Maintaining a Compliance Alliance

Remediation Section

CAP Through NFA

Using the RBCA program

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PREPARING THE CAP

SCR Complete – CAP due in 60 days

Now What?

Consider Developing Site Specific **Target** Levels – Risk Based Evaluation

- Use a computer model (Tier 2) to evaluate the fate and transport of contaminants in:
  - Vadose Zone, Saturated Soil, & Dissolved Phase
  - Find concentrations where POE will no longer be threatened
- A valid fate and transport model will be supported by empirical data.

CORRECTIVE ACTION PLAN EVALUATION

- Proposed options for remediation must address the completed exposure pathways and impacted or threatened POEs.

PILOT TESTING

- Evaluate technical feasibility of an anticipated remediation approach.
- Pilot testing can be simple or complicated.
- Work with OPS technical reviewer.

In-situ Pilot Testing

- Calculate/estimate mass removal rates.
- Estimate Radius of Influence to determine how many remediation wells will be needed to provide the coverage necessary to cleanup the release.
- Evaluate results with OPS.

Prepare the Corrective Action Plan

- Determine cleanup goals that are protective of all POEs. Remediate to Tier 1 RBSLs (at POEs), or to site-specific target levels (SSTLs) if appropriate, and explain the rationale of the choice.
- Evaluate the anticipated costs of the feasible method based on pilot testing, evaluate the time to achieve cleanup goals against the costs.
- Confer with OPS to ensure that preparation of the CAP is complete. If complete, CAP Approval letter is issued.

Implement the CAP

- Conduct an excavation.
- Install the approved remediation system.
- Begin (or continue) monitoring for monitored natural attenuation (MNA).
- **Keep to the schedule presented in the CAP.**

Monitor the progress of the CAP

- Quarterly monitoring events reported using the MRR.
- System operation & maintenance visits reported using the MRR.
- Keep in contact with OPS in regards to progress of CAP.

When remediation cleanup goals have been achieved

- Contact the OPS technical reviewer with recommendation to conduct post-remedial monitoring.

Conduct the post-remediation monitoring

- A minimum of four consecutive quarters to ensure that the remediation is complete.

- If soil remediation was part of the effort, conduct confirmatory soil sampling to demonstrate that the soil contamination was remediated.

Request for No Further Action

- Demostrate that all pathways may be eliminated.
- Post remediation data is favorable.
- Include all the supporting data.

Tier 2
Fate & Transport Model to request NFA

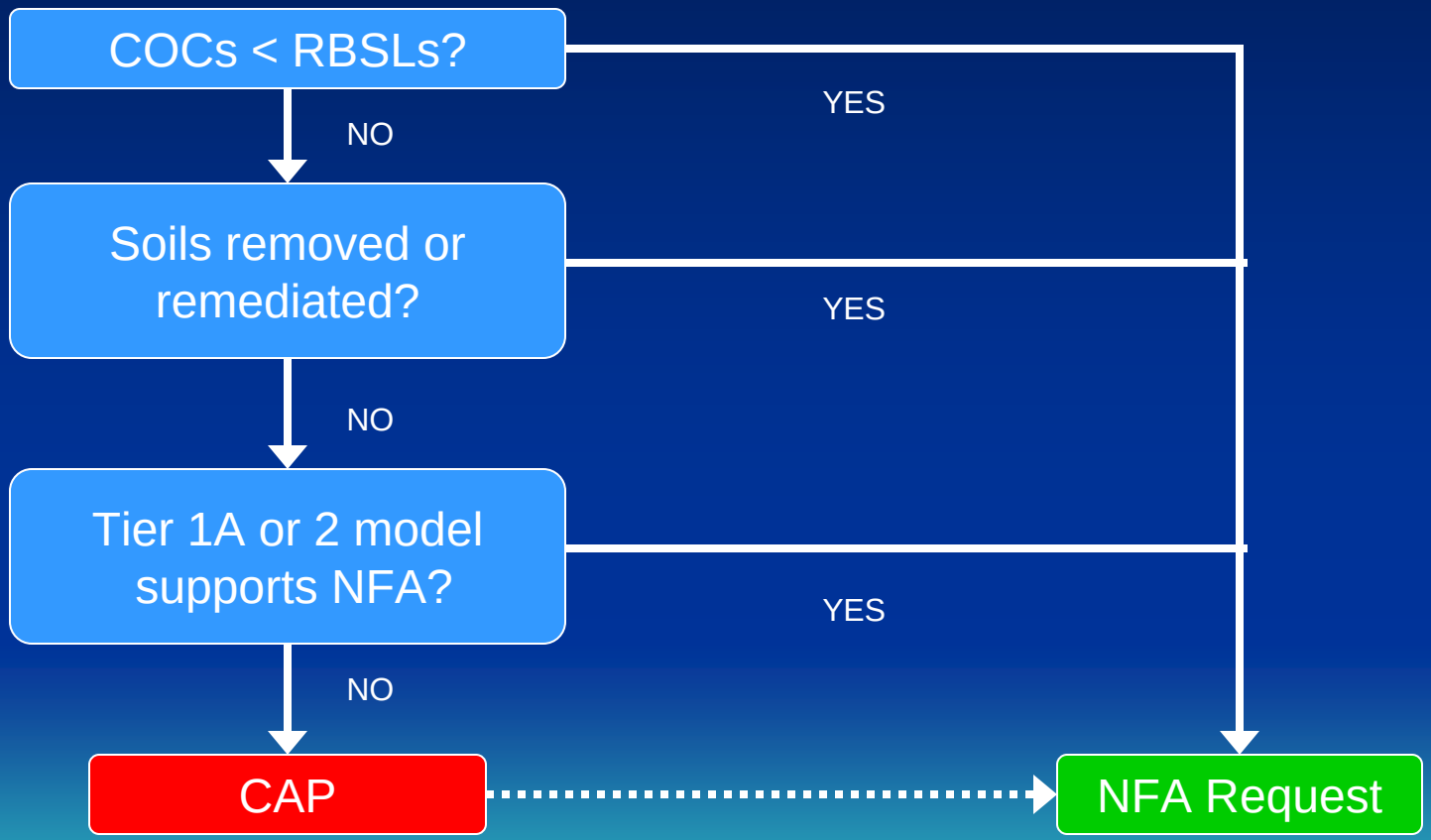
- Are contaminates at or below SSTLs?
- Can evaluate risk of contaminants to POEs in:
  - Vadose Zone, Saturated Soil, & Dissolved Phase
- A valid fate and transport model will be supported by empirical data.

Eliminating the Groundwater Ingestion Pathway

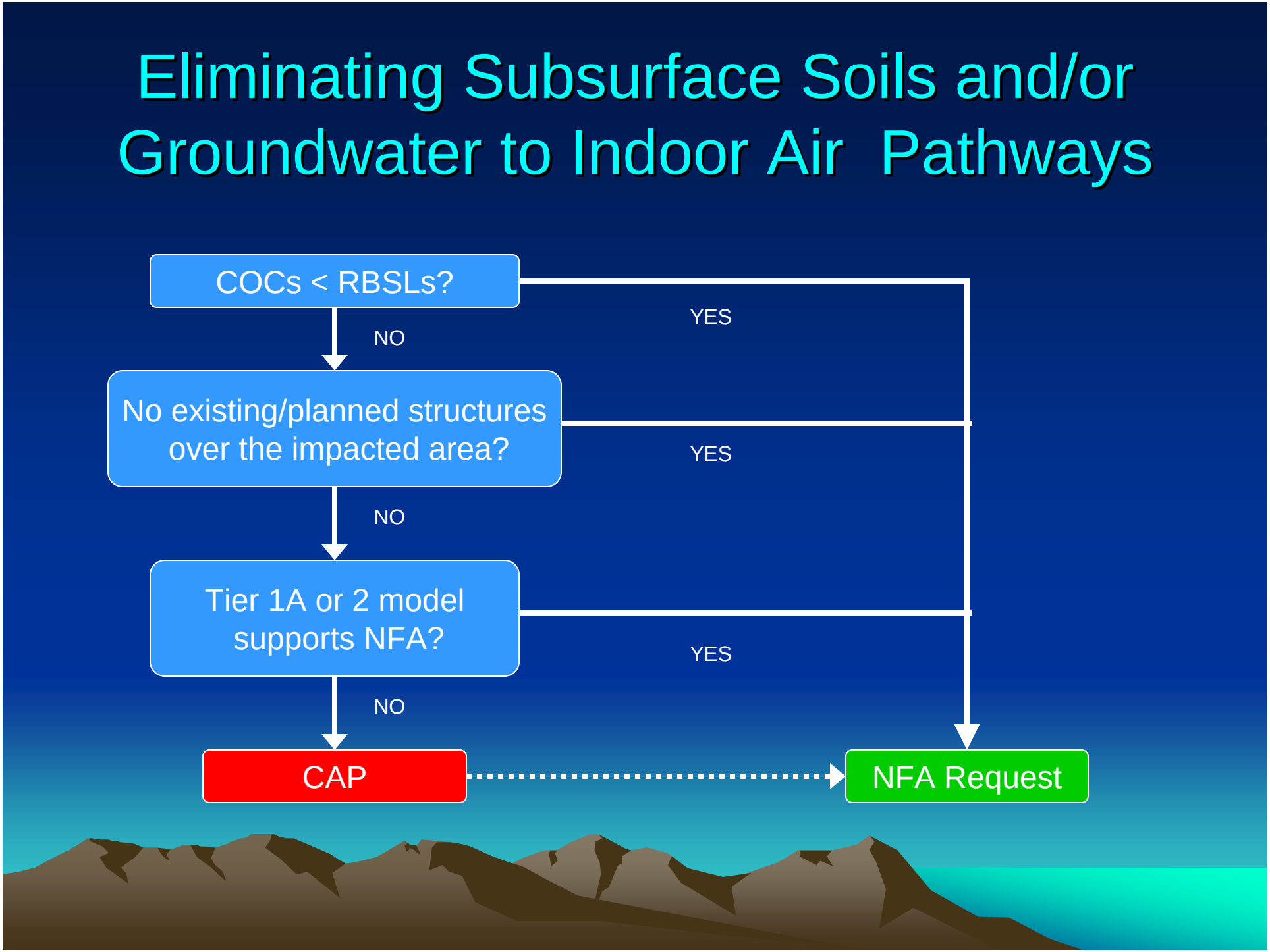
What Makes a Model Invalid for NFA?

- Free product is present.
- Lateral extent of contamination is not defined.
- Chemicals of Concern are not stable or decreasing in concentration.
- Source concentration used is not highest over previous four quarters of monitoring.
- Active remediation is ongoing.

Eliminating the Subsurface Soils Leaching to Groundwater Pathway



Eliminating Subsurface Soils and/or Groundwater to Indoor Air Pathways



Eliminating the Surficial Soils Pathway

Request No Further Action

- All (five) Exposure Pathways have been fully evaluated and can be eliminated.

No Further Action !!!

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Questions?

Also send questions to:

ops.outreach@state.co.us