



ANSWERS

California Integrated Waste Management Board

Environmental Field Sampling Training

DQO Worksheet

September 2006

Scenario

An old buried dump in a rural area is reported to your agency for investigation. The location of the dump on the 3 acre area is obvious and a preliminary pothole investigation indicates the presence of only general construction debris. A few subsurface soil samples indicated that the contamination was below cleanup standards. However, a stream with salmon spawning habitat runs within 10 feet of the dump and reduced fry production has been documented for the past. No other sources of water pollution are identified upstream. (Draw simple sketch of site on board.)

Step 1: State the problem

Problem: Contamination from a dump may be impacting the water quality of a nearby stream and effecting salmon fry survival rates.

Team: PM, water quality specialist, wild life biologist, field technician

Resources: N/A

Step 2: Identify the Goals of the Study

Principal Study Question: Determine if contamination from the dump is impacting the water quality of the stream.

Alternative Actions: If the dump is impacting the stream water quality then the dump will be remediated. If the dump is not impacting the stream water quality then no action.

Decision Statement: Determine if water quality has been impacted.

Step 3: Identify Informational Inputs

1. Concentrations of potential contaminants in surface water samples
 - a. Metals by EPA Method 6010B
 - b. VOCs by EPA Method 8260B
 - c. SVOCs by EPA Method 8270C
 - d. PCBs by EPA Method 8082
 - e. Pesticides by EPA Methods 8081B (organochlorine pesticides), 8141A (organophosphorus pesticides), and 8151A (chlorinated herbicides)
2. Location of water samples.
3. Action levels for water samples.



ANSWER SHEET
California Integrated Waste Management Board
Environmental Field Sampling Training
DQO Worksheet
September 2006

Step 4: Define the Boundaries of the Study

Population of Interest: Contaminant concentrations in surface water samples.

Spatial: 100 feet upstream to 500 feet downstream of boundary of site

Temporal: None

Step 5: Develop the Analytic Approach

Population of Parameter: Individual results will be compared to action levels.

“If, then, else” Decision Rule: If contaminant concentrations exceed the action levels then remediation actions will be implemented else no action will be taken.

Step 6: Specify Performance or Acceptance Criteria

Statistical Test: Individual data results will be compared to surface waste action levels thus no statistical test is required. Errors will be reduced by using standard field and analytical procedures.

Step 7: Develop the Plan for Obtaining Data

1. Collect surface water samples 50 and 100 feet upstream.
2. Collect three surface water samples near dump site.
3. Collect surface water samples at 100 and 200 feet downstream.
4. Collect water quality parameters with a Horiba U-10 at each sample location.
5. Analyze all samples for
 - a. Metals by EPA Method 6010B
 - b. VOCs by EPA Method 8260B
 - c. SVOCs by EPA Method 8270C
 - d. PCBs by EPA Method 8082
 - e. Pesticides by EPA Methods 8081B (organochlorine pesticides), 8141A (organophosphorus pesticides), and 8151A (chlorinated herbicides)