(E) *Short-term effectiveness.* The short-term impacts of alternatives shall be assessed considering the following:

(*1*) Short-term risks that might be posed to the community during implementation of an alternative;

(*2*) Potential impacts on workers during remedial action and the effectiveness and reliability of protective measures;

(*3*) Potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation; and

(*4*) Time until protection is achieved.

(F) *Implementability.* The ease or difficulty of implementing the alternatives shall be assessed by considering the following types of factors as appropriate:

(*1*) Technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of the remedy.

(*2*) Administrative feasibility, including activities needed to coordinate with other offices and agencies and the ability and time required to obtain any necessary approvals and permits from other agencies (for off-site actions);

(*3*) Availability of services and materials, including the availability of adequate off-site treatment, storage capacity, and disposal capacity and services; the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; the availability of services and materials; and availability of prospective technologies.

(G) *Cost.* The types of costs that shall be assessed include the following:

(*1*) Capital costs, including both direct and indirect costs;

(*2*) Annual operation and maintenance costs; and

(*3*) Net present value of capital and O&M costs.

(H) *State acceptance.* Assessment of state concerns may not be completed until comments on the RI/FS are received but may be discussed, to the extent possible, in the proposed plan issued for public comment. The state concerns that shall be assessed include the following:

(*1*) The state's position and key concerns related to the preferred alternative and other alternatives; and

(*2*) State comments on ARARs or the proposed use of waivers.

(I) *Community acceptance.* This assessment includes determining which components of the alternatives interested persons in the community support, have reservations about, or oppose. This assessment may not be completed until comments on the proposed plan are received.

(f) *Selection of remedy*—(1) Remedies selected shall reflect the scope and purpose of the actions being undertaken and how the action relates to long-term, comprehensive response at the site.

(i) The criteria noted in paragraph (e)(9)(iii) of this section are used to select a remedy. These criteria are categorized into three groups.

(A) *Threshold criteria.* Overall protection of human health and the environment and compliance with ARARs (unless a specific ARAR is waived) are threshold requirements that each alternative must meet in order to be eligible for selection.

(B) *Primary balancing criteria.* The five primary balancing criteria are long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost.

(C) *Modifying criteria.* State and community acceptance are modifying criteria that shall be considered in remedy selection.

(ii) The selection of a remedial action is a two-step process and shall proceed in accordance with § 300.515(e). First, the lead agency, in conjunction with the support agency, identifies a preferred alternative and presents it to the public in a proposed plan, for review and comment. Second, the lead agency shall review the public comments and consult with the state (or support agency) in order to determine if the alternative remains the most appropriate remedial action for the site or site problem. The lead agency, as specified in § 300.515(e), makes the final remedy selection decision, which shall be documented in the ROD. Each remedial alternative selected as a Superfund remedy will employ the criteria as indicated in paragraph (f)(1)(i) of this section to make the following determination:

(A) Each remedial action selected shall be protective of human health and the environment.

(B) On-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for invoking a waiver under § 300.430(f)(1)(ii)(C).

(*1*) Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment.

(*2*) Components of the remedy not described in the ROD must attain (or waive) requirements that are identified as applicable or relevant and appropriate at the time the amendment to the ROD or the explanation of significant difference describing the component is signed.

(C) An alternative that does not meet an ARAR under federal environmental or state environmental or facility siting laws may be selected under the following circumstances:

(*1*) The alternative is an interim measure and will become part of a total remedial action that will attain the applicable or relevant and appropriate federal or state requirement;

(*2*) Compliance with the requirement will result in greater risk to human health and the environment than other alternatives;

(*3*) Compliance with the requirement is technically impracticable from an engineering perspective;

(*4*) The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach;

(*5*) With respect to a state requirement, the state has not consistently applied, or demonstrated the intention to consistently apply, the promulgated requirement in similar circumstances at other remedial actions within the state; or

(*6*) For Fund-financed response actions only, an alternative that attains the ARAR will not provide a balance between the need for protection of human health and the environment at the site and the availability of Fund monies to respond to other sites that may present a threat to human health and the environment.

(D) Each remedial action selected shall be cost-effective, provided that it first satisfies the threshold criteria set forth in § 300.430(f)(1)(ii) (A) and (B). Cost-effectiveness is determined by evaluating the following three of the five balancing criteria noted in § 300.430(f)(1)(i)(B) to determine overall effectiveness: long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, and short-term effectiveness. Overall effectiveness is then compared to cost to ensure that the remedy is cost-effective. A remedy shall be cost-effective if its costs are proportional to its overall effectiveness.

(E) Each remedial action shall utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum

United States Environmental Protection Agency | Office of Solid Waste and Emergency Response | Publication 9234.2-01/FS-A | July 1991

ARARs Q's & A's:
General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers

Office of Emergency and Remedial Response
Office of Program Management 0S-240

Quick Reference Fact Sheet

Section 121(d)(2) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA), requires that on-site remedial actions must attain (or waive) Federal and more stringent State applicable or relevant and appropriate requirements (ARARs) of environmental laws upon completion of the remedial action. The revised National Contingency Plan of 1990 (NCP) requires compliance with ARARs during remedial actions as well as at completion, and compels attainment of ARARs during removal actions to the extent practicable, considering the exigencies of the situation. See the NCP, 40 CFR section 300.415(i) (55 FR 8666, 8843) and section 300.435(b)(2) (55 FR 8666, 8852) (March 8, 1990).

To implement the ARARs provision, EPA has developed guidance, CERCLA Compliance With Other Laws Manual: Parts I and II (Publications 9234.1-01 and 9234.1-02), and has provided training to Regions and States on the identification of and compliance with ARARs. These "ARARs Q's and A's are part of a series of Fact Sheets that provide guidance on a number of questions that arose in developing ARAR policies, in ARARs training sessions, and in identifying and complying with ARARs at specific sites. This particular Q's and A's Fact Sheet, **which updates and replaces a Fact Sheet first issued in May 1989**, addresses the ARARs general policy; compliance with the Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), and the Safe Drinking Water Act (SDWA); Post-ROD Information and Administrative Record requirements; and "contingency" waivers of ARARs.

I. General Policy

Q1. What difference does it make whether a requirement is "applicable" or "relevant and appropriate"? Why make that distinction?

A. It is true that once a requirement is determined to be relevant and appropriate, it must be complied with as if it were applicable. However, there are significant ,differences between the identification and analysis of the two types of requirements (see **Highlight 1**). "Applicability" is a legal and jurisdictional determination, while the determination of "relevant and appropriate" relies on professional judgment, considering environmental and technical factors at the site. There is more flexibility in the relevance and appropriateness determination: a requirement may be "relevant," in that it covers situations similar to that at the site, but may not be "appropriate" to apply for various reasons and, therefore, not well suited to the site. In some situations, only portions of a requirement or regulation may be judged relevant and appropriate; if a requirement is applicable, however, all substantive parts must be followed. (See Overview of ARARs: Focus on ARAR Waivers, Publication 9234.2-03/FS, December 1989, for further discussion on compliance with ARARs.)

For example, if closure requirements under Subtitle C of RCRA are applicable (e.g., at a landfill that received RCRA hazardous waste after 1980 or where the Superfund action constitutes disposal of hazardous waste), the landfill must be closed in compliance with one of the closure options available in Subtitle C regulations. These options are closure by removal (clean closure), which requires decontamination to health-based levels, or closure with waste in place (landfill closure), which requires impermeable caps and long-term maintenance.

However, if Subtitle C closure requirements are not applicable, but are determined to be relevant and appropriate, then a "hybrid closure," which includes other types of closure designs, may also be used. The hybrid closure option arises from a determination that only certain closure requirements in the two Subtitle C closure alternatives are relevant and appropriate. (See proposed NCP, 53 FR at 51446, and preamble to the NCP, 55 FR at 8743, for further discussion of RCRA closure requirements and the concept of hybrid closure.)

Highlight 1: DEFINITIONS OF "APPLICABLE"AND "RELEVANT AND APPROPRIATE"

"**Applicable requirements mean those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site."** [Section 300.5 of the NCP, 55 FR at 8814] In other words, an applicable requirement is one with which a private party would have to comply by law if the same action was being undertaken apart from CERCLA authority. All jurisdictional prerequisites of the requirement must be met in order for the requirement to be applicable.

If a requirement is not applicable, it still may be relevant and appropriate. "**Relevant and appropriate requirements mean those cleanup standards [that] ... address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site."** [Section 300.5 of the NCP, 55 FR at 8817] A requirement that is relevant and appropriate may "miss" on one or more jurisdictional prerequisites for applicability but still make sense at the site, given the circumstances of the site and release.

Q2. Does an applicable requirement take precedence over one that is relevant and appropriate? In other words, if an applicable requirement is available, will that be the ARAR, rather than one that might otherwise be relevant and appropriate?

A. No, a requirement may be relevant and appropriate even if another requirement legally applies to that situation, particularly when the applicable requirement was not really intended to address the type or magnitude of problems encountered at Superfund sites. For example, RCRA Subtitle D requirements for covers for solid waste facilities may be applicable when RCRA hazardous waste is not present at the site. However, the soil cover required under Subtitle D may not always be sufficient to limit leachate at a Superfund site that has substantial amounts of waste similar to RCRA hazardous waste. In such a situation, some Subtitle C closure requirements may be relevant and appropriate to some parts of the site, even though Subtitle D requirements legally apply.

However, one factor that affects whether a requirement is relevant and appropriate is whether another requirement exists that more fully matches the circumstances at the site. In some cases, this might be a requirement that was directly intended for, and is applicable to, the particular situation. For example, Federal Water Quality Criteria generally will not be relevant and appropriate and, therefore, not ARAR when there is an applicable State Water Quality Standard promulgated specifically for the pollutant and water body, which therefore "more fully matches" the situation. (See Overview of ARARs: Focus on ARAR Waivers, Publication 9234.2-03/FS, December 1989, for further discussion on compliance with ARARs, and CERCLA Compliance With the CWA and SDWA, Publication 9234.2-06FS, February 1990, for additional discussion on the resolution of potentially conflicting water ARARs.)

Q3. Is compliance with ARARs required for a "no action" decision?

A. No. CERCLA Section 121 cleanup standards, including compliance with ARARs, apply only to remedial actions that the Agency determines should be taken under CERCLA Sections 104 and 106 authority. A "no action" decision can only be made when no remedial action is necessary to reduce, control, or mitigate exposure because the site or portion of the site is already protective of human health and the environment. See Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3-02) for further discussion of "no action" decisions.

Q4. Does an ARAR always have to be met, even if it is not necessary to ensure protectiveness?

A. Yes, unless one of the six waivers can be used. Attainment of ARARs is a "threshold requirement" in SARA, as is the requirement that the remedies be protective of human health and the environment. If a requirement is applicable or relevant and appropriate, it must be met, unless an ARAR waiver can be used. ARARs represent the minimum that a remedy must attain; it may sometimes be necessary, where there are multiple contaminants with potentially cumulative or synergistic effects, to go beyond what ARARs require to ensure that a remedy is protective. (See Overview of ARARs: Focus on ARAR Waivers, Publication 9234.2-03/FS, December 1989 for further discussion on compliance with ARARs.)

Q5. If wastes from non-contiguous facilities are combined on one site for treatment, is the treatment viewed as off-site activity, and the unit therefore subject to permitting?

A. No. Because the combined remedial action constitutes on-site action, compliance with permitting or other administrative requirements would not be required (see **Highlight 2**). CERCLA Section 104(d)(4) authorizes EPA to treat two or more non-contiguous facilities as one site for purposes of response, if such facilities are reasonably related on

Highlight 2: ON-SITE VS. OFF-SITE ACTIONS

The requirements under CERCLA for compliance with other laws differ in two significant ways for on-site and off-site actions. **First, the ARARs provision applies only to on-site actions; off-site actions must comply fully only with any laws that legally apply to that action**. Therefore, off-site actions need only comply with "applicable" requirements, not with "relevant and appropriate" requirements; ARAR waivers are not available for requirements that apply to off-site actions.

Second, on-site actions must comply only with the substantive portions of a given requirement; on-site activities need not comply with administrative requirements, such as obtaining a permit or record-keeping and reporting. (Monitoring requirements are considered substantive requirements.) **Off-site actions must comply with both substantive and administrative requirements of all applicable laws.** [Note: ARARs are the requirements of environmental and facility siting laws only. Independent of ARARs, on-site activities also must comply with applicable requirements of non-environmental laws (e.g., building codes and safety requirements), excluding permit requirements.]

the basis of geography or their potential threat to public health, welfare, or the environment. In keeping with the statutory criteria under CERCLA Section 121(b), combining facilities as one site for remedial action must also be shown to be cost-effective and not result in any significant additional short-term impacts on public health and the environment. (See preamble to the NCP, 55 FR at 8690-8691; Interim RCRA/CERCLA Guidance on NonContiguous Sites and On-Site Management of Waste Residue, OSWER Directive 9347.0-1, March 1986; and 49 FR at 37076, September 21, 1984.)

Q6. Are environmental resource laws, such as the Endangered Species Act, the National Historic Preservation Act (NHPA), and the Wild and Scenic Rivers Act, potential ARARs for CERCLA actions?

A. Yes, requirements in these laws are potential ARARs. However, these laws frequently require consultation with, and under some laws, concurrence of, other Agencies or groups, such as the Fish and Wildlife Service or the Advisory Council on Historic Preservation. Administrative requirements such as consultation or obtaining approval are not required for on-site actions. However, it is strongly recommended that the lead agency nevertheless consult with the administering agencies to ensure compliance with substantive requirements, e.g., the NHPA requirement that actions must avoid or minimize impacts on cultural resources. (See preamble to the NCP, 55 FR at 8757. Also, see Summary of Part II: CAA, TSCA, and Other Statutes, Publication 9234.2-07/FS, April 1990, for further discussion of resource protection laws.)

Q7. Are environmental standards and requirements of Indian Tribes potential ARARs?

A. Yes. Indian Tribal requirements are potential ARARs for CERCLA actions taken on Tribal lands and are treated consistently with State requirements. Tribal requirements that meet the eligibility criteria for State ARARs, i.e., those that are promulgated (legally enforceable and of general applicability), are more stringent than Federal requirements, and are identified in a timely manner, are potential ARARs. (See preamble to the NCP, 55 FR at 8741-8742; section 300.5 of the NCP, 55 FR at 8816 for a definition of Indian Tribe; and the Revised Interim Final Guidance on Indian Involvement in the Superfund Program, OSWER Directive 9375.5-02A, November 28, 1989.)

II. Resource Conservation and Recovery Act (RCRA)

Q8. How can RCRA listed waste be "delisted" when wastes will remain on-site?

A. By documenting in the ROD that the substantive requirements in RCRA for delisting have been met, a RCRA listed waste may be "delisted" when wastes remain on-site.

Once a listed waste is "delisted," it is no longer considered a "hazardous waste" and is, therefore, subject to RCRA Subtitle D requirements for solid waste, rather than the more stringent RCRA Subtitle C requirements.

The substantive requirements that must be met for delisting a RCRA hazardous waste that will remain on-site are the standards in 40 CFR sections 260.22(a)(1) and (2), which state that a waste that "does not meet any of the criteria under which the waste was listed as hazardous or an acutely hazardous waste" and for which there is no "reasonable basis to believe that factors (including other constituents) other than those for which the waste was listed could cause the waste to be a hazardous waste" is "delistable." Administrative requirements, which include requirements to undergo a petition and rulemaking process and to develop and supply specific

information, need not be met on-site. (See A Guide to Delisting of RCRA Wastes for Superfund Remedial Responses, Publication 9347.3-09/FS, September 1990.)

Wastes containing constituents at health-based levels, assuming direct exposure, generally will meet the standards for delisting. Wastes with constituents at higher levels may also be delistable, since the RCRA delisting process allows fate-and-transport modeling, generally based on the waste being managed in a solid waste unit. The models used by the RCRA program for delisting are recommended for use in determining whether constituent concentrations above health-based levels are delistable, e.g., for wastes that will be land disposed (See 50 FR 48886, November 27, 1985 and 51 FR 41082, November 13, 1986). The Waste Identification Branch in the Office of Solid Waste (FTS 382-4770) can also provide assistance and advice in delisting a waste.

Substantive requirements for a waste to meet delisting levels should be documented in the RI/FS and the ROD, and a general discussion of why delisting is warranted should be included (see A Guide to Delisting of RCRA Wastes for Superfund Remedial Responses, Publication 9347.3-09/FS, September 1990). Generally, the constituent levels that must be achieved in order for the waste to be considered non-hazardous should be identified in the ROD. Unless treatability studies done during the RI/FS make delisting reasonably certain, the ROD should also address, as a contingency, how the waste will be handled if it does not achieve delistable levels, based on full-scale treatability studies or actual performance of the remedy during RD/RA. If the waste cannot be delisted, and this contingency is expressly noted in the ROD, a fact sheet may be needed to notify the public that the contingency remedy will be implemented.

Q9. Are RCRA financial responsibility requirements potential ARARs for Superfund?

A. No, because they are considered to be administrative requirements, not substantive environmental requirements. RCRA financial responsibility requirements support implementation of RCRA technical standards by ensuring that RCRA facility owners or operators have the financial resources available to address releases and comply with closure and post-closure requirements. CERCLA agreements with PRPs and, ultimately, the Fund itself, achieve essentially the same purpose.

Q10. RCRA hazardous waste is placed into an existing pit that had received hazardous waste in the past, but is not subject to RCRA Subtitle C regulations because the pit closed before 1980. Would the minimum technology requirements (MTR) be applicable?

A. Yes; although the pit is not considered a "new unit," all surface impoundments (i.e., both new and existing) are subject to MTR if they receive hazardous wastes (i.e., wastes that were hazardous as of November 7, 1984) after November 1988. In addition, the land disposal restrictions (LDRs) prohibit placement of restricted wastes (which are under a national capacity variance) in landfills or surface impoundments that are not in compliance with MTR. If such a waste is placed in the existing waste pit, the pit would have to comply with MTR, even though it is not a "new unit." See Superfund LDR Guide #3: Treatment Standards and Minimum Technology Requirements Under Land Disposal Restrictions (LDRs), Publication 9347.3-03/FS, July 1989.

III. Clean Water Act (CWA) & Safe Drinking Water Act (SDWA)

Q11. Do antidegradation laws for ground water, which are increasingly common in State laws, mean that the aquifer must be restored to its original quality before contamination from the site occurred?

A In most cases, no. Antidegradation laws are prospective and are intended to prevent further degradation of water quality. At a CERCLA site, therefore, a State ground-water antidegradation law might preclude the injection of partially treated water into a pristine aquifer. It would not, however, require cleanup to the aquifer's original quality prior to contamination. If more stringent State standards than those imposed under Federal law are determined to be ARARs for the site, they would have to be met (e.g., by meeting the discharge requirements) or waived (e.g, by the interim remedy waiver). Where temporary degradation of the ground water may be required during remedial action, protection should be provided by restricting access or providing institutional controls, and EPA response actions should ultimately result in restoration of the ground water's beneficial uses. (See ARARs Q's & A's: State Ground-Water Antidegradation Issues, Publication 9234.2-11/FS, July 1990.)

Q12. There are some situations where an aquifer that is a current or potential drinking-water source, treatable to MCLs at the tap, cannot be remediated to non-zero MCLGs or MCLs in the aquifer. Would non-zero MCLGs or MCLs still be relevant and appropriate?

A. In general, yes. The non-zero MCLGs and, if none, the MCLs, are generally relevant and appropriate for any aquifer that is a potential drinking-water source (see **Highlight 3**) (see section 300.430(e)(2)(i)(B)-(D) of the NCP, 55 FR at 8848). If they cannot be attained (e.g., because of complex hydrogeology due to fractured bedrock), an ARAR waiver for technical impracticability should be used. If attainment of a non-zero MCLG or MCL is impossible because the background level of the chemical subject to CERCLA authority (e.g., a man-made chemical) is higher than that of the MCLG or MCL, attainment of the MCLG or MCL would not be relevant and appropriate. (See CERCLA Compliance With the CWA and SDWA, Publication 9234.2-06/FS, January 1990.)

Highlight 3:
ARARs FOR GROUND-WATER CLEANUP

Non-zero MCLGs, and, if none, MCLs promulgated under SDWA, generally will be the relevant and appropriate standard for ground water that is or may be used for drinking, considering its use, value, and vulnerability as described in the EPA's Ground-Water Protection Strategy (August 1984), e.g., for Class I and II aquifers.

Q13. Many new MCLGs and MCLs will be promulgated or existing ones revised in upcoming years. Will new or revised MCLGs and MCLs, when promulgated, need to be incorporated into the remedy, possibly altering it? Should a proposed non-zero MCLG or MCL be used as the remediation goal in the ROD?

A. Under the NCP, if a new requirement is promulgated after the ROD is signed, and the requirement is determined to be applicable or relevant and appropriate, the remedy should be examined in light of the new requirement (at the 5-year review or earlier) to ensure that the remedy is still protective. If the remedy is still protective, it would not have to be modified, even though it does not meet the new requirement. Since non-zero MCLGs and MCLs often are a key component in defining remediation levels, new or revised MCLGs and MCLs may reveal that the chosen remedy is not protective. In such cases, the remedy would have to be modified accordingly. This could occur at any time after the ROD is signed -- during remedial design, remedial action, or at the 5-year review.

However, a new non-zero MCLG or MCL usually will not mean the remedy must be changed. If the existing remedy is still within the risk range, even considering the new MCLG or MCL, the remedy would not have to be modified because the remedy is still protective. For example, if the new non-zero MCLG or MCL represents a risk of 10^{-6}, while the selected remediation level results in a 10^{-5} risk, the remedy is still considered protective.

At some sites, however, a new MCLG or MCL could require modification to the remedy after implementation of the remedy has begun. Therefore, if a proposed non-zero MCLG or MCL is available before the ROD is signed, the preferred remedy should be evaluated to determine how the MCLG or MCL, if promulgated as proposed, would affect the remedy. Will the preferred remedy achieve the proposed MCLG or MCL? Could the remedy achieve the proposed MCLG or MCL with minor design modifications? Would the proposed MCLG or MCL require significant changes, such as requiring remediation in ground water that is currently deemed fully protective?

The proposed non-zero MCLG or MCL may be used as a "to-be-considered" (TBC) in establishing a protective remediation level in the ROD, provided that: (1) the new standard would make a- remedy based on the current standard unprotective; and (2) the proposed standard is not controversial or otherwise is unlikely to change. This reflects the importance of non-zero MCLGs and MCLs in Superfund's determination of protectiveness and as a cleanup standard for the community. It also minimizes the need for later changes to the remedy when changes may be more difficult and costly to make. (See CERCLA Compliance With the CWA and SDWA, Publication 9234.2-06/FS, January 1990.)

Note: In the May 1989 version of this fact sheet, Question 14 addressed the use of the 10^{-6} risk level when non-zero MCLGs or MCLs exist for some, but not all, significant contaminants. Question 14 has been omitted from this fact sheet because this issue is currently being clarified by the Agency. Final resolution of this issue will be addressed in guidance in the near future.

Lowry Landfill Community Advisory Group Virtual Meeting

Summary of January 21, 2020 CAG meeting

I. Welcome, Introductions, Preliminary Matters

EPA introduced a new member of their staff, Christa-Marie Leibli, who has decades of experience as a hydrogeologist, including work with Native American communities

II. New EPA Administrator and Region 8's Regional Administrator
Objective: Request from CAG for information from EPA

The Biden Administration has nominated Michael Regan as EPA Administrator. He is the Secretary of North Carolina's Department of Environmental Quality. There is no information about the Region 8 nominee, and it is not clear when the regional appointments will occur. Deb Thomas continues as the acting Regional Administrator.

III. EPA Budget and TAG Grant Status –
Objective: Request from CAG for information from EPA

The grants office is handling this and the staff at tonight's meeting do not have access to that information. There have been both personnel changes and changes in the grant system. Although EPA staff Linda K and Lisa MV are working to resolve this, they do not have a definitive time when the grant will be funded.

Action Item: Linda agreed to continue to seek clarification about whether the CAG can spend against the grant while the previous invoices are under review.

IV. Contractor – Name, Scope of Work for New Contractor – Given End of Contract with PWT & Tetra Tech
Objective: Request from CAG for information from EPA

EPA has no plans to replace the technical contractors. It would take six to nine months to award a new contract, and by then the five-year review issues will be resolved. In addition, EPA staff are confident that the agency's own technical team, along with CDPHE, is capable of addressing anything related to the Lowry Landfill.

EPA staff reminded the CAG of their qualifications; Christa reiterated her experience and expertise.

In the discussion, the CAG members indicated that the loss of an outside technical view is an important change.

V. Letter of Thanks to City of Aurora Michael Coffman and State response to Councilman Marcano
Objective: CAG will go through the thank you to City of Aurora to clarify for those in the ex-officio group who did not participate in the Aurora City Council Study Session what corrections

were made due to city council statements and questions at the study session.

Bonnie Rader informed the meeting participants of a thank you letter to Aurora Mayor, Mike Coffman and offered her thanks to Colleen for the letter from CDPHE clarifying the information sent to Aurora Councilman Marcano.

VI. Guidance from EPA on Recent Document Transfer to the CAG and TAG – Areas of Focus
Objective: Request from CAG for information from EPA

EPA staff suggested that the CAG follow their TAG work plan and use its time to focus on the five-year-review issue topics.
Upcoming items include:

- Effectiveness Evaluations – (released on 2/8)– to be discussed at the 2/18 CAG meeting
- Five-Year-Review Addendum – to be released soon
- Conceptual Site Model- will be released soon for 30-day public review.

VII. How does freezing Applicable or Relevant and Appropriate Requirements (ARARs) interact with State Reg 41 and 1995 ESD?
Objective: Request from CAG for information from EPA about how the agency will address ARARs going forward

- Please see handouts included in this meeting summary. Five-year review concluded that the ARARs are still protective; however, if the conclusion were that they are not protective, that could become a Five-year review issue
- 1,4 dioxane – added in 2002 to the performance standards; the next five-year review will review ARARs to insure they are still valid.

Extensive discussion followed. Please see the recording of the zoom call here for details: https://www.youtube.com/watch?v=y0j3TU4CRrk

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NOV 17 2020

Ref: 8SEM-RBA

Mrs. Bonnie Rader
Lowry Landfill Superfund Site Citizens Advisory Group
71 Algonquian Street
Aurora, Colorado 80018

Re: Documents Distributed by the Work Settling Defendants for Lowry Landfill Superfund Site

Dear Mrs. Rader:

Please see below for specific responses to questions raised in your October 23, 2020, email to EPA.

Background:

The EPA has gone beyond statutory requirements under CERCLA for public involvement at the Lowry Landfill Superfund Site, especially since the Site's remedy has been implemented, and it is in the Operations and Maintenance (O&M) phase. "No community involvement activities during O&M or the Five-Year Review (FYR) are mandated in CERCLA or addressed in the National Oil and Hazardous Substances Contingency Plan (NCP)" (2016 Superfund Community Involvement Handbook page 58).

Nevertheless, EPA's technical experts have thoughtfully and thoroughly responded to the communities' extensive comments and questions at monthly CAG meetings and in writing. For example, the EPA hosted four technical meetings over the past year, one in person and three virtually, with the TAG advisors and CAG co-presidents in attendance. At the request of the CAG, the EPA also participates in monthly two-hour CAG meetings.

Over the past two years at the CAG meetings, EPA's Lowry Landfill Superfund Site Project Manager, Linda Kiefer, and the Site Team have presented information on the numerous projects the Work Settling Defendants (WSDs) are conducting to resolve the 2017 Five-Year Review issues and have answered questions (written and verbal) on these projects. These include:

- Synoptic Sampling/Cessation Summary report
- North End Investigation Report, which includes the 2020 Risk Assessment
- Groundwater (Numerical) Model Calibration Report
- 3-Dimensional Data Visualization and Analysis (3DVA) Technical Memorandum
- Containment System/Effectiveness Evaluations
- Conceptual Site Model Update, and
- Groundwater Monitoring Plan Update, which includes the North End Monitoring Plan Update No. 2.

Mrs. Rader and the Technical Advisor Dietrick McGinnis's recent questions are listed below, and EPA's responses are in italics. Mrs. Rader contends: "These documents have been approved as final without proper public review and input":

- Final North End Groundwater Monitoring Plan, Update 2
- Updated Waste Management Plan for Lowry Landfill Superfund Site
- Final North Boundary Barrier Wall Containment System Evaluation Plan

1. We have not seen any correspondence from Linda Kiefer at EPA regarding drafts of this plan (Final North End Monitoring Plan Update 2), I assume her approval is outside any participation she expects from stakeholders et cetera or is that role being assumed by EMS? Would it not be typical that developing a document this important, a groundwater monitoring plan that includes my clients neighborhood, would usually include some public involvement? Or was this omitted in the new Community Involvement Plan?

Table 3 of the 2020 Community Involvement Plan provides three categories for public input: 1) an official public comment period, 2) public review, and 3) feedback.

An official, public comment period is required by CERCLA and the NCP when a Superfund site is listed or delisted from the National Priorities List, or when the EPA issues a proposed plan prior to a record of decision.

Even though a public review process is not statutorily required for all Site-related documents, some Lowry Landfill documents are made available under the Lowry Landfill public review process. The Site team determines if a particular work product represents a significant change or update to existing Site information, and if so, a public review process may be considered. The public review process consists of the EPA posting a draft document on our website and emailing a copy to community members and requesting comment by a specific date. These comments are reviewed and considered by the EPA. This past year, the EPA had a public review period for the North End Investigation Report - Technical Memorandum From: EMSI Re: Updated 1,4-dioxane plume map and north end conceptual model, 2017 FYR issues #7 and #9 (Attachment B, the database, upon request), September 2, 2020, and the Community Involvement Plan. The upcoming draft Conceptual Site Model will also go out for public review.

For feedback (also not statutorily required), the EPA posts final documents on the Site webpage. The Community Advisory Group chairs receive emailed copies of the final documents at the same time the State and the EPA receives them from the WSDs. The EPA has conveyed on numerous occasions that the community is welcome to ask questions and provide feedback at any time. The Final North End Monitoring Plan Update 2, Updated Waste Management Plan for Lowry Landfill Superfund Site, October 14, 2020, and the Final North Boundary Barrier Wall Containment System Evaluation Plan, October 20, 2020, are in this "feedback" category. The EPA would generally like to receive feedback by emailing Linda Kiefer at Kiefer.Linda@epa.gov or Lisa McClain-Vanderpool at Mcclain-Vanderpool.Lisa@epa.gov.

Both the public review and feedback processes allow the EPA to consider information provided by the community and changes to be made if warranted. All comments are seriously considered whether or not the documents are considered "final" when reviewed. To ensure more timely notification of newly

available site documents, the EPA will send a mass email to the CAG email list with the documents/links attached.

2. Usually a change in a monitoring program of this scope, in this case a plume extending miles beyond the point of compliance and boundary of the original site, would include an updated QAPP or discussion of either additional amended Data Quality Objectives or how the plan falls within existing Data Quality Objectives as well as address more recent topics for the area of investigation such as surface water issues and efforts to bring PQLs to better conform to ARARs and modern analytical capabilities. Is this discussion pending? Is this four-page document just a summary or proposed overview? Please provide some clarification.

The final October 16, 2020, North End Monitoring Plan Update 2 is an update to the 2008 existing plan. The update incorporates the newly drilled wells that add to the characterization effort of the 1,4-dioxane plume listed in the 2018 Final Work Plan to Further Assess the North End 1,4-Dioxane Plume.

The 2020 North End Investigation Report, for which the CAG provided comments during the public review period that ended in January, and the incorporation/changes to this report were discussed at the May CAG meeting. Finding #11 in the North End Investigation Report mentions that the North End Monitoring Plan would be updated. The Final North End Groundwater Monitoring Plan, Update 2 is an extension of the characterization efforts that have been incorporated with the Groundwater Monitoring Plan since 2007. Appendix A, Quality Assurance Project Plan, in the 2018 Groundwater Monitoring Plan includes all quality assurance/quality control procedures, data quality objectives and metrics. The recently approved update #2 to the North End Groundwater Monitoring Plan includes the objectives for the monitoring efforts.

Discussions regarding bringing "PQLs to better conform to ARARs" are not ongoing. When the EPA issued the ROD and identified ARARs in 1994, there was no groundwater standard for 1,4-dioxane. In 2002, the EPA issued a minor ROD modification that established a performance standard of 8 µg/l and a Practical Quantitation Limit (PQL) of 200 µg/l. In 2004, the State promulgated a 1,4-dioxane groundwater standard of 6.1 µg/l. The State's standard has since been lowered.

CERCLA and the NCP "freeze" ARARs at the time of ROD signature, meaning that even if a standard is later lowered, remedial actions are not required to treat to the lower standard unless the EPA finds that the remedial action is no longer protective of human health and the environment. When new ARARs are identified, they are incorporated through an updated decision document, and frozen at the date of the new decision document. The EPA has not determined that remedial action associated with 1,4-dioxane is not protective of human health and the environment for the reasons discussed below.

The 2020 risk assessment for surface water in Murphy Creek and groundwater in the North End area demonstrates, under the most conservative assumptions, that the risk to the community is well within the acceptable risk range, based on the very low levels of 1,4-dioxane historically detected in groundwater and surface water north of the Site. The EPA and Colorado Department of Public Health and the Environment's 2020 risk assessment evaluated surface water and groundwater concentrations in the North End area and concluded there were no unacceptable risks to current/future receptors.

There is no 1,4-dioxane surface water standard for Murphy Creek because it is not classified for water supply use. There is no basis, and therefore no requirement, for ongoing surface water monitoring in the North End area. The EPA will not institute a surface water monitoring plan at this time or in the future

unless conditions change, or new information indicates the issue requires additional consideration and the need for a surface water monitoring plan is documented in a future FYR.

The PQL for 1,4-dioxane has been a topic of discussion at numerous CAG meetings, including several presentations/discussions by Laurie Wright from PWT. The PQL at Lowry Landfill, which was identified based on recent laboratory studies and reviewed annually, is 0.9 µg/l (ppb). This concentration of 0.9 µg/l (ppb) corresponds to a calculated incremental cancer risk of two in one million, which is well within the National Oil and Hazardous Substances Contingency Plan (NCP) acceptable risk range of one in ten thousand to one in one million.

3. The cover letter directs questions to Dave Wilmoth and Steve Richtel, they are cc'd above if needed to respond to the questions. Is this a new policy regarding who will be responding to comments and questions on site documents?

There was not a policy change. The cover letter was addressed to EPA's Linda Kiefer. The statement "Please feel free to call Dave Wilmoth, Steve Richtel, or me (Tim Shangraw) if you have any questions or need additional information." was directed to Linda Kiefer, the addressee. Comments or questions the community has about the document should be directed to the EPA.

Feel free to call or write Linda Kiefer at 303.312.6689 Kiefer.Linda@epa.gov or Lisa McClain-Vanderpool at 303.312.6077 Mcclain-Vanderpool.Lisa@epa.gov at EPA anytime with any questions.

Sincerely,

Gregory Sopkin
Regional Administrator

cc: Tim Shangraw, EMSI, Inc
Dave Wilmoth, City of Denver
Steve Richtel, Waste Management
Dietrick McGinnis, McGinnis and Associates
Linda Kiefer, EPA
Dustin McNeil, CDPHE

At the same time, EPA recognizes the benefits of consultation, reporting, etc. To some degree, these functions are accomplished through the state involvement and public participation requirements in the NCP. In addition, EPA has already strongly recommended that its regional offices (and states when they are the lead agency) establish procedures, protocols or memoranda of understanding that, while not recreating the administrative and procedural aspects of a permit, will ensure early and continuous consultation and coordination with other EPA programs and other agencies. CERCLA Compliance with Other Laws Manual, OSWER Directive No. 9234.1–01 (August 8, 1988). In working with states, EPA generally will coordinate and consult with the state Superfund office. That state superfund office should distribute to or obtain necessary information from other state offices interested in activities at Superfund sites.

The basis for this recommendation is a recognition that such coordination and consultation is often useful to determine how substantive requirements implemented under other EPA programs and by other agencies should be applied to a Superfund action. For example, although the Superfund office will make the final decisions on using ARARs, a water office may provide information helpful in determining ARARs when a surface water discharge is part of the Superfund remedy. Such information may include surface water classifications, existing use designations, technology-based requirements, and water quality standards. A water office may also be able to provide advice during the detailed analysis of alternatives on the effectiveness and implementability of treatment alternatives and the likely environmental fate and effects of surface or ground-water discharges. Other offices or agencies with different environmental responsibilities may similarly provide useful information, if it is given in a timely manner.

EPA also recognizes the importance of providing information to other programs and agencies that maintain environmental data bases. This is particularly true where the remedy includes releases of substances into the air or water and the extent of such releases is integral for air and water programs to maintain accurate information on ambient air and surface water quality in order to set statutorily-specified standards. Monitoring requirements themselves are considered substantive requirements and are necessary in order to document attainment of cleanup levels and compliance with emission limitations or discharge requirements identified as ARARs in the decision document. EPA strongly encourages its OSCs or RPMs, or the agency that is responsible for maintaining the operation and maintenance of an action (e.g., pump and treat system), to provide reports on monitoring activities to other offices in a form usable to those offices.

In summary, cleanup standards must be complied with; although administrative procedures such as consultation are not required, they should be observed when, for example, they are useful in determining the cleanup standards for a site. EPA believes that in order to ensure that Superfund actions proceed as rapidly as possible it must maintain a distinction between substantive and administrative requirements.

Final rule: EPA is promulgating the reference to "substantive" in the § 300.5 definitions of "applicable" and "relevant and appropriate" as proposed.

Name: Section 300.430(f)(1)(ii)(B). Consideration of newly promulgated or modified requirements.

Proposed rule: The preamble to the proposed rule discussed how new requirements or other information developed subsequent to the initiation of the remedial action should be addressed (53 FR 51440). It explained that new requirements or other information should be considered as part of the five-year review (as provided for in § 300.430(f)(3)(v)) (renumbered as final § 300.430(f)(5)(iii)(C)) to ensure that the remedial action is still protective of human health and the environment. That is, if a requirement that would be applicable or relevant and appropriate to the remedy is promulgated after the initiation of remedial action, the remedy will be evaluated in light of the new requirement to ensure that the remedy is still protective.

Response to comments: Several commenters objected to EPA's policy requiring consideration of new requirements on the grounds that the statute requires the five-year review only to determine that a remedy is still protective. These commenters were concerned that consideration of new requirements would require additional analysis and perhaps drastic changes in design; would impose an open-ended liability on PRPs; and would violate PRPs' right to due process. Two commenters suggested that making new requirements part of a negotiation process based on a reopener in the settlement agreement could alleviate the second and third concern.

Based on the comments and its experience in carrying out remedies, EPA is modifying its policy on considering newly promulgated or modified requirements to address those requirements that are promulgated or modified after the ROD is signed, rather than those requirements promulgated or modified after the initiation of remedial action, as discussed in the proposal. Once a ROD is signed and a remedy chosen, EPA will not reopen that decision unless the new or modified requirement calls into question the protectiveness of the selected remedy. EPA believes that it is necessary to "freeze ARARs" when the ROD is signed rather than at initiation of remedial action because continually changing remedies to accommodate new or modified requirements would, as several commenters noted, disrupt CERCLA cleanups, whether the remedy is in design, construction, or in remedial action. Each of these stages represents significant time and financial investments in a particular remedy. For instance, the design of the remedy (treatment plant, landfill, etc.) is based on ARARs identified at the signing of the ROD. If ARARs were not frozen at this point, promulgation of a new or modified requirement could result in a reconsideration of the remedy and a re-start of the lengthy design process, even if protectiveness is not compromised. This lack of certainty could adversely affect the operation of the CERCLA program, would be inconsistent with Congress' mandate to expeditiously cleanup sites and could adversely affect PRP negotiations, as noted by commenters. The policy of freezing ARARs will help avoid constant interruption, re-evaluation, and re-design during implementation of selected remedies.

EPA believes that this policy is consistent with CERCLA section 121(d)(2)(A), which provides that "the remedial action selected * * * shall require, at the completion of the remedial action," attainment of ARARs. EPA interprets this language as requiring attainment of ARARs identified at remedy selection (i.e., those identified in the ROD), not those that may come into existence by the completion of the remedy.[21] Neither the explicit statutory language nor the legislative history supports a conclusion that a ROD may be subject to indefinite revision as a result of shifting

[21] No commenters objected to the position in the preamble to the proposed rule that CERCLA remedial actions should attain ARARs identified at the initiation—versus completion—of the action.

requirements. Rather, given the need to ensure finality of remedy selection in order to achieve expeditious cleanup of sites, and given the length of time often required to design, negotiate, and implement remedial actions, EPA believes that this is the most reasonable interpretation of the statute.

As EPA discusses elsewhere in this preamble, one variation to this policy occurs when a component of the remedy was not identified when the ROD is signed. In that situation, EPA will comply with ARARs in effect when that component is identified (e.g., during remedial design), which could include requirements promulgated both before and after the ROD was signed. EPA notes that newly promulgated or modified requirements may directly apply or be more relevant and appropriate to certain locations, actions or contaminants than existing standards and, thus, may be potential ARARs for future responses.

It is important to note that a policy of freezing ARARs at the time of the ROD signing will not sacrifice protection of human health and the environment, because the remedy will be reviewed for protectiveness every five years, considering new or modified requirements at that point, or more frequently, if there is reason to believe that the remedy is no longer protective of health and environment.

In response to the specific comments received, EPA notes that under this policy, EPA does not intend that a remedy must be modified solely to attain a newly promulgated or modified requirement. Rather, a remedy must be modified if necessary to protect human health and the environment; newly promulgated or modified requirements contribute to that evaluation of protectiveness. For example, a new requirement for a chemical at a site may indicate that the cleanup level selected for the chemical corresponds to a cancer risk of 10^{-2} rather than 10^{-5}, as originally thought. The original remedy would then have to be modified because it would result in exposures outside the acceptable risk range that generally defines what is protective.

This policy that newly promulgated or modified requirements should be considered during protectiveness reviews of the remedy, but should not require a reopening of the ROD during implementation every time a new state or federal standard is promulgated or modified, was discussed in the preamble to the proposed rule (53 FR at 51440) but not in the rule section itself. For the reasons outlined above, EPA believes that this concept is critical to the expeditious and cost-effective accomplishment of remedies duly selected under CERCLA and the NCP, and thus is appropriate for inclusion in § 300.430(f)(1)(ii)(B) of the final NCP. This will afford both the public and implementing agencies greater clarity as to when and how requirements must be considered during CERCLA responses, and thus will allow the CERCLA program to carry out selected remedies with greater certainty and efficiency. Of course, off-site CERCLA remedial actions are subject to the substantive and procedural requirements of applicable federal, state, and local laws at the time of off-site treatment, storage or disposal.

Final rule: EPA is adding the following language to the rule at § 300.430(f)(1)(ii)(B):

(B) On-site remedial actions selected in a ROD must attain those ARARs that are identified at the time of ROD signature or provide grounds for invoking a waiver under § 300.430(f)(1)(ii)(C)(*3*).

(*1*) Requirements that are promulgated or modified after ROD signature must be attained (or waived) only when determined to be applicable or relevant and appropriate and necessary to ensure that the remedy is protective of human health and the environment.

(*2*) Components of the remedy not described in the ROD must attain (or waive) requirements that are identified as applicable or relevant and appropriate at the time the amendment to the ROD or the explanation of significant differences describing the component is signed.

Name: Applicability of RCRA requirements.

Proposed rule: The preamble to the proposed rule discussed when RCRA subtitle C requirements will be applicable for site cleanups (53 FR 51443). It described the prerequisites for "applicability" at length, which are that: (1) The waste must be a listed or characteristic RCRA hazardous waste and (2) treatment, storage or disposal occurred after the effective date of the RCRA requirements under consideration (for example, because the activity at the CERCLA site constitutes treatment, storage, or disposal, as defined by RCRA).

The preamble explained how EPA will determine when a waste at a CERCLA site is a listed RCRA hazardous waste. It noted that it is often necessary to know the origin of the waste to determine whether it is a listed waste and that, if such documentation is lacking, the lead agency may assume it is not a listed waste.

The preamble discussed how EPA will determine that a waste is a characteristic hazardous waste under RCRA. It stated that EPA can test to determine whether a waste exhibits a characteristic or can use best professional judgment to determine whether testing is necessary, "applying knowledge of the hazard characteristic in light of the materials or process used."

The preamble also discussed when a CERCLA action constitutes "land disposal," defined as placement into a land disposal unit under section 3004(k) of RCRA, which triggers several significant requirements, including RCRA land disposal restrictions (LDRs) and closure requirements (when a unit is closed). It equated an area of contamination (AOC), consisting of continuous contamination of varying amounts and types at a CERCLA site, to a single RCRA land disposal unit, and stated that movement within the unit does not constitute placement. It also stated that placement occurs when waste is redeposited after treatment in a separate unit (e.g., incinerator or tank), or when waste is moved from one AOC to another. Placement does not occur when waste is consolidated within an AOC, when it is treated in situ, or when it is left in place.

Response to comments: EPA received many comments on its discussion of when RCRA requirements can be applicable to CERCLA response actions. On the issue of compliance with RCRA in general, most of these commenters argued that RCRA requirements are not intended for site cleanup actions, that such compliance will result in delays and that RCRA requirements are often unnecessary to protect human health and the environment at CERCLA sites. Other commenters argued, however, that EPA is trying to avoid compliance with RCRA requirements. Most of the comments, however, focused on when LDRs are applicable to CERCLA actions and on EPA's discussion of what actions associated with remediation trigger LDRs.

Some commenters opposed EPA's interpretation of "land disposal" or "placement" as too lenient, believing that EPA is trying to avoid compliance with RCRA laws, particularly LDRs. These commenters argued that LDRs should be applicable when hazardous wastes are managed, excavated, or moved in any way. One argued that ARARs waivers are available to address situations when the LDR levels cannot be achieved and should be used as necessary, rather than trying to narrowly define the universe of ARARs to avoid waivers. This commenter was also concerned with EPA's use of the term "unit," calling it an inappropriate concept for Superfund sites because it