

SITE INVESTIGATION COMPLETENESS

The Fast Track to Closure

Dave Rozeboom
Jeff Ackerman
Jennifer Borski

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Key Points

- The pathway to closure begins with a complete site investigation
- Incomplete SI = Not ready for closure
- Connect the dots

FOUNDATION FOR THE PATH FORWARD



2017

Site Investigation Completeness

SI Completeness: The Foundation for the Path Forward

The path to closure begins with a complete site investigation.

When is a Site Investigation Report not Required?

- NR 716.05 is your “out”
- If NR 708.09 criteria is met, no site investigation report is required:
 - No Action Required (NAR)
 - No Further Action (NFA)



When is a Site Investigation Report Required?

- At all sites where a NAR/NFA determination is not appropriate.
- 60 days after completion of site investigation field work and lab data received.

Foundation for the Path Forward

A complete site investigation is:

- The basis for an appropriate remedial action(s)
- The basis for a strong closure request
- Your opportunity to demonstrate full understanding



Foundation for the Path Forward

A complete site investigation must:

- Evaluate all pathways and contaminants
- Evaluate all risks and potential receptors
- Define degree and extent for all impacted media and contaminants
- **Connect the dots**



Regulatory Framework – NR 716

- 716.05 - possible “out” to site investigation requirements.
- 716.07 - Scoping
- 716.09 - Work plan
- 716.11 - Field investigation
- 716.13 - Methods
- 716.14 - Notifications
- 716.15 - Reports



DNR's Closure Approval Authority

NR 726 says DNR can't close a site if it will:

- Pose a threat to public health, safety, welfare or the environment
- Cause a violation of NR 140 Enforcement Standards
- Have an expanding groundwater plume
- Not have adequate source control



DNR's Closure Approval Authority (cont.)

NR 726 says DNR may not close a site if it will:

- Cause a violation of surface water quality standards
- Cause a violation of air quality standards
- Cause indoor air vapor action levels to be exceeded



A Complete Site Investigation

- Is the foundation for the path forward
- Connects the dots
- Displays a logical progression of activities
- Ensures that all pathways, contaminants, risks and receptors have been sufficiently evaluated
- Ensures that remedial action plans are thorough
- Increases potential for closure approval

PLANNING AND INVESTIGATING



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Planning and Implementation

The site investigation is the foundation for the report

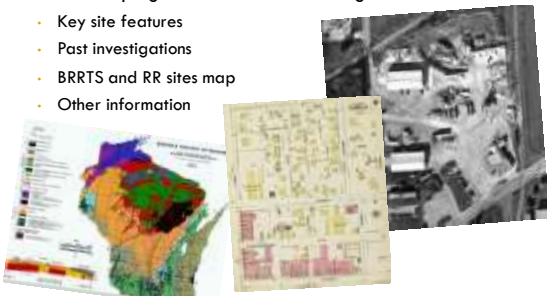
- Work scoping – should reflect site complexity
- Work plans – are required, reviews are optional
- Field work – doing and documenting the field work



Scoping – NR 716.07

Good scoping leads to better investigations:

- Key site features
- Past investigations
- BRRTS and RR sites map
- Other information



Work Plan – NR 716.09

Put the plan in writing, and it is required:

- Frame the issues
 - Contaminants of Concern
- Explain the methods:
 - Do you need a variance?
 - Trying something unusual?
 - Access issues?
- Include the schedule



Consider a DNR review

Field Investigation – NR 716.11

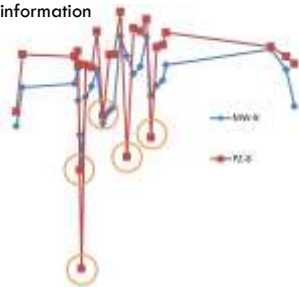
The investigative results are only as good as the execution and documentation

- Essential data gathering phase
- Professional oversight – NR 712
- Need for good science by field staff
 - understanding the issues
 - ability to adapt
 - strong observational skills
 - good documentation



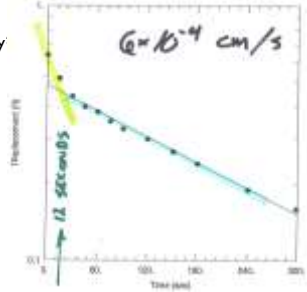
Water Level Measurements

- Measure all water levels on the same day
- Make the most of the information
 - gradients
 - flow rates
 - hydrographs
 - trend analysis
- New insights



Hydraulic Conductivity

- Do you have sufficient information?
 - “Who’s Fetter?”
 - Did the well bail dry
 - Single well tests
 - Pumping tests
 - Tracer tests



Documentation – NR 716.13

Good documentation is key for better understanding

- Boring logs
- Well forms
- Development records
- Chain of custody
- Field notes
- Photographs



THE SITE INVESTIGATION REPORT (SIR)



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Site Investigation Report (SIR)

- Due 60 days after field investigation complete
- Submit one paper copy & one e-copy (RR-690)
- Tells the story: tenant(s)/owner(s), land use, discharge, discovery & detective work
- Many users of the report (current & future):

✓ DNR project manager	✓ Site owner
✓ Insurance company	✓ Environmental attorney
✓ Prospective purchaser	✓ Lender
✓ Neighboring site	✓ Redeveloper
✓ Future consultant	



Supporting Documentation

- Documentation is the foundation of the report.
- Boring logs, well and abandonment forms → agree
 - Lab & field data → accurately tabulated and supported with lab sheets and chain of custody
 - Photos → supports description of site conditions



Attention to detail builds confidence in the report.

Tables and Figures

- Tables – include all standards / screening levels
- Figures – get the maximum impact
- Iso-concentration maps & cross sections are required
- Don't be afraid to go beyond the requirements:
 - Laser induced fluorescence (LIF) survey
 - Concentration trends at key wells
 - Hydrographs



The Narrative

The narrative is a valuable resource, it identifies and connects the dots for the reader

- Includes an executive summary
- Meets the code requirements for information content
- Has an analysis of the data; a chance to do science!
- Presents the conceptual model of the site
- Explains deviations from the workplan
- Includes NR 712 certifications



Remember the Goals

Consultant tells the story for all users of the SIR



- What is the nature of the problem?
- Where is it going?
- Does it pose a threat to public health, safety, welfare, or the environment?
- Is there a need for action or is closure recommended?

Common Pitfalls



- No SIR → Phase II ESA ≠ Site Investigation Report
- No discussion on vapor migration and intrusion
- Lack of analysis and data evaluation
- Errors in the report and internal inconsistencies
- Lack of conclusions or recommendations
- Missing NR 712 certifications and proper qualifications

Consider a DNR review –
It's a good investment!



DNR PM Recommendation

Frequent review of NR 716.15 during:

- Site investigation scoping
- Site investigation field work
- SIR drafting



Takeaways

A Complete Site Investigation

- The foundation for the path forward
- Connects the dots
- Displays a logical progression of activities
- Ensures that all pathways, contaminants, risks and receptors have been thoroughly evaluated
- Ensures that remedial action plans are thorough
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Questions
