

EPRI Soil and Groundwater Remediation Guidelines

A Review

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**FRTR General Meeting
Performance Monitoring for
Optimization of In Situ Remediation
Technologies**

USGS Headquarters

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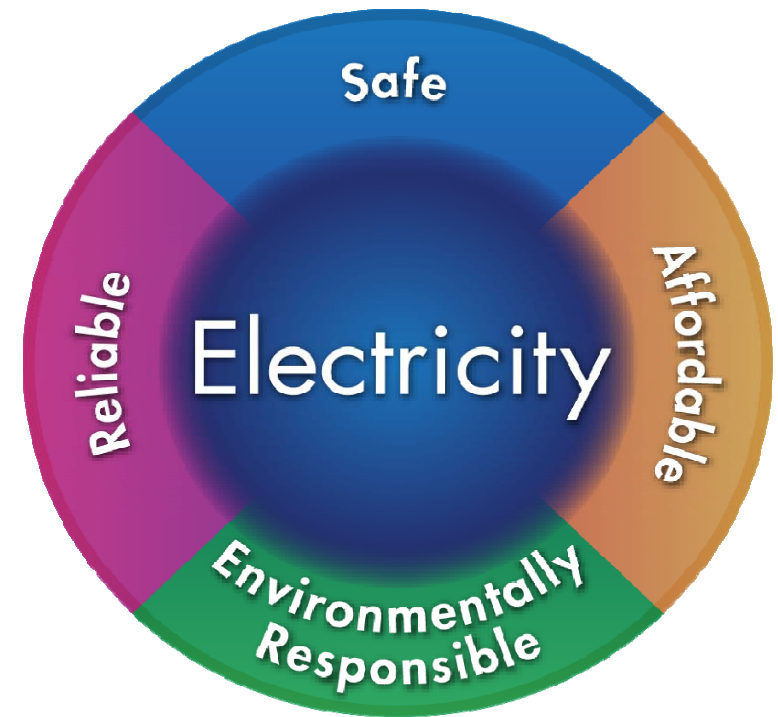
Together...Shaping the Future of Electricity

EPRI's Mission

Advancing **safe, reliable, affordable** and **environmentally responsible** electricity for society through global collaboration, thought leadership and science & technology innovation

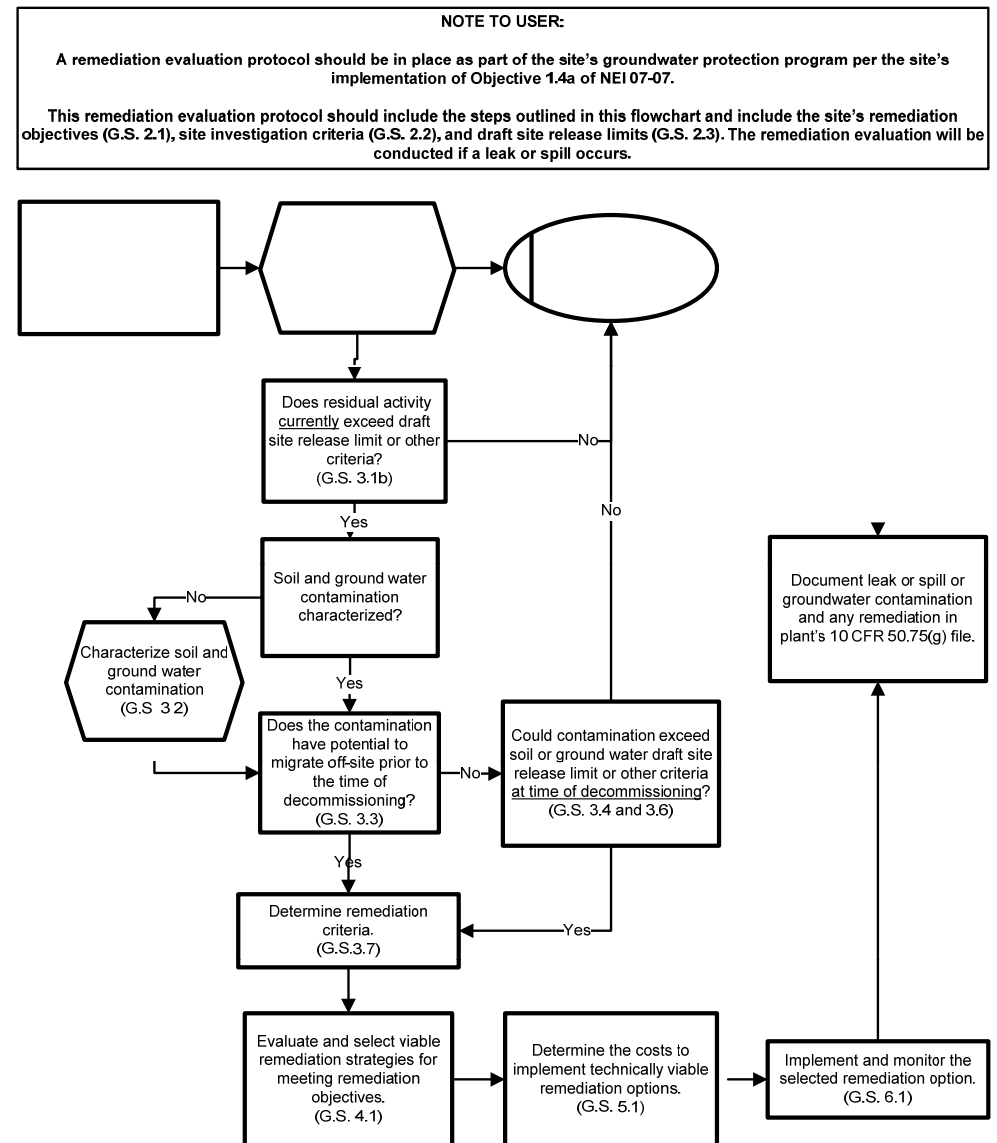
Three Key Aspects of EPRI:

Independent, Non-profit, Collaborative



Soil and Groundwater Remediation Guidelines for Nuclear Power Plants

- Technical guidance for development of a Remediation Decision Making Process.
- Evaluate if and when remediation is needed (and how):
 - Operation
 - Decommissioning
- Developed by EPRI and EPRI Groundwater Guidelines Committee:
 - Subject Matter Experts
 - Utility Members
 - Colleague Organizations (ANI, INPO, NEI)



Remediation Decision Making Objectives and Criteria Definitions

- Site Remediation Objective:

- Ultimate goal of remediation project(s).

- Dose based
- Qualitative
- Radionuclide concentration based

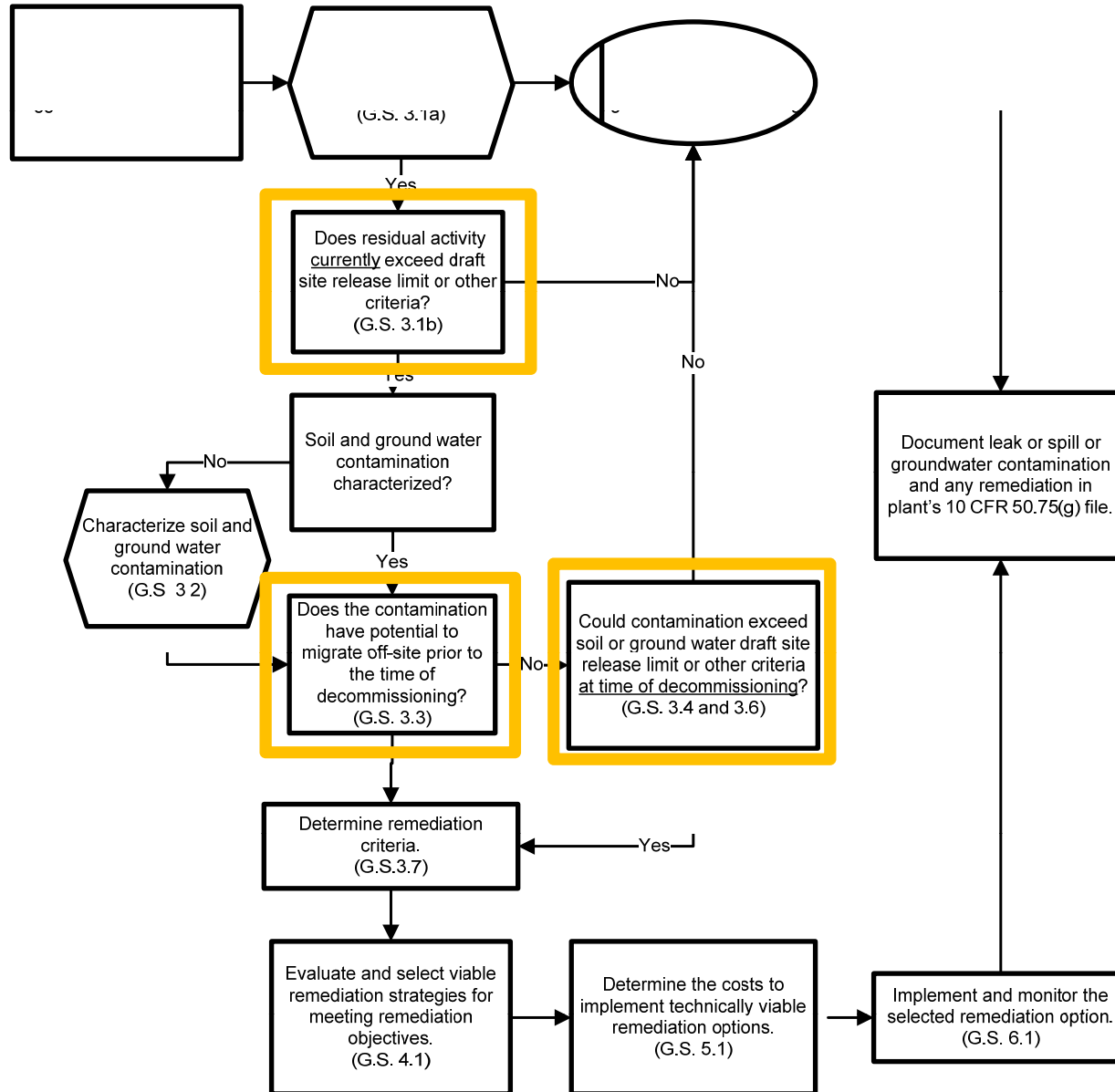
- Considerations:

- Potential for off-site migration
- Potential impact to plant operation
- Potential impacts to decommissioning planning and costs
- Potential to exceed site release criteria at license termination.
 - U.S. NRC limit: 25 mrem/yr.
 - Some states/local stakeholders may require lower dose limits.
- Other site-specific criteria

NOTE TO USER:

A remediation evaluation protocol should be in place as part of the site's groundwater protection program per the site's implementation of Objective 1.4a of NEI 07-07.

This remediation evaluation protocol should include the steps outlined in this flowchart and include the site's remediation objectives (G.S. 2.1), site investigation criteria (G.S. 2.2), and draft site release limits (G.S. 2.3). The remediation evaluation will be conducted if a leak or spill occurs.



Soil and Groundwater Remediation Guidelines

Guidance Number	Guidance Statement
2.1	Define remediation objectives.
2.2	Establish site-specific investigation criteria that will be used to evaluate the outcome of initial leak or spill response.
2.3	Determine draft site release limits for soil and groundwater. These draft site release limits define the allowable concentrations in soil and groundwater that meet the NRC site release criteria at license termination.
3.1	Once initial leak or spill response is complete, survey the area to determine if residual radioactivity exists. <u>a</u> : If residual radioactivity is below the investigation criteria determined in Guidance Statement 2.2, further remediation evaluations are not required. <u>b</u> : If residual radioactivity is below the draft site release limits defined per Guidance Statement 2.3, further remediation evaluations are not required.
3.2	Characterize the extent of soil and groundwater contamination.
3.3	Evaluate the potential for contamination to migrate off-site prior to the time of decommissioning.
3.4	Estimate the extent of soil and groundwater contamination at the time of decommissioning.
3.6	Compare the radionuclide concentrations that are projected to remain in the soil and groundwater at the time of decommissioning (determined per Guidance Statement 3.4) to the draft site release limits (determined per Guidance Statement 2.2). If the projected radionuclide concentrations are below the draft site release limits defined per Guidance Statement 2.2, further remediation evaluations are not required.
3.7	Define remediation criteria.
4.1	Evaluate and select viable remediation strategies for meeting remediation objectives. Both remediation during operation and remediation during decommissioning should be considered in order to make informed decisions about when to implement remediation.
5.1	Determine the costs to implement the technically viable remediation options chosen per Guidance Statement 4.1.
6.1	Implement and monitor the selected remediation option.

Accessing the Guidelines

- Soil and Groundwater Remediation Guidelines: Public Edition (1023464)
<http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=00000000001023464>



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