

Jefferson Co. Water Quality Monitoring Program

EXHIBIT A DEFINITIONS

Baseline Monitoring: Surface water quality sampling designed to establish existing conditions against which future trends and/or determinations of harm can be assessed. This ordinance establishes a goal of completing baseline monitoring on all identified streams within five years of the effective date of this ordinance.

Compliance Assessment: A property or area specific evaluation of compliance with adopted performance standards. Compliance Assessments will routinely be initiated when a statistically significant violation(s) of baseline conditions and adopted performance standard(s) are observed.

Exceedance: A measured increase in a monitoring parameter above an adopted performance standard.

Endpoint: A measurable physicochemical property of water or sediment for which a performance standard has been legally established.

Baseline Conditions: Geometric mean (for bacteria) or arithmetic mean (all other endpoints) water quality data published in the Jefferson County Conservation District Report dated 1988-89. Historic baseline conditions are specific to watersheds that have previously been monitored. Baseline conditions for previously unmonitored watersheds or for any watershed for which baseline data describing all of the required parameters are not available will be established during the first year of monitoring of those watersheds.

Source Identification: Sampling that is specific to an identified watershed or portion of a watershed intended to determine the source of an exceedance in Water Quality Standards and baseline conditions.

Water Quality Standard (WQS): A specific numeric value established for a monitoring endpoint that, if exceeded, will require action by the County to identify the source of the contamination when the exceedance also exceeds the watershed's Baseline Condition. Water Quality Standards are established by Chapter 173-201A WAC.

Water Quality Thresholds: A specific numeric measure established for a monitoring endpoint set at a more stringent level than a Water Quality Standard that, if exceeded, may require a change in the monitoring program, but that does not require immediate action.

Water Quality Trend: A detectable change over time for a monitoring parameter after Baseline Monitoring is completed. Trends are established by a statistically significant ($p \leq 0.05$) coefficient on an appropriate dependent variable. A Water Quality Trend can serve as early warning that an Exceedance may occur in the future and will typically result in increased monitoring within a watershed and may result in Compliance Monitoring.

Watersheds: Watershed boundaries are established drainage areas. Watersheds are also referred to as "basins."

Performance Standards. These are standards against which future water quality endpoints are evaluated to determine compliance with the Critical Area Ordinance. Exceedances occur when existing water quality endpoints do not comply with the water quality standards published in Chapter 173-201A WAC and documented Baseline Conditions, whichever is least restrictive.

18.XX.XXX CRITICAL AREAS

I. Monitoring. Monitoring water quality is important to determining whether exemptions and uses permitted under this Chapter are adversely affecting Critical Areas. Commencing on the date of enactment of this ordinance, the Administrator shall implement an interdepartmental water quality monitoring program in coordination with other local, state and federal agencies conducting water quality monitoring in Jefferson County or adjacent waters. The Department shall prepare annual reports describing the results of this monitoring to the public, State Agencies, and the Board of County Commissioners, as part of the annual Comprehensive Plan review. The Water Quality Monitoring Program shall have four components: baseline monitoring, compliance assessment; source identification; and adaptive management.

1. Purpose. The primary focus of the County's Water Quality Monitoring Program is to detect and respond to potential sources of surface water contamination that are adversely affecting critical areas.
2. Guiding Principles. The following principles shall be used to guide the implementation of the Water Quality Monitoring Program and adaptive management actions that are used by the County to address exceedances in water quality standards, baseline conditions or thresholds that are or may in the future adversely affect designated critical areas.
 - a) Water quality monitoring of all fish bearing perennial streams (Department of Natural Resources Type F) shall be conducted countywide to establish baseline conditions in watersheds where:
 - i. baseline conditions have not already been established and;
 - ii. for which there is a reason to believe that development may now or in the future adversely affect water quality and;
 - iii. the watershed lies at least partially outside state, federal and/or tribal lands;
 - iv. The monitoring program shall be conducted in a manner that encourages the involvement of property owners and voluntary compliance.
 - v. Except when authorized pursuant to ICC 17.03.260A, access to private property to conduct Baseline Monitoring and Source Identification shall only occur if the property owner voluntarily consents in writing to such access.
 - b) Compliance monitoring will be undertaken as quickly as possible under the following conditions:
 - i. in those watersheds where new baseline monitoring indicates existing exceedances of performance standards. Exceedances shall be determined using *t-tests* of arithmetic means with $\alpha = 0.05$ for all endpoints excepting bacterial endpoints, which shall be based on geometric mean values.
 - ii. where an exceedance of the adopted performance standard is observed;
 - c) Compliance monitoring may be undertaken where routine monitoring determines that a statistically significant trend (regression analysis with a non-zero slope significant at $p \leq 0.05$ indicates deteriorating water quality;
 - d) Source Identification shall be initiated whenever Compliance Monitoring confirms violation of a performance standard. The goal of source identification is to determine the nature of the exceedance. If it is determined to be anthropogenic in nature, then an attempt shall be made to determine the specific property or properties from which the contaminant is originating. Source Identification will require development of

protocols specific to the situation that provide for the efficient determination of the sources of the exceedance.

- e) Adaptive Management. When Source Identification identifies a specific property or properties that are contributing to an existing or probable future Exceedance. The following sequence of approaches to correcting the problem will be undertaken:
 - i. Jefferson County will request that the property owner(s) participate in a voluntary adaptive management program to correct the identified problem.
 - ii. Educational outreach will be the first action taken by the County after a Compliance Assessment or Source Identification determines that an Exceedance is attributable to a specific source or sources.
 - iii. When available, technical assistance may be provided by the Jefferson County Conservation District or other local, state or federal jurisdiction. Alternatively, the property owner(s) may retain a qualified professional to develop a management plan for correcting meeting the performance standard.
 - iv. Correction of Exceedances associated with agriculture will focus on incorporation of National Resource Conservation Service *Best Management Practices* using technical assistance provided by Jefferson County's Conservation District.
- f) Enforcement. All property owners must comply with State water quality standards. The Washington State Department of Ecology is charged with the responsibility to initiate enforcement actions when such actions are required under State law. In addition:
 - i. When specifically authorized by this Chapter, the Director may order a property owner(s) to modify their management practices in order to achieve compliance with a Performance Standard or Baseline Condition, whichever is less restrictive.
 - ii. Administrative actions taken by the County to address non-point source contamination adversely affecting designated critical area functions and values shall be proportional to the scale of the exceedance. Actions may focus on single properties, groups of properties, individual watersheds or segments of watersheds or on the county as a whole. However, the administrative action taken should be the least onerous available.
 - iii. Any order directing that management practices be modified may be appealed as a Type I decision to the Hearing Examiner by a property owner that is required to modify management practices. Appeals will be governed by this Chapter and Chapter 16.19 ICC.
- g) Monitoring protocols. All stages of monitoring shall utilize the best available "peer reviewed" protocols for sampling and measuring contaminants. The Puget Sound Estuary Protocols (most current edition) provide a compendium of protocols useful for monitoring. The following general provisions shall apply.
 - i. Monitoring will be accomplished bi-monthly (6 times per year)
 - ii. Site specific protocols may be developed where conditions warrant. For instance, eutrophic waters may require monitoring of dissolved oxygen and temperature at several times during the day in summer to establish diurnal trends and ranges.

- iii. Monitoring of lakes having residential development within XXX feet of their shorelines will be included when baseline monitoring of Type F streams has been completed.
 - iv. The water quality database will include inputs for the Washington State Department of Health describing nearshore marine fecal coliform data and from the Department of Ecology and the U.S. Environmental Protection Agency associated with their ongoing monitoring programs.
 - v. The Jefferson County Conservation District will establish permanent water quality monitoring stations at identifiable locations. Stations having public access (bridges, etc.) are preferred. Permanent monitoring stations will be established on private property only after obtaining written permission from the property owner.
- h) Monitoring endpoints. The endpoints listed in Table 1 will be monitored during baseline and routine monitoring. Additional endpoints may be added generally or on a site specific basis as needed.

Table 1. Water quality endpoints to be evaluated quarterly in support of baseline and routine monitoring.

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| 1. Dissolved Oxygen | 5. Phosphorus (PO ₄) |
| 2. Temperature | 6. Dissolved Inorganic Nitrogen (NO ₂ , NO ₃ , NH ₃ , NH ₄ ⁺) |
| 3. Turbidity | 7. Hardness (as CaCO ₃) |
| 4. Conductivity | 8. Fecal coliform bacteria |

- j) Reporting. The Administrator will produce annual reports and make them available to the public and State Agencies. These reports will include all Baseline Monitoring data, summary statistics, an assessment of the accuracy and completeness of the data, and a description of data collection issues, if any, identified during the reporting period as well as the following additional information:
- i. A background section describing baseline conditions, current performance standards, and previously detected exceedances.
 - ii. Materials and methods section describing the protocols used to include sampling methods, sampling dates, endpoints evaluated, and quality assurance procedures.
 - iii. Results section to include a general description of available rainfall data for the county, a list of the sampling stations and dates on which samples were collected and a tabulation of the results for all endpoints. The results section should include a summary description of conditions existing in each evaluated watershed to include appropriate statistical analyses assessing compliance with performance standards and the identification of significant trends suggesting possible future problems. The results section should discuss, in detail the results of all Compliance Assessments and Source Identification studies undertaken during the previous year. The current status of all previously identified exceedances and voluntary actions undertaken by property owners shall be discussed to include their current water quality status and/or trends and an estimate of the effectiveness of previous actions taken to correct the problem. The status of previously imposed enforcement actions shall be discussed and the effectiveness of enforcement versus voluntary corrective actions compared.

