questions on ACL applicability from a risk standpoint, contact Ms. Sonal Iyer at (804) 698-4259 or Sonal.Iyer@deq.virginia.gov.

ACL performance standards

1] What is the basis for ACL use in groundwater monitoring?

ACL use was originally defined under 40 CFR 264.94(b) for RCRA remediation actions.

ACL values are risk-based numbers created after factoring in the following constituent characteristics (Oral Reference Dose; Oral Slope Factor; Inhalation Reference Concentration; Inhalation Unit Risk; and Carcinogenic vs. non-Carcinogenic nature) and reflects EPA's hierarchy for toxicity data resources:

- (1) Integrated Risk Information System*
- (2) Provisional Peer-Reviewed Toxicity Values,*
- (3) U.S. Agency for Toxic Substances & Disease Registry Minimal Risk levels,*
- (4) The California Environmental Protection Agency; Office of Environmental Health Hazard Assessment's toxicity values,*
- (5) PPRTV-appendix, and*
- (6) Health Effects Assessment Summary Tables.*

2] What performance 'benchmarks' must ACLs meet?

An ACL concentration value must meet the site and health-based criteria listed under 9 VAC 20-81-250.A.6.b.(4).(b) which includes potential adverse effects on groundwater, surface water, site use, and potential human exposure.

It is important to recognize that when calculating ACLs using the REAMS program or a site-specific model, exposure must take into account sensitive subgroups (i.e. children). All groundwater in the Commonwealth is to be considered a potential source of drinking water until such time as resource delineation or resource use restriction is in place.

Most importantly, ACLs are calculated based on potential future use (future exposure), not simply the current conditions on site or surrounding properties.

3] What information does a facility-calculated ACL request need to include?

From an administrative standpoint, all the information/topics addressed under 9 VAC 20-81-250.A.6.b.(4).(b). (i – iv).

4] If 1 x 10⁻⁵ based ACLs are approved for use at my facility, when would the new values become effective in the groundwater monitoring program?

9 VAC 20-81-250.A.6.e requires the owner/operator apply the most recently issued ACL values to each sampling event completed after issuance of the ACLs.

If there is a case where groundwater has been sampled prior to the ACL revision being released, and the analytical results are released after the ACL revision has been issued, the results of the sampling event should be compared to the ACL values in place at the time the sampling event was undertaken.

In those cases where the new 1×10^{-5} ACL values would not trigger a GPS exceedance, even though the previous values would have, the exceedance shall be reported as normally required by the VSWMR and the Department will issue a response that further action addressing the exceedance shall not be required if the new ACL value is not exceeded in a future sampling event.

Screening Factors for Site-Specific ACL use

DEQ currently calculates risk-based ACLs for carcinogens using a lifetime cancer risk level based on lifetime exposure of 1×10^{-6} hazard index of 1 for non-carcinogens and the presumption that groundwater on site and adjoining properties can be used as a potential drinking water supply. Any landfill owner/operator who would wish to apply a less stringent ACL must demonstrate to the Department's satisfaction that site specific factors would allow deviation from this standard risk/hazard level without presenting potential risk to human health and the environment, and demonstrate the site-specific ACL is established in a manner consistent with EPA guidelines for assessing health risks.

5] What site factors would most likely lead to an allowance to utilize a 1×10^{-5} based ACL as GPS?

- *There are no current users of groundwater on site or on surrounding properties.*
- *An alternate water supply is available to the site and all surrounding properties.*
- *There is an enforceable local ordinance prohibiting contaminated groundwater use.*
- *The groundwater plume is not currently discharging to, or reasonably expected to discharge to surface waters.*
- *There are no permanent building/structures located above, or within 100 feet of, any impacted groundwater with the potential for vapor intrusion.*
- *Preferably, any impacted groundwater (i.e. with detected constituents) remains confined within the Permitted Facility Boundary and the plume is stable (not expanding) based on trends established over at least ten sampling events.*
- *The presence of multiple carcinogenic contaminants would not result in a cumulative risk exceeding 1×10^{-4} .*
- *The use of 1×10^{-5} does not result in a hazard quotient (HQ) greater than one.*

6] Why is it important that the plume remain on site and be shown to be stable?

If a landfill caused groundwater plume remains on site, the owner/operator has full control over potential exposure to the contaminated media. Once a plume has left the site, this control is lost. For any landfill proposing use of site-specific ACLs, the owner/operator must have reasonable certainty that the plume, which may currently reside on site at the time of the request, is stable and not expanding such that off site plume migration may take place in the future. At least 10 sampling events are necessary to establish statistically significant trends.

If the plume has migrated off-site, control of off-site groundwater use must be established and documented by the appropriate locality and the off-site landowner must be notified of the impact. If off-site risk is exceeding the current standard risk/hazard based performance criteria (i.e. cumulative risk below 1×10^{-4} or less and hazard quotient of 1 or less) site-specific ACL may not be deemed appropriate.

7] Why is it important to show there are no current groundwater users in the site area and that an alternate water supply is available?

The owner/operator must demonstrate that the impacted groundwater is not currently being used by any potential risk receptors. In addition, if there is a lack of alternate water supply in the area, even though the contaminated groundwater may not be currently used as a resource, it may have

to be used in that manner in the future. ACL values must be calculated based on future uses, not simply current use.

8] Why is it important to determine if there is a local enforceable prohibition against groundwater use?

Use of site-specific ACL values as GPS will allow for groundwater with elevated concentrations of landfill constituents to go unremediated under the VSWMR. As a result it is important to have an enforceable mechanism in place which would prevent the cross media transfer of groundwater contaminants to the surface (e.g., irrigation, landscaping, agricultural use, non-potable use) on site or on adjacent properties in those cases where the plume has migrated off-site.

9] Why does the presence of onsite and nearby surface water matter?

Current Water Law in the Commonwealth prohibits discharge to State waters without a discharge Permit. EPA Corrective Action guidance also notes that unacceptable cross-media transfer of contaminants should be avoided. Therefore, the impact of site-specific ACLs on onsite and nearby surface waters must be evaluated.

10] Why are permanent buildings/structures included in the demonstration?

Evaluation of "other adverse effects" including physical structures, is already required under 9 VAC 20-81-250.A.6.b.(4).(b).(iv) of the VSWMR.

With respect to use of 1×10^{-5} ACL values, the owner/operator must review whether these structures lie atop the groundwater plume and whether or not the structures were built with vapor intrusion prevention systems. If no such intrusion protection(s) is in place, the owner/operator must evaluate the risk of vapor intrusion exposure within these buildings based on the groundwater concentration levels that would be allowable under the site-specific ACLs. Such evaluation may include the installation and sampling of soil vapor/gas well near any permanent on site buildings. Similarly, an evaluation for vapor intrusion risk should occur for any off-site structures within 100 feet of the groundwater plume.

11] How does the owner/operator demonstrate the factors discussed in item 5] above have been evaluated?

- *Groundwater sampling information obtained during the Nature and Extent, Assessment of Corrective Measures, or Corrective Action program, whatever is most recent to the facility's monitoring status.*
- *Groundwater user information obtained from local government permitting or billing sources.*
- *Municipal utilities information available from the local jurisdiction.*
- *Information from local zoning or planning departments who govern landuse zoning or building permit issuance.*
- *Groundwater and/or surface water sampling information obtained during the Nature and Extent, Assessment of Corrective Measures, or Corrective Action program, whatever is most recent to the facility's monitoring status.*
- *Site inspection and/or site plan review.*
- *Data base/GIS searches.*

Documentation must be provided in the form of formal correspondence from the appropriate local entity to DEQ, interpreting and attesting that their local ordinances/regulations prohibits or restricts groundwater use in the areas affected by the contaminated groundwater.

12] Does the owner/operator have to calculate the 1×10^{-5} ACL values or will DEQ provide REAMS-based values at that risk level?

DEQ will provide the Default ACL values at individual risk of 1×10^{-6} as part of the annual ACL update, and will also include 1×10^{-5} values for use after site-specific Director approval.

13] If approved for use, can alternate ACL approval ever be withdrawn in the future?

If site conditions or land-use on surrounding properties changes (i.e., residential development) after the initial approval has been granted, use of the alternate ACLs may no longer be appropriate or be able to be demonstrated as protective of human health and the environment. Additionally, any change in the number of constituents detected, concentration of detected constituents, detection limits for all constituents, toxicity values for any of the detected constituent, exposure factors, and ecological screening values could require that a revised site-specific ACL is calculated to demonstrate that the cumulative risk and hazard quotient standards are met. Please note the VSWMR (9 VAC 20-81-250.A.6.b.(5) already gives the Director the authority to include a schedule for periodic review of the approved ACLs.

Application of site-specific ACLs

14] At what point in my monitoring program can I request use of 1×10^{-5} based ACLs?

GPS must be established whenever a landfill owner/operator finds one or more groundwater constituent present at a level that is statistically above the natural background level at the groundwater point of compliance as this indicates a potential landfill-derived impact to the uppermost aquifer system.

A landfill owner/operator who believes that a facility may be eligible for 1×10^{-5} based ACLs may in some cases, propose these alternate limits upon first needing to establish GPS due to detection of one or more Table 3.1 Column B constituents – see question 14 below; while in Phase II/Assessment monitoring, or more likely during any phase of the Corrective Action process (i.e. as part of CAP submittal or during the remedy implementation phase).

15] Doesn't the Department have a policy regarding possible implementation of 1×10^{-5} based ACL before Corrective Action is initiated?

Yes. These FAQs provide expanded guidance for use of the 1×10^{-5} values to the group of sites that meets the criteria in FAQ 5.

16] Does that mean site-specific ACLs could be applicable at some point in the corrective action process?

Yes. Once plume extent has been fully identified, as part of submittal of the proposed Corrective Action Plan (CAP), the owner/operator may request to use ACLs for GPS based on 1×10^{-5} risk value.

Under the VSWMR, the groundwater remedy has to achieve GPS in all points of the plume beyond the edge of the waste mass. The remedy also has to demonstrate protection of HH&E, control the

source of the release (to prevent or minimize future releases), and (if applicable) properly address the handling of investigatively-derived waste.

It may be possible to demonstrate, and thus justify the use of 1×10^{-5} clean-up standards, if site-conditions indicate such standards will still be protective of human health and the environment. However, before such a decision can be made, the full extent of the groundwater plume for all GPS exceeding constituents must be known as those plume limits have direct bearing on some of the technical items noted above.

17] I have already implemented my groundwater remedy, could I still request site-specific ACL use at this point in time?

Yes. Nothing prohibits an owner/operator from requesting site-specific ACL use after they have already implemented their CAP. If such ACLs are approved, the owner/operator may have to modify the GPS constituents of concern list included in the approved CAP or, in rare instances, may be able to terminate CA.

18] How would use of site-specific ACLs affect my groundwater corrective action remedy performance?

Groundwater data collected since remedy implementation is presented in documents titled Corrective Action Site Evaluation (CASE) reports (260.G.1). These documents, which the Department has developed Submission Instructions for (available via links on the DEQ website) address the criteria listed under 260.D.1.b.(8), 260.D.1.c and (with respect to PPR-based remedies) 260.C.2f, as well as any site-specific requirements included as conditions in Module XIV of the facility's solid waste permit.

The purpose of the CASE is to demonstrate progress (or lack thereof) toward meeting all remedial endpoints (GPS) and goals of 260.C.3.c.(1), as well as to discuss whether any changes in site conditions have taken place that have altered the risk factors assessed during original remedy selection, as well as the adequacy of the monitoring well network used to monitor the affects of the remedy on the aquifer system.

Because the vast majority of landfill sites trigger corrective as a result of an exceedance over a Federal MCL, use of the site-specific ACLs will be unlikely to terminate or dramatically shorten the life of the remedial program. More likely, the site-specific ACLs, if approved, would shorten the GPS exceeding list of groundwater constituents of concern that would be required to meet cleanup endpoints. This could potentially lessen overall groundwater sampling costs and/or the number of corrective action wells that have been installed in the monitoring network.

Administrative Process

19] What type of site-specific ACL request would be needed?

Consistent with 9 VAC 20-81-250.A.6.b.(4).(a), the owner/operator must submit a request to use ACLs as GPS. As noted above, this request would most commonly come in at the same time the proposed CAP is submitted, or during or following remedy implementation.

At a minimum, the request should contain the technical items discussed in this FAQ document.

20] Is there a fee or public notification involved in the review and approval process?

No.

21] What decisions could the Director make regarding the request?

Consistent with 9 VAC 20-81-250.A.6.b.(5); the Director may:

- *Approve the requested ACLs*
- *Issue modified ACLs which differ from those requested*
- *Require additional or modified monitoring requirements or control measures as part of the ACL approval*
- *Include a schedule for periodic review of the approved ACLs (as noted above as a means to ensure the values approved remain protective of human health and the environment if site conditions change from those in place at the time of the original request)*

DRAFT

COMMONWEALTH OF VIRGINIA
Department of Environmental Quality

Subject: Division of Land Protection and Revitalization Guidance Memo
LPR-SW-SI-xx

**SUBMISSION INSTRUCTION FOR APPLYING FOR SITE-SPECIFIC ALTERNATE
CONCENTRATION LIMITS AT SOLID WASTE LANDFILLS IN AREAS WITH PUBLIC
WATER SUPPLIES**

To: Regional Land Protection and Revitalization Program Managers

From: Jeffery A. Steers
Director, Division of Land Protection and Revitalization

Date: December xx, 2014

Copies: Regional Directors

Summary

This guidance provides owner/operators of regulated solid waste management facilities with an overview of the information applicable to requests to utilize Alternate Concentration Limits (ACLs) with an alternative risk level as Groundwater Protection Standards at solid waste facilities in accordance with 9 VAC 20-81-250.A.6 of the Virginia Solid Waste Management Regulations (VSWMR).

Electronic Copy

An electronic copy of this guidance applicable to regulated solid waste sites is available on DEQ's website at <http://www.deq.virginia.gov/waste/guidance.html>.

Contact Information

Please contact the solid waste groundwater program coordinator, Mr. Geoff Christe at (804) 698-4283 or via email geoff.christe@deq.virginia.gov with any questions regarding the development or application of this guidance.

Disclaimer

This document is provided as guidance and, as such, sets forth standard operating procedures for the agency. However, it does not mandate any particular method nor does it prohibit any alternative method for the analysis of data, unless specifically required by the VSWMR. If alternative proposals are made, such proposals should be reviewed and accepted or denied based on their technical adequacy and compliance with appropriate laws and regulations.



Submission Instruction

Use of Alternate
Concentration Limits
with a Site-specific
Risk Level at Solid
Waste Landfills in
Areas with Public
Water Supplies

Division of Land
Protection &
Revitalization
629 East Main Street,
5th Floor
Richmond, VA 23219

APPLICABILITY

This Submission Instruction (SI) is applicable to solid waste management facilities that are located in areas with public water supplies and are conducting groundwater monitoring under the requirements of the Virginia Solid Waste Management Regulations (VSWMR), originally promulgated by the Virginia Waste Management Board December 21st, 1988; as amended. These SI have been designed in a manner consistent with the regulatory language in Amendment 8 of the VSWMR, effective March 16th, 2011.

DEVELOPMENT

These SI have been developed to assist an owner/operator in the preparation of a request to utilize Alternate Concentration Limits (ACLs) based on an alternative risk level as groundwater protection standards. These SI provide an outline of the suggested minimum technical content that should be included within the submittal. It is the responsibility of the Permittee to include all the data or information necessary to sufficiently support each of the conclusions presented in the submission.

These SI have not been developed as Department rule or policy. They have not gone through public comment. They do not supersede any regulatory requirements found in the VSWMR. Their use is not mandated under the current VSWMR. The Department recognizes that these SI may need to be altered to fit facility-specific geologic or hydrologic conditions that cannot be adequately accounted for in the SI. It is expected that the final content of any ACL request submitted pursuant to these SI will likely include one or more site-specific considerations.

All SI are considered 'living' documents which will be updated or revised as needed. Comments or suggestions for future SI revisions can be submitted at any time to the attention of the Solid Waste *Groundwater Program Coordinator* at the address listed on the cover of this SI.

DISCLAIMER

In the more than 20 years since implementation of the Subtitle D Rule governing groundwater monitoring at solid waste sites, increasing areas of the Commonwealth are now provided with municipal water supplies and/or local prohibitions against groundwater use. These factors may lessen or eliminate the potential exposure to landfill contaminated groundwater. With this in mind, it may be appropriate to set groundwater ACL's at the less stringent 1×10^{-5} risk level at certain sites.

With respect to ACLs based on an alternative risk level, if site conditions or land-use on surrounding properties changes (i.e., residential development) after the initial approval has been granted, use of the alternate ACLs may no longer be appropriate or be able to be demonstrated as protective of human health and the environment. Additionally, any change in the conditions used to demonstrate that the alternate risk level is appropriate could require a re-evaluation of the approved risk level. Please note the VSWMR (9 VAC 20-81-250.A.6.b.(5) already gives the Director the authority to include a schedule for periodic review of approved ACLs.

BACKGROUND

Once a landfill owner/operator has recognized an exceedance of natural site background in the facility's groundwater point of compliance monitoring network, the facility must enter the Assessment or Phase II sampling programs. After entering the applicable program, the Virginia Solid Waste Management Regulations (VSWMR) require owner/operators establish Groundwater Protection Standards (GPS) which may be risk-based alternate concentration limits (ACLs) if no Federal Safe Drinking Water Act Maximum Contaminant Level (MCL) has been promulgated or if site-specific (background-based) concentrations are either not available or have not been established. Plume delineation and remediation of impacted groundwater will be required under 9 VAC 20-81-260 when a GPS exceedance is recognized and the exceedance cannot be tied to a source other than the landfill or be shown as caused by an error in sampling, laboratory analysis, or statistical evaluation.

ACL use as groundwater protection standards was originally defined under 40 CFR 264.94(b) for RCRA remediation actions and was subsequently included in 40 CFR 258. ACL values are risk-based numbers created after factoring in the following characteristics (Oral Reference Dose; Oral Slope Factor; Inhalation Reference Concentration; Inhalation Unit Risk; and Carcinogenic vs. non-Carcinogenic nature) and based on EPA's hierarchy for toxicity data resources:

- (1) Integrated Risk Information System
- (2) Provisional Peer-Reviewed Toxicity Values,
- (3) U.S. Agency for Toxic Substances & Disease Registry Minimal Risk levels,
- (4) The California Environmental Protection Agency; Office of Environmental Health Hazard Assessment's toxicity values,
- (5) PPRTV-appendix, and
- (6) Health Effects Assessment Summary Tables.

Under the VSWMR, ACL concentration values must meet the site and health-based criteria listed under 9 VAC 20-81-250.A.6.b.(4).(b) which includes potential adverse effects on groundwater, surface water, site use, and potential human exposure. ACLs are calculated by the Department based on potential future use (future exposure) of groundwater, not simply the current use on site or surrounding properties. ACLs as calculated by the Department take into account sensitive subgroups (i.e. children) and all groundwater in the Commonwealth is to be considered a potential source of drinking water until such time as resource delineation or resource use restriction is in place.

The Department has determined that under certain conditions(described herein), 1×10^{-5} can be an alternate acceptable risk exposure level for constituents in groundwater. This SI specifies the information to be provided by a Permittee when requesting this alternative risk level.

PURPOSE

GPS must be established whenever a landfill owner/operator finds one or more groundwater constituent present at a level that is statistically above the natural background level at the groundwater point of compliance as this indicates a potential landfill-derived impact to the uppermost aquifer system.

A landfill owner/operator who believes that a facility may be eligible for 1×10^{-5} based ACLs may propose these alternate limits upon first needing to establish GPS due to detection of one or more Table 3.1 Column B constituents; while in Phase II/Assessment monitoring, or more likely during any phase of the Corrective Action process (i.e. as part of CAP submittal or during the remedy implementation phase).

TECHNICAL CONSIDERATIONS FOR SITE SPECIFIC ACL USE

The following information deals with the most important discussion topics included in any request to utilize an ACL at the 10^{-5} risk level as a groundwater protection standard.

Regulatory Content Requirements

Any request to utilize a site specific ACL must contain all the information and topics found under 9 VAC 20-81-250.A.6.b.(4).(b).(i - iv).

Technical Content Requirements

DEQ currently calculates risk-based ACLs for carcinogens using:

- 1] a cancer risk level based on lifetime exposure of 1×10^{-6} ,
- 2] a hazard index of 1 for non-carcinogens and
- 3] the presumption that groundwater on site and adjoining properties can be used as a potential drinking water supply.

Any landfill owner/operator who would wish to apply an ACL at the 10^{-5} risk level must demonstrate to the Department's satisfaction that site-specific factors would allow deviation from this standard risk/hazard level without presenting potential risk to human health and the environment. Site criteria that will be reviewed/described in the request include:

- Proof there are no current users of groundwater on site or on surrounding properties and an alternate water supply is available to the site and all surrounding properties.
- Proof there is an enforceable local ordinance prohibiting groundwater use.
- Proof that there is no potential impact from vapor intrusion to any permanent building/structure onsite or in the vicinity of the landfill where that building/structure is located above groundwater which has been impacted with landfill constituents at levels which are above site background levels. Such demonstration will likely entail field work specific to VI risk assessments.
- Demonstration that if there are multiple carcinogenic contaminants identified within monitoring wells on site, potential exposure to these constituents would not result in a cumulative risk exceeding a 1×10^{-4} threshold.

- Demonstration that use of the proposed ACL would not result in a hazard quotient (HQ) greater than one.
- At sites which currently exceed groundwater protection standards, a determination of whether or not the plume is stable (e.g., not expanding in size) based on trends established over at least the last ten sampling events.
- If applicable, evidence that the groundwater plume is not currently discharging to, or reasonably expected to discharge to, surface waters.
- Demonstration that use of the proposed ACL would not result in unacceptable impacts to wildlife or to crops and vegetation.

Information sources for some of the information listed above may include, but are not limited to:

- Any groundwater and surface water sampling information obtained during the Detection Monitoring, Assessment/Phase II Monitoring, Nature and Extent, Assessment of Corrective Measures, or Corrective Action program; whatever is most recent to the facility's monitoring status.
- Recent soil gas or sub-slab gas survey data.
- Groundwater user information obtained from local government permitting or billing sources.
- Municipal utilities use or availability information from the local jurisdiction.
- Information from local zoning or planning departments who govern land use zoning or building permit issuance. Documentation must be provided in the form of formal correspondence from the appropriate local entity to DEQ, interpreting and attesting that their local ordinances/regulations prohibit or restrict groundwater use in the landfill area.
- Site inspection and/or site plan review.
- Federal, State, or local data base/GIS searches.

TECHNICAL REVIEW

Consistent with 9 VAC 20-81-250.A.6.b.(5); the Director may:

- Require additional or modified monitoring requirements or control measures as part of the site-specific ACL approval; and
- Include a schedule for periodic review of the approved ACLs (as noted above as a means to ensure the values approved remain protective of human health and the environment if site conditions change from those in place at the time of the original request).

IMPLEMENTATION SCHEDULE

The Department will calculate ACLs for both the default 10^{-6} and the new 10^{-5} risk levels. Both values will be published together at the beginning of each calendar year. 9 VAC 20-81-250.A.6.e requires the owner/operator apply the most recently issued ACLs to each groundwater sampling event completed after issuance of the revised ACLs. Groundwater samples are to be compared against the ACLs that are in effect at the time of the sampling.

Use of the 10^{-5} risk level for ACL-based GPS must be specifically approved by the Department following a submittal that meets the requirements of this SI. Such a request may be submitted at any time after the release of this submission instruction, regardless of the groundwater monitoring program at the facility (detection, Phase II/assessment, or corrective action).

For sites in Corrective Action, data collected since remedy implementation is typically used to demonstrate progress (or lack thereof) toward meeting all remedial endpoints (GPS) and goals of 260.C.3.c.(1). The data will often be used to determine whether any changes in site conditions have taken place that may have altered the risk factors assessed during original remedy selection or the potential long term effectiveness of the remedy on the aquifer system. Because the vast majority of landfill sites trigger corrective action as a result of an exceedance over a Federal Safe Drinking Water Act MCL, use of a site-specific ACL will be unlikely to terminate or dramatically shorten the life of the remedial program. However, site-specific ACLs, if approved, would potentially shorten the list of GPS exceeding groundwater constituents that would be required to meet cleanup endpoints. This could potentially lessen overall groundwater sampling costs during corrective action.

EXAMPLE TABLE OF CONTENTS

- **Signature-Seal Page**
- **Executive Summary**
- **Groundwater Issues**
 - .1 Hydrologic characteristics of the site including groundwater flow direction and rate
 - .2 Summary review of any landfill design aspects which prevent leachate from entering the aquifer
 - .3 Review of existing groundwater quality on site and, if applicable, potential for contaminant plume migration toward potential receptors
 - .4 List of groundwater constituents of concern proposed for site specific ACL use
 - .5 Physical properties and health assessment of the groundwater constituents of concern using published data sources
- **Surface Water Issues**
 - .1 Proximity of the landfill to hydrologically connected surface waters including evidence of impacted groundwater discharge to surface waters
 - .2 Current and future uses of onsite and adjoining property surface water
 - .3 Current surface water quality
 - .4 (In those cases where surface water is onsite or forms a property boundary) Demonstration that proposed 10^{-5} groundwater ACLs would not violate any existing surface water quality standards
- **Human Exposure Issues**
 - .1 Current groundwater users (on site and adjoining properties)
 - .2 Future groundwater users (on site and adjoining properties)
 - .3 Availability of alternate water supply (in site vicinity)

- .4 Institutional Controls (any existing prohibition against groundwater use on site and surrounding properties)
 - .5 Potential for human exposure to landfill impacted groundwater
 - .6 Potential for human exposure to vapors including any adverse affects on physical structures
 - .7 Demonstration that proposed ACLs meet the VSWMR risk guidelines for lifetime exposure including sensitive subgroups (may be replaced by reference to DEQ ACL table)
- **Ecologic Exposure Issues**
 - .1 Review of potential impacts on wildlife
 - .2 Review of potential impacts on crops and vegetation
 - **ACL Development Methodology** (may be replaced by a reference to DEQ's ACL table if the owner/operator adopts the default REAMS calculations)

Figures/Attachments

- USGS 7 1/2-minute topographic map - showing the site location.
- Recent aerial image covering the site and surrounding properties.
- Zoning/GIS Map of site and surrounding properties
- Site Plan - to include topographic contours, permanent structures, surface water features, a bar scale, north arrow, facility boundary, waste management unit boundary, and all monitoring wells or sampling points relevant to the submittal.
- Groundwater potentiometric map with location of monitoring wells and, if applicable, delineation of GPS exceeding plumes.
- Constituent specific, groundwater trend graphics (if available).
- Copy of any local ordinance, zoning prohibition, UECA or other institutional control governing groundwater use on site and surrounding properties along with correspondence from the issuing authority interpreting the restriction.
- Optional figures - published geologic maps, USDA soils maps, etc.