

5. Special Studies Program

Special studies (SS) are initiated for the purposes of supporting permit development, for special investigations not categorized by any of the other station definitions, or to scientifically develop or validate new methods and techniques. A special study must have a Quality Assurance Project Plan (QAPP) developed and approved by the WQM Quality Assurance Officer before sampling efforts can begin (see Section IV – Quality Management Program, on project plans). The purpose, siting, parameters, frequency, and duration of special study stations are outlined in the study-specific SS QAPP. Upon approval, the study is registered and receives a special study number in the DEQ CEDS 2000 database. Copies of the QAPP and any other pertinent documents, including interim and final reports, are stored in the database as Microsoft Word® documents, along with the title of the project and a brief description of its objectives. All monitoring stations where samples were collected for a specific special study are automatically linked to its Special Study Screen in CEDS, and a running summary of analytical expenditures associated with the study is maintained automatically. (See “[Special Study Module of the CEDS 2000 Database](#)” [III-D-0a.doc] for an illustrative example.)

(a) Purpose

Special Studies activities facilitate the accomplishment of Objectives 2, 6, 13, and 14 of the WQM Strategy.

(b) Reporting

A final post-study report with the study findings must be completed and submitted to the state monitoring coordinator and made public upon the study’s completion. The expected completion date of the study must be included in the duration statement of the project plan.

Electronic copies of interim and final special studies reports are permanently stored in the Special Studies Module of the CEDS database.

(1) Generic Special Studies

Generic Special Studies are a permanent categorical component of the DEQ WQM Strategy, although specific individual studies are temporary in nature. They are designed, as needed, to provide the data required to answer appropriate, unanticipated questions about water quality, sampling and analytical methodologies, etc. Regional Office or Central Office personnel may initiate proposals for Special Studies. A proposal, accompanied by a Quality Assurance Project Plan (QAPP), is entered into CEDS and must be submitted to and approved by the Regional Office Director or Program Director and the DEQ Quality Assurance Officer prior to samples being collected. Upon approval, the study is activated as live in CEDS whereupon sample collection may begin. Copies of the QAPP and any other pertinent documents, including interim and final reports, are stored in the database along with the title of the project and a brief description of its objectives. All monitoring stations where samples are collected for a specific special study are automatically linked to its Special Study Screen in CEDS, and a running summary of analytical expenditures associated with the study is maintained automatically.

(i) Purpose

Purpose varies, depending on the project. They are used to support data uses not covered by any of the other special study stations designations.

(ii) Siting

Station siting procedures are specific to each individual study.

(iii) Parameters

Parameters vary, based on project needs.

(iv) Frequency

Frequencies vary, based on project needs.

(v) Duration

Durations vary, based on project needs.

(vi) Action

Actions are determined by the goals of the study, as outlined in the project plan. If the study is inconclusive, the study may be extended with modifications (included in a modified project plan) and repeated.

(vii) Plan and Schedule

Special study monitoring is an integral, permanent component of the DEQ WQM Strategy to investigate water quality conditions of the state's water resources. Special studies have been used by the DEQ for decades and the program is considered a fully implemented component of the strategy. By their very nature, individual studies vary widely in scope, duration and cost, each of which is described in the relevant Special Study Project Plan. For some of the studies long-term planning is difficult, if not impossible, because most such studies are established in response to newly identified needs, which may vary from defining the scope of emerging water quality problems to the evaluation of new sampling or analytical methodologies. Many special studies are initiated in response to an immediate problem or threat to the quality of the Commonwealth's surface waters. For others, which may involve multi-year sampling investigations, additional resources (*e.g.*, Virginia Environmental Emergency Response Fund - VEERF) may be utilized, and thoroughly detailed project scope, purpose, and objectives are defined such that proper planning identifies the project's specific resource requirements. The need for special studies is discussed each year during annual budgetary planning sessions.

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(2) Acid Mine Drainage Sites

Acid mine sites exhibit the potential for leaching metals from mines and mine tailings and to facilitate the transfer of metals from the sediment to the dissolved phase due to depressed pH levels. At least on one

occasion, data from a known AMD site contained some of the highest levels of dissolved toxic elements ever measured, and they were well above the water quality criteria.

The Department of Mines Minerals and Energy has conducted a survey of approximately 1300 potential sites that may contribute significant pH influences to receiving streams. Now that the data have been reported to the VADEQ, the appropriate sites need to be prioritized and targeted in the strategy for trace metal sampling. The targeted monitoring at Acid Mine Drainage sites, as identified by the results of the Department of Mines, Minerals, and Energy study, will be initiated when resources are available. Estimated site numbers are approximately 1300 and will require approximately \$490,000 in analytical costs to be spread out over approximately a five-year period, at an estimated 325 man days of field time.

(3) Shenandoah River

Monitoring for mercury in the Shenandoah River Basin and its tributaries is a permanent program in DEQ's monitoring network. As a result of a 1984 settlement between DuPont and the state for past releases of mercury from the company's former plant in Waynesboro, VA, a 100-year study of the basin is managed and implemented by DEQ. As we have reached the 25-year mark, DEQ continues to routinely monitor the basin, collecting water samples every other month, fish samples every five years, and sediment samples every 10 years.