

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

CONTRACTOR'S QUALITY CONTROL FOR SURFACE WATER AND
SAMPLING PROCEDURES FOR QUALITY DETERMINATION

1.0 PURPOSE

- 1.1 The purpose of this procedure is to establish practices for the Contractor's Quality Control System for surface waters. This procedure is intended to be used in designing an adequate Quality Control Plan for the sampling, testing, and evaluation of surface water quality during construction.
- 1.2 This procedure includes requirements for methods to be used in collecting samples and conducting testing. Also, procedures are established that outline actions to be taken if the water quality is not maintained.

2.0 APPLICABLE DOCUMENTS

- 2.1 MP 642.40.20
- 2.2 West Virginia Administrative Regulations, State Water Resources Board, Chapter 20-5 and 20-5A, Series I
- 2.3 Environmental Water: Quality Check

3.0 REQUIREMENTS AND GUIDELINES

- 3.1 General Requirements: The Contractor will design a Quality Control Plan to include tests, methods, and frequency of sampling. The plan will be submitted to the Engineer at the Pre-Construction Conference and a plan must be approved by the District Materials Section before construction may begin. The Contractor's Quality Control results of surface water testing, both field and laboratory, will be documented and copies will be provided to the Engineer throughout the life of the contract.

- 3.1.1 The Quality Control Plans shall be updated as needed during the life of the contract. The updating will be done by the Contractor as directed by the project Engineer/Supervisor. The updating shall be approved by the District Construction Division.
- 3.1.2 The Contractor will assign a qualified technician to each project to perform and document the sampling and testing.
 - 3.1.2.1 A qualified technician is defined as a person who is knowledgeable and trained in the sampling and testing of surface waters for those tests as stated in Section 4.3 of this procedure. A resume' of the technician's experience in water quality sampling and testing must accompany the Quality Control Plan. If found inadequate, the technician will be replaced by the Contractor or be given additional training so that sampling and testing is adequately performed.
- 3.2 Quality Control Plan: The plans will clearly describe the methods by which the Quality Control Program will be conducted. As a minimum, an acceptable plan will include the following:
 - 3.2.1 Name of company official for the specific project who is responsible for the Quality Control and liaison with the Division project personnel. Also, the name of person(s) actually conducting sampling and testing. Sampling and testing will be conducted by a qualified technician and such duties are to be this person's primary assignment.
 - 3.2.2 The tests and type of equipment to be used in sampling and testing will be listed along with accepted methods.
 - 3.2.3 The number and locations of sampling points shall be identified. This may need to be updated frequently during the course of the project.
- 4.0 QUALITY CONTROL BY THE CONTRACTOR
 - 4.1 Quality Control testing of surface waters will be performed by the Contractor. Sampling and testing will be conducted on those surface waters within the Division of Highways project areas and in adjacent surface waters that may be affected by construction on these projects.

- 4.1.1 The Contractor will ensure that a precipitation gauge is located on the project. A daily record will be kept of precipitation. This record will be submitted to the project with any test results that cover the same time period.
- 4.2 Points of Sampling
 - 4.2.1 Water quality will be determined in flowing streams and/or other surface waters to be affected by construction.
 - 4.2.1.1 The Contractor will monitor the quality of the water upstream and downstream from the limits of construction.
 - 4.2.1.2 In cases of major highway construction, streams will be sampled above and below structures, such as bridges, large sediment control devices, or a series of smaller devices.
 - 4.2.1.3 Streams outside the construction limits that receive flow from construction affected streams are to be sampled. This sampling will be conducted on the receiving stream above and below the mouth of the stream affected by construction. Sampling on the receiving stream will not have to be conducted when the distance of the affected stream from the construction limits to the receiving stream is greater than one-half mile, unless it is observed that pollution is carried a greater distance to enter the receiving stream.
 - 4.2.2 Samples will be taken approximately 15 m above and 30 m below construction limits, structures, sediment control devices and the confluence of streams.
 - 4.2.2.1 When mixing has not created visible homogeneous conditions within approximately 30 m below a confluence, sampling will be conducted at the nearest point where visible homogeneity exists throughout the cross section. This location is to be recorded. When homogeneity does not exist within approximately 304 m below the confluence, a minimum of three samples are to be taken along the cross section at this point. Additional samples may be necessary if determined by the Engineer.

- 4.2.3 Samples should not be taken from areas of heavy aeration, agitation, or stagnation, unless for specific circumstances and tests.
- 4.2.4 Under some conditions, points of sampling may have to be located at a specific spot to determine influx of concentrated substances or isolated sources of pollution.
- 4.2.5 Grab samples will be appropriate in most cases. Depth of sample will be from just below the surface to 9 m below depending on the depth of the stream.
 - 4.2.5.1 Containers for grab samples may be either soap and water cleaned glass or plastic, fitted with plastic screw caps. Containers will be able to hold at least 500 ml.
- 4.3 Testing
 - 4.3.1 The following tests will be conducted using MP 642.40.20:
 - pH
 - Turbidity

Testing for pH and turbidity will be conducted within thirty (30) minutes after the samples have been collected. The Engineer will be notified immediately after testing when limits have been exceeded.
 - 4.3.1.1 For other tests that may be specified in the contract document, the Contractor will utilize MP 642.40.20.
 - 4.3.2 The Contractor's attention is directed to the "Limits as per W.Va. Administrative Regulations" attachment. Under the turbidity limit it is noted that this control factor may not apply if the sediment control plans are submitted to the appropriate cooperative. This may result in a waiver approval by the cooperative with concurrence of the chief for streams other than trout streams. The cooperative, as mentioned above, is the Soil Conservation District that has control in the area of construction. The chief, as mentioned above, is the head of the Water Resources Division of the Division of Natural Resources.

- 4.3.2.1 The waiver approval may contain limits for turbidity. If the waiver does not contain limits for turbidity, then the following limits shall apply. Turbidity shall not exceed 20 Nephelometric Turbidity Units (NTU) over background (I) turbidity when the background is 50 NTU or less, or have more than a 20 percent increase in turbidity (plus 20 NTU minimum) when the background turbidity is more than 50 NTU.
- 4.2.2.2 The continuation of the waiver, for the duration of the project construction period, will be based on the adherence of the Contractor to the control plan submitted.
- 4.3.2.3 The Engineer shall be monitoring the water quality data to determine compliance with the specifications and sediment control plan to determine if the methods of control need revision, maintenance, or adjustment.
- 4.4 Frequency and Duration of Sampling
- 4.4.1 In normal weather conditions, water quality sampling and testing will be conducted daily at each site. When testing indicates that pollution problems exist, sampling and testing will be conducted once per work shift.
- (1) Background water quality is the quality of water entering the project area or the quality of the receiving body of water upstream from the discharge point of project affected water.
- 4.4.2 During periods of no precipitation (greater than one week), when it is evident by the Contractor's testing that pollution is not being created beyond standard limits at a site, and with the concurrence of the Engineer, water quality sampling and testing may be limited to a weekly frequency at these sites. Visual observations are to be made daily to determine that conditions have not significantly changed. If a change is noted visually, testing is to be conducted and the frequency revised as needed.
- 4.4.3 During in-stream construction, when visual inspection indicates possible pollution, water quality sampling and testing will be conducted at least once per work shift.

- 4.4.4 During periods of project shutdown sampling will be conducted at least once per week.
- 4.5 Documentation of Results
 - 4.5.1 Water quality results will be maintained on the Division's form entitled "Environmental Water: Quality Check" or on a Contractor's form containing the same information as the Division's form. The completed forms will be provided to the Project Engineer on a daily basis.
- 5.0 ACCEPTANCE PROCEDURE
 - 5.1 Acceptance shall be the responsibility of the Division. Acceptance may be accomplished by testing a sample obtained by and tested by the Contractor, by observation of Contractor's sampling and testing, or by sampling and testing independent of the Contractor's.
 - 5.1.1 Testing or observation frequency should be equal to approximately 10% of the frequency of the Contractor's sampling and testing listed in the Quality Control Plan. Normally, some sampling and testing shall be independent of the Contractor's testing.
 - 5.1.2 When discrepancies exist between the Contractor's data and the Division's findings, the Division and Contractor shall individually test a sample in an attempt to locate and correct the problem. These samples shall be taken at the same times and locations. The investigation of the problem is to be mutually cooperative.
 - 5.2 Water quality which is affected by actions of the Contractor resulting in violations will require action to be taken. The water quality requirements are contained in the West Virginia Administrative Regulations, State Water Resources Board, Chapter 20-5 and 20-5A, the limits specified by the cooperative or this Materials Procedure. Action will be taken by the Contractor to reduce the pollution to acceptable limits (for such limits, see attachment or section (4.3.2.1). The actions may include, but are not necessarily limited to, the following:(1) Work in the area of influence will be reduced or stopped until the cause, such as rain, has abated to a degree that pollution is within acceptable levels and/or (2) appropriate Best Management Practices will be utilized to reduce the pollution to an acceptable level.

- 5.2.1 If the Contractor does not take action to control the pollution, the Engineer may stop construction work other than pollution control work, on the project until adequate measures are taken to control the pollution.


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GLR:w

Attachments

MP 642.03.50
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Limits As Per West Virginia Administrative
Regulations, State Water Resource Board, Chapters
20-5 and 20-5A

pH - No value below 6.0 nor above 9.0

Turbidity - No point or non-point source to West Virginia's waters shall contribute a net load of suspended matter such that the turbidity exceeds 10 NTU over background turbidity when the background is 50 NTU or less, or have more than a 10 percent increase in turbidity (plus 10 NTU minimum) when the background turbidity is more than 50 NTU.

This limitation shall apply to all earth disturbance activities and shall be determined by measuring stream quality directly above and below the area where drainage from such activity enters the affected stream. Any earth disturbance activity continuously or intermittently carried on by the same or associated persons on the same stream or tributary segment shall be allowed a single net loading increase.

This regulation shall not apply to those activities at which Best Management Practices in accordance with the State's adopted 208 Water Quality Management Plan are being utilized on a site specific basis as determined by the appropriate 208 cooperative with concurrence of the chief or an approved Federal or State Surface Mining Permit is in effect. This exemption shall not apply to trout waters.

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ENVIRONMENTAL WATER: QUALITY CHECK

PROJECT _____ COUNTY _____ DISTRICT _____

LAB. NUMBER _____

DATE SAMPLED/TESTED _____

SAMPLED BY _____

SAMPLING OBSERVED BY DISTRICT: YES NO

RAINFALL (24 HRS.) _____ "

	SITE#	SITE#	SITE#	SITE#	SITE#
STATION	_____	_____	_____	_____	_____
OFFSET	_____	_____	_____	_____	_____
TURBIDITY	_____	_____	_____	_____	_____
pH	_____	_____	_____	_____	_____
IRON	_____	_____	_____	_____	_____
WATER TEMP. °C	_____	_____	_____	_____	_____
AIR TEMP. °C	_____	_____	_____	_____	_____

REMARKS:

Technician's Signature