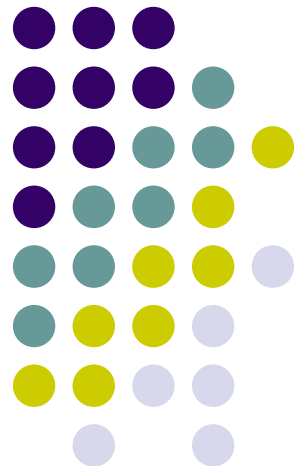
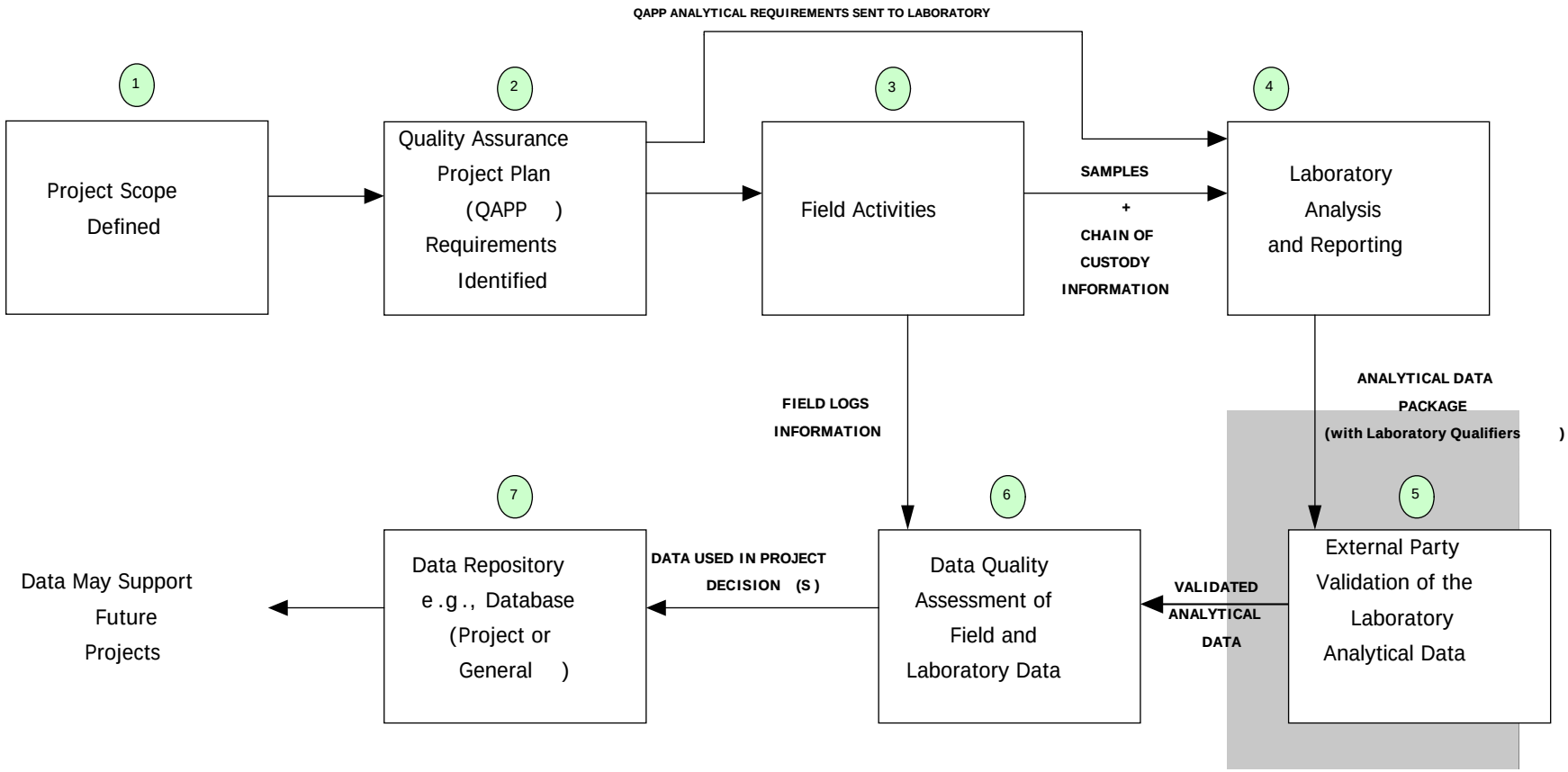
Improving Communication About Superfund Lab Data Validation

January 28, 2009

FASTAC Meeting
Dallas, TX



Typical Superfund Data Generation and Review Process



Current State:
Lab Data Verification / Validation

- Often laborious, complex procedures.
- Inconsistency/ambiguity in:
  - terminology
  - guidance
  - practice
- Many different reviewing organizations.
- Communication about specifics of reviews inconsistent, incomplete.

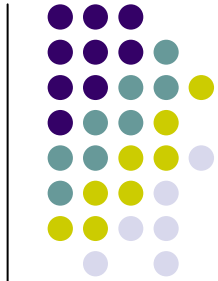
Workgroup Goals

- Improve communication within Superfund about scope and content of lab analytical data verification and validation.
- Encourage appropriate use of data for
  - Task at hand
  - Future decisions

Approach Taken

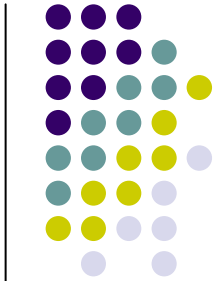
- Facilitate communication though the use of “labels” that summarize verification and validation checks.
- Checks to be grouped into stages.
- Each stage to build on the checks from previous stage.
- Labels also describe nature of review process (manual and/or electronic)

Range of Validation Checks



- Completeness
- Compliance
  - Sample-related QC
  - Instrument-related QC
- Recalculation
- Instrument output review

Completeness Checks

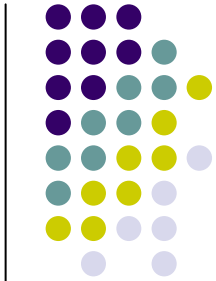


- To make sure that the requested data deliverables are provided.
- To determine that data requested are actually present in the deliverables.
- Can include hard copy and/or electronic formats.

Compliance Checks

- To compare analytical Quality Control (QC) results with the acceptance criteria, requirements or guidelines present in the regional data validation documents, analytical method(s) or contract.
  - *Sample-Related QC* (e.g., blank contamination, surrogate recoveries)
  - *Instrument-Related QC* (e.g., instrument calibration, tune)

Recalculation Checks



- The laboratory reported values (e.g., sample results, instrument calibration results) are verified by recalculation using instrument output data reported by the laboratory.

- Confirms that correct formulae and values were used in calculation of results.

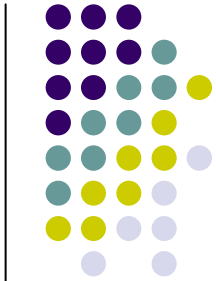
Instrument Output Checks

- Actual instrument outputs should be checked to ensure that the laboratory reported analytes have been correctly identified and quantitated (e.g., are mass spectra properly identified? Are peak integrations correct?).

Validation Stage Labels

• Completeness	Stage 1	(S1V)
• …and Sample QC	Stage 2a	(S2AV)
• …and Instrument QC	Stage 2b	(S2BV)
• …and Recalculations	Stage 3	(S3V)
• …and Instrument output	Stage 4	(S4V)

Process Labels

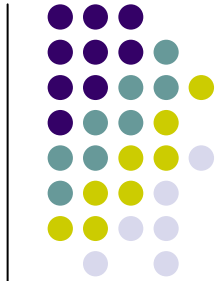


- Electronic review only E
- Manual validation M
- Electronic and manual EM

Examples

- Stage 2b validation by electronic tools only:
  - S2BVE
- Stage 3 validation by both electronic and manual processes:
  - S3VEM

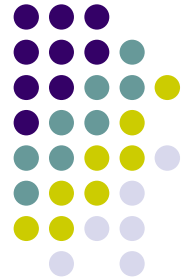
Desired Outcome



- Third party reviewers associate the reviewed data with its review stage as data is shared with decision makers.
- Data users quickly recognize the nature of review performed on data prior to use.
- Future use of data is facilitated by labels that travel with data.

Participants

- OSRTI
- Regional QA and Lab staff
- OEM
- OEI
- OGC
- FFRRO
- OSW
- OSWER
- OECA
- Regional Waste Management Division Directors
- Regional RS&T Center Directors



QUESTIONS??