Announcing the Open Environmental Restoration Resource (OER2) Webinar Series

Presented by:
NAVFAC Environmental Restoration Program

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Logistics

- **Submit all questions via chat box throughout the presentation**
- **Presentation is being recorded**
- **Complete the webinar survey (main feedback mechanism)**

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OER2 Webinar Series

- **New initiative by NAVFAC ERP**
- **Serves as a critical program outreach to the DON ERP Community**
  - Why: ability to reach out to and solicit feedback from all the members of the community (two-way communication)
- **Participation is fully voluntary by all ERP community members**
- **Who Should Attend?**
  - ERP Community Members: RPMs, RTMs, Contractors, and other remediation practitioners who support and execute the ERP
- **Why Attend?**
  - Obtain the latest Department of Defense and DON's policies and guidance on the ERP
  - Hear about the latest tools, technologies and practices to improve the ERP's efficiency
  - Promote innovation and share lessons learned among the ERP Community
  - Provide feedback to the ERP Leadership

- **Format:**
  - 45-50 minutes webinar: 35-40 minutes – intro + presentation, 10-15 minutes – Q&A, and **complete feedback questionnaire at the end**
  - Questions: submitted in writing throughout the presentation to the Topic Champion, select questions will be answered during the Q&A

- **Schedule and Registration:**
  - Every other month, 4th Wed (few may be rescheduled due to holidays)
  - Each topic has a registration link; the topics and links will be sent via ER T2 email.

- **Topics and Presenters:**
  - **ERP community members** to submit topics (non-marketing and DON ERP-relevant) to POCs (Gunarti Coghlan – gunarti.coghlan@navy.mil or Josh Fortenberry – josh.fortenberry@navy.mil)
  - Selected topic will be assigned Champion to work with presenter

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NAVFAC
Naval Facilities Engineering Command
ENGINEERING AND EXPEDITIONARY WARFARE CENTER

The Conceptual Site Model(CSM) – A Primary Focus of the Navy's SAP Reviews

Ken Bowers
NAVFAC Atlantic
July 2014

Overview

- **Sampling and Analysis Plans (SAP) Reviews**
  - Then and Now
  - Purpose
  - Historical
  - Shift in Focus
  - Typical Comments
  - Important Elements
- **Formats – Tiered Approach**
- **Conclusions**
- **Case Studies**
- **Questions**

Purpose of the SAP

- **DOD Policy requires the documentation of the 37 elements found in the Uniform Federal Policy – Quality Assurance Project Plan (UFP-QAPP) Manual**
  - Document Team decisions
  - Ensure data quality

- **Navy developed 37 worksheets**
  - Provides a consistent format

- **Required for ERN funded projects**

Benefit of Third Party Reviews

- **Provide a Fresh Set of Eyes**
  - Unfamiliar with site
  - Unfamiliar with previous decisions
  - Unfamiliar with team member's perspective
- **Big picture review**
  - See a shift from the optimum path
  - Provide strategy to refocus to keep on course
- **Share New Navy and Regulatory Policies**
- **Understand the Navy Team's Positions**
- **Support RPMs who have a great number of responsibilities by**
  - Providing comments with technical information to support suggested changes
- **Not meant to replace RPM**

Historical Reviews

- **Focused primarily on potential chemistry issue**
- **Review QA/QC from the laboratories**
  - Laboratory Control Samples (LCS)
  - Calibration verification
  - Surrogate recoveries
- **Ensure the correct analytical methods were used**
- **Review Standard Operating Procedures**

- **Historical reviews indicate these criteria were in good shape for most documents**

Fundamental Shift in Focus of Reviews

- Issue was not the quality of the data but rather the data itself

- Was the data being collected the correct data?

- Would the data answer the environmental questions?
  - Where the analytes those of interest?
  - Was the correct matrices being sampled?
  - Would the proposed sample design answer the question?

- Some worksheets or elements in the SAP are more important to the success of the project

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Fundamental Shift in Focus of Reviews

- **Does the format of the SAP meet the project needs?**

  - **Is there a one size fits all format?**

  - **What about small investigations?**
    - Confirmation samples after a removal action
    - Adding a few wells in order to delineate a plume

  - **A 37 worksheet SAP could cost more than the effort itself without added benefit**

Refocus SAP Process

- **Formats have evolved as well as the review focus**

- **Different level of detail to meet project needs**

- **Tier I SAP – Full 37 worksheets**
  - –Used for complex sites – RI level

- **Tier II SAP – Fewer worksheets**
  - –UFP-QAPP Manual allows for "graded approach"
  - –Used for less complex efforts
  - –Please discuss with LANT/SW/PAC before using
  - –Team must be on board with its use
    - •Format has been well received by stakeholders

What about LTM Sites?

- **Historical information may become lost or out of focus**

  - –**What are the COCs?**

  - –**What are the cleanup values?**

  - –**What matrices should be sampled?**

  - –**Previous data – data trends?**

- **The challenge is getting back on the optimum path**

Further Evolution of SAP Reviews

- **Not only did the SAP formats evolve – the reviews did too!**

- **High level reviews to step back and refocus on overall goals and exit strategies**

- **Supporting busy RPMs with more than just routine QA review**
    - **Provide RPMs with technical discussions they can share with Team**
        - Review data trends, previous investigations, decision documents, regulations

- **Broader focus began shifting to include CSM, DQOs and other project defining portions of the SAP**

Further Evolution of SAP Reviews

- **Ensure that our CSMs are continually updated and evaluated to keep projects on the optimum path**

- **Recognize compromises are made to keep projects moving but also recognize long term impact**

- **When projects leave the optimum path the Navy delays reaching site closure costing both time and money**

Frequent SAP Comments

- **Data Quality Objectives**
  - What is/are the environmental question being asked?
  - What types of data need to be collected to answer the question?
    - Soil
    - Groundwater
    - Sediment
    - Air
  - What analytes need to be measured in order to answer the question?
  - What are the Project Action Levels?

  - **They are ALL determined by the CSM!**

Frequent SAP Comments

Legend:
- CSM Revised — 24%
- DQOs Updated — 34%
- Analytes Changed — 18%
- Other — 25%
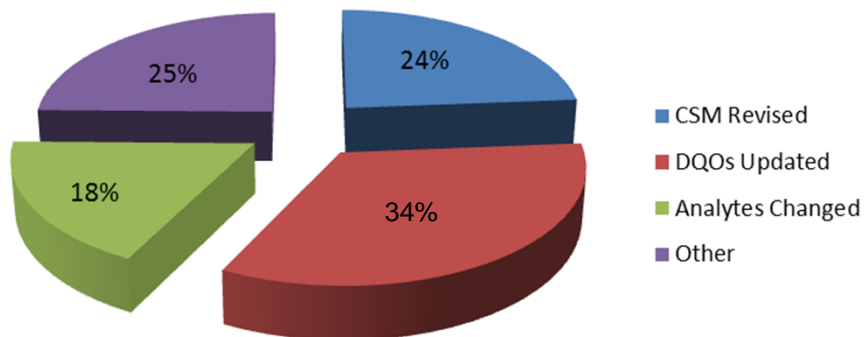
What makes an Effective CSM?

- **We all have a good idea of the textbook definition**
  - Geology
  - Hydrology
  - Nature and extent
  - Migration pathways and receptors

- **Also include the history of the Site**
  - What where the conclusions from the RI, FS and ROD?
    - Are the matrices and analytes supported by historical documents?
  - If the Site is in LTM
    - What have we learned to date with respect to trends, migration, treatments?
    - Have the COCs met cleanup goals?

Conceptual Site Model

- **Keystone for any investigation**
  - Sampling strategy, analytical suite and decisions must agree with CSM

- **How NAVFAC can realize significant cost savings?**
  - Ensuring what we do is supported by the CSM
  - Clearly understand the impact of responding to special requests or questions above and beyond what the CSM supports

- **Critical to staying on the optimum path**
  - Leaving the path results in additional cost through longer remediation timeframes and increased sampling
  - Understand the impact of rerouting
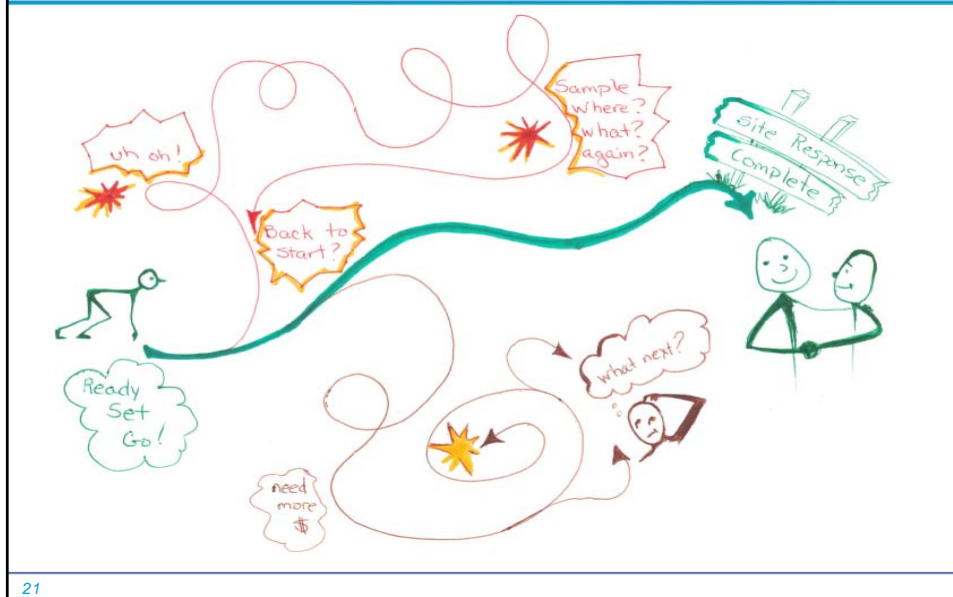
Optimum Path

Why Do We Leave the Optimum Path?

- **Two main reasons**
  - **The CSM is out of focus and not well understood**
    - Requires additional sampling/testing

  - **The CSM is well understood but not applied**
    - Requires additional Team discussions
    - Team members may have expectations that are not feasible

- **Neither follow the optimum path**

- **Lead to**
  - **Higher cost**
  - **Delay in reaching closeout**

Conclusions

- **Third party reviews provide benefits**
  - –Share lessons learned
  - –Share innovative ideas
  - –Update on new regulations and policies

- **Review process can change to support changing needs**

- **Provides an opportunity for technical assist on complex sites**
  - –Review decision documents
  - –Evaluate data trends
  - –Research regulations

Conclusions

- **Formats have been refined to support needs**
  - –Requirements met
  - –Important data documented
  - –Focus on key elements that support decision making
    - •DQOs
    - •CSM
  - –Keeps focus on the optimal path

- **Opportunity to understand the challenges faced by RPM and provide assistance**

Case Studies

- **Lets look at some real world examples**

- **Not to suggest RPMs are doing a poor job**
  - Complex sites
  - Conflicting priorities

- **Some specific comments and how they allowed RPM to make course corrections**

- **Results**

- **Names changed to protect the innocent but these are some real issues faced by RPMs**

Case Study 1 - Illustrates a CSM Out of Focus

- **What is the additional cost?**

- **The Navy has a site where a groundwater plume discharges to surface water**

- **The site has a ROD that includes a remedy whereby groundwater must meet surface water criteria**

- **The remedy includes groundwater extraction/treatment**

Case Study 1 - Conclusion

- **We reviewed historical documents and found that a Risk Assessment was never performed**

- **Findings were well received by the stakeholders**

- **RPM is developing additional testing necessary to clarify the CSM**

- **Effort may lead to no unacceptable risk determination – no remedy necessary**

- **How much did the Navy save?**

Case Study 2 - Does CSM Support Full Suite Analysis?

- **At one of our sites there is a groundwater plume – chlorinated solvent**
    - Not fully delineated
    - Required additional downgradient monitoring wells

- **Downgradient wells would be analyzed for full suite 8260, 8270, TAL metals and 8330 Explosives**
    - Original DQO in the SAP

- **Our review asked - Does CSM support full suite analysis?**
    - What is our exit strategy?
    - Cost?

Case Study 2 - Conclusion

- **Provided RPM with discussion points for partnering Team meeting and suggested path forward**
  - Tier I Screening Risk Assessment – identifies COPCs
  - If the chemical is not a COPC we should not continue sampling

- **RPM held additional discussions with the Team**
  - Team agreed to focus on COPCs - chlorinated solvent
  - 97% reduction in analytical effort
  - Focused the investigation
  - Led to a clearer exit strategy for the Site

Case Study 3 - Sampling Off Navy Property

- **Groundwater plume – chlorinated solvent and BTEX**
  - Not fully delineated
  - Groundwater flow towards fence line
  - Unsure whether plume reached the fence line – CSM?

- **Team proposed sampling offsite supply wells**
  - Full suite 8260, 1,4-dioxane, 8270, 8011, metals and thallium

- **Provided RPM with questions for Team discussion**
  - If found in the well is it from the Navy?
    - Non COPCs
  - What would public perception be - liability?
  - Could we install wells at the fence line to determine potential offsite migration?

Case Study 3 - Conclusion

- **RPM discussed with the Team**

- **Conclusions**
    - **Decided against sampling supply wells**
    - **Avoided potential liability issues**
    - **Install monitoring wells near the fence line in order to sharpen the CSM**

Case Study 4 – Long Term Monitoring

- **Landfill site**

- **Closed for 70+ years**

- **ROD – 2 COCs – metals**

- **5 Year Review**
    - **Analyze for full suite 8260, 8270, metals, PCBs, Dioxin and Pesticides**

- **SAP reviewers asked:**
    - **What criteria should we compare the data?**
    - **How will we meet site closure?**

Case Study 4 - Conclusion

- **RPM has discussed with Team**
  - –**Suggest the Navy only sample for site COCs as outlined in ROD**

- **Currently waiting for response from Stakeholders**

- **If accepted will result in 99% reduction in sampling and analytical effort**

- **Resulted in a clearer exit strategy and optimum path**

Case Study 5 – LTM with Full Suite Analysis

- **The Navy has 8 sites that have an LTM ROD – sample annually**
  - –**Each site has from 8-10 COCs**

- **Annual Performance Monitoring includes full suite analysis**
  - –**Metals, VOCs, SVOCs, Pesticides**
  - –**Sampling sediment, surface water, groundwater**

- **After nearly 15 years of collecting data the Team struggles with an exit strategy**

- **What criteria should the data be compared?**

Case Study 5 - Conclusion

- **We are often told that running the full suite of analytes doesn't cost any more than running just the chemicals of interest**

- **How much has the Navy spent during the last 15 years?**
  - **Sampling costs**
  - **Analytical costs**
  - **Data Reporting**
  - **Validation costs**
  - **Report writing**
  - **Data evaluation - trend charts**

Summarize

- **The goal of SAP reviews is to provide value added comments**
  - **Transitioned from chemistry focus to that of CSM and DQOs**
  - **Allow Team to remain on Optimum Path**
  - **Conduct research to assist RPMs**

- **Continued modification of the SAP format**
  - **Meet the requirements**
  - **Allow for graded approach**

- **Provided several Case Studies**
  - **Importance of CSM**
  - **Clearly defined DQOs**
  - **Demonstrate cost of leaving the Optimum Path**
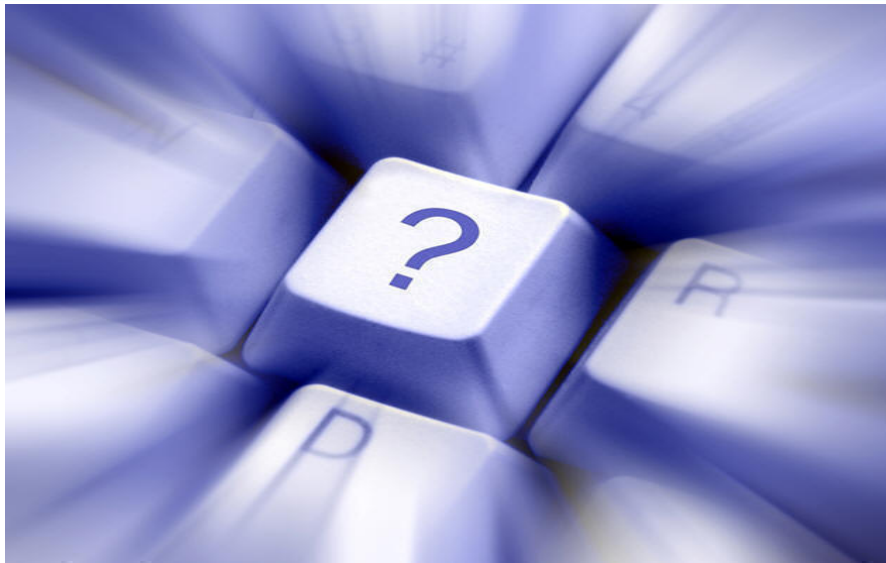
We are here to Help!

- **Enlist our help**
  - **Our goal is to support your efforts**
  - **Pre-scoping**
    - Reduce the number of comments
    - Reduce the review time
    - Lessons learned from other sites
    - Compare to Navy Policy
  - **Site visit**
  - **Full scoping session**
  - **Positive feed back from RPMs**

U.S. Navy

Questions