

ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF ENFORCEMENT

*COMPLIANCE MONITORING PROCEDURES*

NATIONAL FIELD INVESTIGATIONS CENTER-DENVER  
DENVER, COLORADO

JULY 1974



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## COMPLIANCE MONITORING PROCEDURES

July 5, 1974

NATIONAL FIELD INVESTIGATIONS CENTER - DENVER

COMPLIANCE MONITORING PROCEDURES

Verification Monitoring is required to document the effectiveness of self monitoring and reporting activities of permittees and to provide sufficient documentation and verification of NPDES permit conditions and related requirements to justify the issuance of section 309 regulatory orders or other enforcement actions. Verification monitoring, then, will be performed in sufficient detail to acquire primary evidence to satisfy case preparation requirements.

National Field Investigations Center procedures, as outlined below, are consistent with, and meet the objectives of, the overall EPA compliance monitoring strategy. Major emphasis will be placed upon specific permit parameters (effluent limitations, compliance schedules, etc.) although additional surveillance may be required to demonstrate water quality standards violations, the discharge of toxic substances, etc.

To provide the basis for design of the sampling program at each location, a variety of background information will be obtained, compiled and evaluated prior to on-site visits. This will normally be accomplished in two steps. The General Point Source File (GPSF) and auxiliary computerized data bases will be searched and all available application data, permit requirements (effluent limitations, monitoring requirements, compliance schedules), and self-monitoring data will be retrieved. A visit will then be made to the Regional and/or State office, as appropriate, to review permit files and collect additional information, as necessary, to provide the most current data available on production, pollution controls and compliance with permit requirements. The self-monitoring reports will be screened for permit violations, manually at first and, optionally by computer after GPSF becomes fully functional. As a general rule, the Regional office should provide the permittee with reasonable notice of a time period within which inspections and sampling will be conducted. It will be more meaningful, however, to schedule "unannounced" visits for the actual verification and sampling.

Facility inspections and sampling are designed to be consistent with the overall compliance monitoring objectives. In-plant evaluations will be conducted prior to, or concurrent with, the sampling program. In-plant evaluations will be made by personnel most knowledgeable of the particular waste source and the processes employed. Industrial dischargers will be subjected to process evaluations to verify that the processes, raw materials, amount of product produced, water usage, waste treatment processes and other similar factors relative to concentrations and loads of pollutants

## Compliance Monitoring Procedures (Continued)

contained in the discharges are as described in the permit application and the issued permit. In the case of municipal dischargers, O & M procedures, wastewater quantity and quality, raw waste load, type of industrial waste input, pretreatment regulations and compliance, etc. will be evaluated. Monitoring of the influent to a municipal facility may also be required where the permit is controlled by the percentage-removal provisions of the secondary treatment regulations. Process verification also includes determining that solids, sludge, filter backwash and other pollutants removed from wastewater are not entering navigable waters.

Effluent monitoring will be conducted for the parameters and within the time frames as specified in the NPDES permit. Generally, three or more operating day composite samples with calculated loads and concentrations will be considered the minimum to acquire representative and technically defensible data to verify wastewater characteristics and provide the basis for prosecution, if necessary.

In cases where effluent limitations are prescribed in the permit which are more stringent than published effluent guidelines because of water quality standards, limited stream surveys may also be conducted. Stream surveys may also be required where toxic or deleterious substances are suspected of being discharged. Stream surveying may be necessary to demonstrate irreparable harm for anticipated court action where known toxic pollutants or deleterious materials are discharged.

Sampling will be accomplished using automatic samplers, whenever possible. Appropriate security measures will be taken to insure the integrity of the sampling device and collected samples. NFIC - Denver published chain-of-custody procedures will be followed at all times.

Flow measuring devices used by the permittee will be checked for accuracy and, where necessary, EPA personnel will install independent flow measuring equipment for use during the monitoring period.

At facilities discharging deleterious substances, biological monitoring may be required to determine compliance with permit conditions or demonstrate the need for control of additional pollutant parameters. Such monitoring would consist of bioassays, fish survival studies, or other biological tests to determine the suitability of discharge of the effluent to receiving waters. Biological monitoring may also be considered when it is determined or suspected that the receiving waterway is water quality limited.

Water samples will be collected that are representative of the waste effluent. When possible, samples will be preserved and analyzed at the NFIC - Denver central laboratory under closely controlled conditions. Samples which require immediate analysis, will be run on-site at a mobile field laboratory. In all cases, there will be strict adherence to recommended maximum holding times.

## Compliance Monitoring Procedures (Continued)

Standardized procedures have been instituted by the Center for insuring sample integrity during collection, transportation, storage, and analysis. These procedures, as well as documented chain-of-custody procedures, protect against mis-identification, loss or error of data relating to sampling, theft, loss, damage, or alteration of the sample.

Physical and chemical analysis for determining compliance with effluent limitations will be performed by the use of acceptable analytical methods as set forth in the Federal Register pursuant to section 304(g) of the Federal Water Pollution Control Act Amendments of 1972. For analysis of components whose test procedures have not yet been promulgated or defined in the permit, defensible professional judgment will be exercised in selection of suitable test procedures.

In order to demonstrate that the analytical laboratory can perform a test in a correct and reproducible manner, the laboratory will analyze a suitable number of replicate and standard spiked samples to demonstrate that the test can be performed within the published precision and accuracy range. Laboratory instruments essential to the monitoring program will be properly maintained and calibrated. Regular, periodic calibration checks and re-calibrations will be performed on measuring instruments such as electrometers, volumetric equipment and weighing devices and test solutions. Wherever possible, the ultimate reference for all calibrations will be weights, volumetric glassware, thermometers, reagent standards, etc. bearing certificates of an approved standardization program (e.g., National Bureau of Standards).

The laboratory has established an analytical quality control program to demonstrate on a day-to-day basis that the laboratory is producing reliable information. Basically, the overall quality control program will utilize a combination of techniques such as periodic standardization, replicate sample analysis, standard spiked sample recovery and reference sample analysis.

Data summaries resulting from each laboratory evaluation will be thoroughly reviewed and accompanied by a brief report that quantifies the precision and accuracy of the data reported. This report will also specify any problems or interference encountered.

A report and checklist covering the findings of the in-plant evaluation, an interpretation of the monitoring results and recommendations will be prepared and forwarded to the Regional Office Enforcement Director within four weeks of survey completion. In cases where gross permit violations are evident and enforcement action may be required, the Enforcement Director will be immediately notified. Enforcement Division/NFIC mid-survey discussions may result in expanding the scope of a survey should it become evident that immediate enforcement action is necessary.

# COMPLIANCE MONITORING CHECKLIST



NATIONAL FIELD INVESTIGATIONS CENTER - DENVER  
COMPLIANCE MONITORING CHECKLIST

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
EXACT NAME OF DISCHARGER,  
CITY AND STATE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
NAME, ADDRESS, AND TELEPHONE NUMBER  
OF HIGHEST OFFICIAL OF COMPANY OR  
MUNICIPALITY DISCHARGING

RECEIVING WATER: \_\_\_\_\_

NPDES PERMIT NO. \_\_\_\_\_

STATE PERMIT NO. \_\_\_\_\_

**I. BACKGROUND INFORMATION**

A. DISCHARGER IS: MUNICIPALITY \_\_\_\_\_; INDUSTRY \_\_\_\_\_; OTHER (SPECIFY) \_\_\_\_\_

B. TYPE OF OPERATION\*

C. PRODUCTION: ACTUAL \_\_\_\_\_ PERMIT \_\_\_\_\_

D. WATER SUPPLY: WELL(S) \_\_\_\_\_ SURFACE \_\_\_\_\_ OTHER \_\_\_\_\_

E. DISCHARGE IS: CONTINUOUS \_\_\_\_\_ INTERMITTENT \_\_\_\_\_ BATCH \_\_\_\_\_

ACCIDENTAL SPILL \_\_\_\_\_ OTHER \_\_\_\_\_

F. RECEIVING WATER CLASSIFICATION \_\_\_\_\_

G. EFFLUENT LIMITATIONS NOW APPLICABLE: INITIAL \_\_\_\_\_ INTERIM \_\_\_\_\_

FINAL (BPCTA) \_\_\_\_\_

\*e.g., PRIMARY WWTP SERVING XXX PEOPLE; SUGAR MILL, ETC.

885-858  
820-588

II. SUMMARY OF SELF REPORTING DATA

A. EFFLUENT LIMITATIONS VIOLATIONS:

<u>PARAMETER</u>	<u>PERMIT CONDITIONS</u>		<u>SELF REPORTING DATA VIOLATIONS</u>		
	<u>DAILY AVG.</u>	<u>DAILY MAX.</u>	<u>DAILY AVG.</u>	<u>DAILY MAX.</u>	<u>DATE</u>
FLOW					

MAGNITUDE OF VIOLATIONS:

NUMBER OF VIOLATIONS PER NUMBER OF SAMPLES:

B. COMPLIANCE SCHEDULE VIOLATIONS:

<u>MILESTONE</u>	<u>PERMIT DATE</u>	<u>ACTUAL ACHIEVEMENT DATE</u>
------------------	--------------------	--------------------------------

C. OTHER PERMIT CONDITIONS VIOLATED:

### III. IN-PLANT EVALUATION

A. DATE OF EVALUATION \_\_\_\_\_

B. VERIFICATION OF OPERATION CHANGES

	<u>YES</u>	<u>NO</u>	<u>REMARKS</u>
1. <u>INDUSTRIAL</u>			
a. PROCESS	_____	_____	_____
b. RAW MATERIALS	_____	_____	_____
c. AMOUNT OF PRODUCT PRODUCED	_____	_____	_____
d. WATER USAGE	_____	_____	_____
e. WASTE TREATMENT PROCESSES	_____	_____	_____
f. OTHER _____	_____	_____	_____
2. <u>MUNICIPAL</u>			
a. O & M PROCEDURES	_____	_____	_____
b. WASTEWATER QUANTITY	_____	_____	_____
c. WASTEWATER QUALITY	_____	_____	_____
d. INFLUENT WASTE LOAD	_____	_____	_____
e. TYPE AND PERCENTAGE INDUSTRIAL INPUT	_____	_____	_____
f. PRETREATMENT REGULATIONS	_____	_____	_____
g. OTHER _____	_____	_____	_____
3. <u>OTHER</u>			

4. SOLIDS, SLUDGE, FILTER BACKWASH, AND OTHER POLLUTANTS REMOVED BY TREATMENT ARE NOT ENTERING NAVIGABLE WATERS

YES      NO

885-028

502-428

IV. FIELD AND LABORATORY RESULTS

A. DATES OF FIELD SURVEY \_\_\_\_\_ DATES OF ANALYSES \_\_\_\_\_

B. FLOW MEASURED BY: COMPANY DEVICE \_\_\_\_\_ TYPE \_\_\_\_\_ PRECISION \_\_\_\_\_

EPA MEASURING DEVICE \_\_\_\_\_ TYPE \_\_\_\_\_ PRECISION \_\_\_\_\_

QUANTITY \_\_\_\_\_

C. FIELD INSTRUMENTS STANDARDIZED \_\_\_\_\_  
YES NO

D. PROPER PRESERVATION AND SAMPLE HOLDING TIMES ADHERED TO \_\_\_\_\_  
YES NO

E. PROMULGATED GUIDELINES ESTABLISHING TEST PROCEDURES FOR ANALYZING OF POLLUTANTS FOLLOWED \_\_\_\_\_  
YES NO

F. ANALYTICAL QUALITY CONTROL PROCEDURES FOLLOWED \_\_\_\_\_  
YES NO

G. CHAIN OF CUSTODY PROCEDURES FOLLOWED \_\_\_\_\_  
YES NO

H. ADEQUACY OF SAMPLING LOCATION:

I. BIOLOGICAL MONITORING RESULTS:

J. WATER QUALITY STANDARDS VIOLATIONS:

STREAM FLOW \_\_\_\_\_ SOURCE OF INFORMATION \_\_\_\_\_

WQ STANDARDS

SURVEY DATA VIOLATIONS

DATE

885-228

IV. FIELD AND LABORATORY RESULTS (CONTINUED)

K. EFFLUENT LIMITATIONS VIOLATIONS:

<u>PARAMETER</u>	<u>PERMIT CONDITIONS</u>		<u>SURVEY DATA VIOLATIONS</u>		<u>DATE</u>
	<u>DAILY AVG.</u>	<u>DAILY MAX.</u>	<u>DAILY AVG.</u>	<u>DAILY MAX.</u>	

MAGNITUDE OF VIOLATIONS:

NUMBER OF VIOLATIONS PER NUMBER OF SAMPLES:

V. PRECISION AND ACCURACY OF AVAILABLE DATA

A. CONSIDERING THE VARIABILITY OF THE TESTING PROCEDURES, IS IT LIKELY  
THAT THE VIOLATIONS LISTED ARE: REAL \_\_\_\_\_ APPARENT \_\_\_\_\_

REMARKS:

B. IF ADDITIONAL DATA REQUIRED, EXPLAIN NATURE OF DATA, ETC.

**VI. VIOLATIONS****A. FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972:**

1. FAILURE TO FILE FOR NPDES PERMIT \_\_\_\_\_
2. SECTION 301 EFFLUENT LIMITATION \_\_\_\_\_ OR  
COMPLIANCE SCHEDULE \_\_\_\_\_
3. SECTION 302 WATER QUALITY LIMITED EFFLUENT LIMITATION \_\_\_\_\_ OR  
COMPLIANCE SCHEDULE \_\_\_\_\_
4. SECTION 306 STANDARD OF PERFORMANCE \_\_\_\_\_
5. SECTION 307(a) TOXIC POLLUTANT STANDARD \_\_\_\_\_
6. SECTION 307(b) PRETREATMENT STANDARD \_\_\_\_\_
7. SECTION 308 INSPECTIONS, MONITORING AND ENTRY \_\_\_\_\_
8. OTHER: \_\_\_\_\_

**B. REFUSE ACT: \_\_\_\_\_****CHECKLIST CERTIFIED BY:                      DATE**

\_\_\_\_\_

## PLANT EVALUATION AND FIELD SURVEY PROCEDURES



## PLANT EVALUATION AND FIELD SURVEY PROCEDURES

Although each field survey and plant evaluation are different, there are certain procedures which are common to all. Assuming that the problem has been adequately, or at least generally defined, background information must be evaluated and updated before going into the field. Background data may consist of:

1. NPDES or RAPP applications and/or permits
2. Previous field surveys conducted in the area
3. Reports by the industries and industrial listings
4. Literature reviews
5. Legal actions in the area
6. Climatology
7. Historical stream flows of major waterways
8. Applicable water quality and air quality standards

Appropriate Federal, state, and municipal officials should be contacted to discuss the objectives of the survey. Records may be available from these officials which can be used for background information.

A reconnaissance trip is next in the plan of action. Waste sources must be investigated to validate the background information. Prior to making the trip, all companies should be contacted and appointments established. Once the schedule is firm, state authorities should be notified as they may want to be present during the interviews. It is important to allow sufficient time during the plant inspections so that all information is obtained on one visit. Large industrial

## Plant Evaluation and Field Survey Procedures (Continued)

complexes may require several days while smaller companies may only take several hours. Knowing exactly what the purpose of the survey is and the role each industry plays will provide the basis of the interview and evaluation. An interview form should be prepared before the actual inspection and may include the following:

1. Company name, location, corporate headquarters.
2. Company official, phone, title.
3. Description of production process, rates (average and maximum), hours of operation, cleanup schedule, number of employees.
4. Waste treatment practices, efficiencies of equipment, waste loads or emissions.
5. Number and location of all outfalls including discharges to city sewers.
6. Establish sampling locations and how flows will be measured (this is very important).
7. Water supplies, quantities, sources, flow measurements.
8. Air pollution control equipment wastewater flows.
9. Solid waste disposal.
10. Anticipated changes or expansion.
11. Blueprints or drawings of plant layout.
12. Design specs on pollution control equipment.
13. Operational problems.
14. OSHA regulations which apply to field crews.

## Plant Evaluation and Field Survey Procedures (Continued)

15. Will the company want to split samples.
16. Water quality standards and classification of receiving waters (i.e., where water quality limiting).

Additional information required while on the reconnaissance include:

1. Sufficient area maps for field crews.
2. Establish locations for mobile laboratories.
3. Accommodations for field personnel.
4. Airline freight schedules.
5. Locations of state, city and Federal offices and the contacts within each office.
6. Supply of ice for preservation.
7. Location of hospitals.
8. Set of area telephone books.

The background information and field reconnaissance data are then used to set up the actual survey. All waste sources should be located on a map and the dates established when they will be investigated. Logistics should be worked out to reduce travel time. After the dates are established, all companies should be notified and permission to sample obtained in writing when applicable.

All waste sources should be assigned a sample location number with all analyses listed (i.e., those for which effluent limitations have been established and others as required, e.g., toxic substances). The daily analytical load will be determined on the basis of laboratory capability. Where there is a water quality limiting situation, the receiving waters will be monitored to determine compliance or non-compliance

## Plant Evaluation and Field Survey Procedures (Continued)

with applicable water quality standards.

Equipment and manpower requirement will be determined and included as part of the study plan. The plan will be revised as necessary. A briefing of all personnel involved will be held prior to the survey.

PLANT EVALUATION FORMS

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## INDUSTRIAL PLANT EVALUATION FORM

GENERAL

Company: \_\_\_\_\_ Date Visited: \_\_\_\_\_

Location: \_\_\_\_\_ EPA Personnel: \_\_\_\_\_

Contact: \_\_\_\_\_

Title: \_\_\_\_\_ Phone No. \_\_\_\_\_

Main Office: \_\_\_\_\_

Raw Materials Used: \_\_\_\_\_

Finished Products &amp; Current Production Rates: (Flow Diagram) \_\_\_\_\_

Rated Plant Capacity: \_\_\_\_\_

Previous Studies: \_\_\_\_\_

OPERATIONS

No. of Days/Week \_\_\_\_\_ No. of Hrs/Day \_\_\_\_\_

No. of Production Employees \_\_\_\_\_

Date Plant Began Operating \_\_\_\_\_

Current Operating Permits &amp; Applications Filed: \_\_\_\_\_

## Plant Evaluation Form (Continued)

WATER SUPPLY & USES

Source(s): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Treatment: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Use(s) &amp; Quantity Used: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Analysis: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

WASTE SOURCES & TREATMENT

A. Domestic Waste - Quantity: \_\_\_\_\_

\_\_\_\_\_

Type of Treatment: \_\_\_\_\_

\_\_\_\_\_

Receiving Water: \_\_\_\_\_

\_\_\_\_\_

Analysis: \_\_\_\_\_

\_\_\_\_\_

B. Process Waste(s) \_\_\_\_\_

\_\_\_\_\_

Source &amp; Quantity: \_\_\_\_\_

\_\_\_\_\_

## Plant Evaluation Form (Continued)

### Treatment (flow diagram)

Receiving Waters (State classification and uses).

## Analysis of Effluent

FUTURE PLANS (Expansion, modification of process, water reuse, by-product recovery, etc)



## Plant Evaluation Form (Continued)

FIELD NOTES & OBSERVATIONS:

By \_\_\_\_\_ (Signature)

Date \_\_\_\_\_

## MUNICIPAL PLANT EVALUATION FORM

GENERAL

Name of Facility \_\_\_\_\_ Date Visited \_\_\_\_\_

Location \_\_\_\_\_ EPA Personnel \_\_\_\_\_

Contact \_\_\_\_\_

City Official \_\_\_\_\_

Type of Treatment; Units Employed (Flow Diagram) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Industrial Waste Contribution (Percentage, Types, Pre-treatment ordinance, etc.)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Flow Devices Utilized \_\_\_\_\_

Design Capacity (Ave. &amp; Max) Flow \_\_\_\_\_

Wasteload (BOD, Solids, etc.) \_\_\_\_\_

\_\_\_\_\_

Present Conditions (Max, Min, Ave.) - Flow \_\_\_\_\_ Wasteload (BOD, Solids, etc.)

Influent \_\_\_\_\_

\_\_\_\_\_

Effluent \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Wet Weather Flow vs Dry Weather Flow \_\_\_\_\_

Lift Stations (No., By-Pass, Auxillary Power Unit, etc.) \_\_\_\_\_

RECEIVING WATER

Name \_\_\_\_\_

Classification & Use \_\_\_\_\_

OPERATIONS

No. of Plant Operators \_\_\_\_\_

Certification Held by Operators \_\_\_\_\_

No. of Hours and Days Operators on Duty \_\_\_\_\_

Current Operation Permits and Effluent Limitations \_\_\_\_\_

Laboratory Provided \_\_\_\_\_

Type of Analyses Performed \_\_\_\_\_

Type of Samples Collected (Grab, Composite) \_\_\_\_\_

Summary of Historical & Present Data \_\_\_\_\_

Wastewater Reuse \_\_\_\_\_

Future Plans (Expansion, Modifications, Etc.) \_\_\_\_\_

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Field Notes & Observations (Problem w/sampling, etc.) \_\_\_\_\_

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By \_\_\_\_\_  
(Signature)

Date \_\_\_\_\_

CHECKLIST FOR FLOW MEASUREMENT EQUIPMENT  
INSTALLED BY EPA

## CHECKLIST FOR FLOW MEASUREMENT EQUIPMENT INSTALLED BY EPA

Name of Industry or Municipality \_\_\_\_\_

Date of Installation \_\_\_\_\_ Date of Removal \_\_\_\_\_

Permit Discharge No. \_\_\_\_\_

Type Samples to be Collected \_\_\_\_\_ Grab; \_\_\_\_\_ Time Weighted Composite

\_\_\_\_\_ Flow Weighted Composite

Type of Wastes: \_\_\_\_\_

Type of Discharge:

\_\_\_\_\_ Batch \_\_\_\_\_ Hrs/Batch, \_\_\_\_\_ Number/Day.

\_\_\_\_\_ Continuous, \_\_\_\_\_ Hrs/Day

<sup>1</sup>Selection of Flow Measuring Site:

Description of Discharge Channel \_\_\_\_\_

Depth of Flow in Channel \_\_\_\_\_ (Ft)

Velocity of Flow in Channel \_\_\_\_\_ (FPS)

Range of Flow Expected \_\_\_\_\_ (mgd)

Type of Device Installed \_\_\_\_\_

Discharge Capacity of Device \_\_\_\_\_ (mgd)

Type of Recording Device Installed \_\_\_\_\_

Relation Between Recording Device and Measuring Device \_\_\_\_\_

Date \_\_\_\_\_ By \_\_\_\_\_ (Signature)

<sup>1</sup>Site location and flow measurement device can be selected based on criteria set forth in Water Measurement Manual, U. S. Dept. of Interior, Bureau of Reclamation, Denver, Colorado 1967 and Handbook For Monitoring Industrial Wastewater, Technology Transfer, U.S. EPA August 1973.

12-5-84

## CHECKLIST FOR EXISTING FLOW MEASUREMENT DEVICES

CHECKLIST FOR EXISTING FLOW MEASUREMENT DEVICES<sup>1</sup>

Name of Industry or Municipality \_\_\_\_\_

Name of Contact \_\_\_\_\_

Date: \_\_\_\_\_

Permit Discharge Number: \_\_\_\_\_

Type of Wastes: \_\_\_\_\_

Type of Discharge: Batch \_\_\_\_\_, \_\_\_\_\_ Hrs/Batch, \_\_\_\_\_ Number/Day

Continuous \_\_\_\_\_, \_\_\_\_\_ Hrs/Day

<sup>2</sup>Type of Measurement Device: \_\_\_\_\_<sup>3</sup>Dimensions (e.g., Length of Weir) \_\_\_\_\_

Capacity of Device \_\_\_\_\_ (Max-Min mgd)

Range of Flows (From Self-Monitoring Record) \_\_\_\_\_

<sup>3,4</sup>Is Device Properly Installed \_\_\_\_\_ Yes; \_\_\_\_\_ No.

If no, specify reasons installation is not correct: \_\_\_\_\_

When was device last calibrated by company: \_\_\_\_\_

Type of Stage Recording Device (manufacturer, model, etc.) \_\_\_\_\_

Relation Between Recording Device and Measuring Device \_\_\_\_\_

Is Recorder Device Properly Installed: \_\_\_\_\_ Yes; \_\_\_\_\_ No

If no, specify reasons installation is not correct: \_\_\_\_\_



## Checklist for Existing Flow Measurement Devices (Continued)

Is Recording Device Functioning Properly: \_\_\_\_\_ Yes; \_\_\_\_\_ No

If no, specify reasons for malfunctions: \_\_\_\_\_

Remarks \_\_\_\_\_

Date \_\_\_\_\_

By \_\_\_\_\_ (Signature)

<sup>1</sup>Device installed by discharger.

Examples: 60° V-notch, Parshall Flume, rectangular wier, Cipolletti weir, etc.

<sup>3</sup>Information recorded depends on type of measurement device. The accuracy and adequacy of the device will be ascertained using the criteria set forth in the Water Measurement Manual, U. S. Department of the Interior, Bureau of Reclamation, Denver, Colorado 1967, and the Handbook for Monitoring Industrial Wastewater, Technology Transfer, U.S. EPA. August 1973.

<sup>4</sup>A check of the device will be made to determine if, for example, it is level, is it at a suitable location, is there leakage, is there free or submerged flow, etc. The reference cited in Footnote #3 contains a list of points to be considered when installing flow measurement devices.

## CHECKLIST FOR FIELD INSTRUMENTS

88C-000

88C-000

## CHECKLIST FOR FIELD INSTRUMENTS

Date: \_\_\_\_\_ Time \_\_\_\_\_ By: \_\_\_\_\_

Conductivity Meter: Model \_\_\_\_\_

Identification No. \_\_\_\_\_

Probe \_\_\_\_\_; Battery \_\_\_\_\_

Remarks \_\_\_\_\_

pH Meter: Model \_\_\_\_\_

Identification No. \_\_\_\_\_

Calibration (Reference) pH 4.0 \_\_\_\_\_, pH 7.0 \_\_\_\_\_, pH 9.0 \_\_\_\_\_

Recorder \_\_\_\_\_

<sup>1</sup>Remarks \_\_\_\_\_

Thermometer (check against National Bureau of Standards thermometer) \_\_\_\_\_

Date \_\_\_\_\_

By \_\_\_\_\_ (Signature)

<sup>1</sup>Indicate if instrument is working properly. If not, what changes were necessary.

CHECKLIST FOR INSTALLATION OF AUTOMATIC SAMPLER

## CHECKLIST FOR INSTALLATION OF AUTOMATIC SAMPLER

Name of Industry or Municipality \_\_\_\_\_

Name of Contact \_\_\_\_\_

Date of Installation \_\_\_\_\_

Time Sampling Commenced \_\_\_\_\_ Time Sampling Ended \_\_\_\_\_

Date of Removal \_\_\_\_\_

Number of Sampler \_\_\_\_\_ Permit Discharge No. \_\_\_\_\_

<sup>1</sup> Sampler Location (Describe) \_\_\_\_\_

\_\_\_\_\_

Nearest Power Available \_\_\_\_\_

Nearest Cleanup Facilities Available \_\_\_\_\_

Description of Waste Channel \_\_\_\_\_

Type Wastes to be Sampled \_\_\_\_\_

<sup>2</sup> Position of Sampler Intake \_\_\_\_\_

Type of Sample: \_\_\_\_\_ Grab; \_\_\_\_\_ Composite (flow weighted) \_\_\_\_\_

Reason Method Selected \_\_\_\_\_ (equal volume) \_\_\_\_\_

Time Period Covered \_\_\_\_\_

Specify the Compositing Interval<sup>3</sup> (i.e., continuous, 15 min., 1 hr., etc.) \_\_\_\_\_

\_\_\_\_\_

<sup>4</sup> Method of Preservation (e.g., Temperature Control) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Method of Securing Sampler (Maintenance of Chain of Custody) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Checklist for Installation of Automatic Sampler (Continued)

## Periodic Inspection of Sampler

Date \_\_\_\_\_ Time \_\_\_\_\_

Position of Sample Intake \_\_\_\_\_

Mechanical Operation of Sampler \_\_\_\_\_

Check of Sample Preservation (e.g., temperature control) \_\_\_\_\_

Security (Check for Possible Tampering, etc.) \_\_\_\_\_

Date \_\_\_\_\_

By \_\_\_\_\_ (Signature)

<sup>1</sup>Sampler shall be located so that a representative sample is collected. Dye will be used to determine the mixing characteristics.

<sup>2</sup>Wastes containing high solids, rags, fibrous material, etc. can clog intake of sampler. Intake must be placed to minimize while at same time obtaining a representative sample.

<sup>3</sup>Interval should be such that a representative sample is collected during the compositing period.

<sup>4</sup>Method used to preserve sample (i.e., temperature, chemical, etc.) and maintain at that level.

<sup>5</sup>This inspection generally made several times per day.

## ANALYTICAL QUALITY CONTROL CHECKLIST

NATIONAL FIELD INVESTIGATIONS CENTER - DENVER  
ANALYTICAL QUALITY CONTROL CHECKLIST

\_\_\_\_\_  
 EXACT NAME OF DISCHARGER,  
 CITY AND STATE

	<u>YES</u>	<u>NO</u>	<u>REMARKS</u>
1. CHAIN OF CUSTODY PROCEDURES FOLLOWED	_____	_____	_____
2. REAGENTS, STANDARDS, BLANKS, AND DILUTIONS PREPARED USING DISTILLED WATER FROM THE APPROVED LABORATORY SUPPLY	_____	_____	_____
3. REAGENTS AND STANDARDS PREPARED USING AR GRADE CHEMICALS UNLESS OTHER PURITY GRADES ARE SUGGESTED BY THE PROPER PROCEDURE	_____	_____	_____
4. REAGENTS STANDARDIZED IN ACCORDANCE WITH THE PROCEDURE APPLIED	_____	_____	_____
5. STANDARDIZATION DATA REPORTED TO THE AQC OFFICER WITH THE RAW DATA	_____	_____	_____
6. CLASS A (NBS) MEASURING GLASSWARE USED THROUGHOUT THE ANALYSIS. ANY VOLUMETRIC MEASURING DEVICES NOT CLASSIFIED ACCORDING TO FEDERAL SPECIFICATIONS OF CIRCULAR 602 OF NBS CALIBRATED PRIOR TO USE	_____	_____	_____
7. PRECISION CALCULATED AS STANDARD DEVIATION OF REPLICATE ANALYSES CONDUCTED AT LEAST ONCE EVERY TEN SAMPLES. IF FEWER THAN TEN SAMPLES ARE ANALYZED AS A SINGLE SERIES, AT LEAST ONE REPLICATE SAMPLE INCLUDED IN THE SERIES	_____	_____	_____
8. ACCURACY CALCULATED AS PERCENT RECOVERY FROM STANDARD ADDITIONS ANALYZED AT LEAST ONCE EVERY TEN SAMPLES. IF FEWER THAN TEN SAMPLES ARE ANALYZED AS A SINGLE SERIES, AT LEAST ONE STANDARD ADDITION INCLUDED IN THE SERIES	_____	_____	_____
9. REPLICATES AND STANDARD ADDITIONS PREPARED AND ANALYZED CONCURRENTLY WITH THE UNKNOWN SAMPLE SERIES	_____	_____	_____
10. CUSTODY OF REMAINING SAMPLE ALIQUOT SECURED AND MAINTAINED	_____	_____	_____

CHECKLIST CERTIFIED BY:

DATE

885-878



CHAIN OF CUSTODY PROCEDURES  
(Partial Revision - June 1975)

ENVIRONMENTAL PROTECTION AGENCY  
Office Of Enforcement  
NATIONAL ENFORCEMENT INVESTIGATIONS CENTER  
Building 53, Box 25227, Denver Federal Center  
Denver, Colorado 80225

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June 1, 1975

CHAIN OF CUSTODY PROCEDURES

General:

The evidence gathering portion of a survey should be characterized by the minimum number of samples required to give a fair representation of the effluent or water body from which taken. To the extent possible, the quantity of samples and sample locations will be determined prior to the survey.

Chain of Custody procedures must be followed to maintain the documentation necessary to trace sample possession from the time taken until the evidence is introduced into court. A sample is in your "custody" if:

1. It is in your actual physical possession, or
2. It is in your view, after being in your physical possession, or
3. It was in your physical possession and then you locked it up in a manner so that no one could tamper with it.

All survey participants will receive a copy of the survey study plan and will be knowledgeable of its contents prior to the survey. A pre-survey briefing will be held to re-appraise all participants of the survey objectives, sample locations and Chain of Custody procedures. After all Chain of Custody samples are collected, a de-briefing will be held in the field to determine adherence to Chain of Custody procedures and whether additional evidence type samples are required.

Sample Collection:

1. To the maximum extent achievable, as few people as possible should handle the sample.
2. Stream and effluent samples shall be obtained, using standard field sampling techniques.
3. Sample tags (Exhibit I) shall be securely attached to the sample container at the time the complete sample is collected and shall contain, at a minimum, the following information: station number, station location, date taken, time taken, type of sample, sequence number (first sample of the day - sequence No. 1, second sample - sequence No. 2, etc.), analyses required and samplers. The tags must be legibly filled out in ballpoint (waterproof ink).

Sample Collection (Continued)

4. Blank samples shall also be taken with preservatives which will be analyzed by the laboratory to exclude the possibility of container or preservative contamination.
5. A pre-printed, bound Field Data Record logbook shall be maintained to record field measurements and other pertinent information necessary to refresh the sampler's memory in the event he later takes the stand to testify regarding his action's during the evidence gathering activity. A separate set of field notebooks shall be maintained for each survey and stored in a safe place where they could be protected and accounted for at all times. Standard formats (Exhibits II and III) have been established to minimize field entries and include the date, time, survey, type of samples taken, volume of each sample, type of analysis, sample numbers, preservatives, sample location and field measurements such as temperature, conductivity, DO, pH, flow and any other pertinent information or observations. The entries shall be signed by the field sampler. The preparation and conservation of the field logbooks during the survey will be the responsibility of the survey coordinator. Once the survey is complete, field logs will be retained by the survey coordinator, or his designated representative, as a part of the permanent record.
6. The field sampler is responsible for the care and custody of the samples collected until properly dispatched to the receiving laboratory or turned over to an assigned custodian. He must assure that each container is in his physical possession or in his view at all times, or locked in such a place and manner that no one can tamper with it.
7. Colored slides or photographs should be taken which would visually show the outfall sample location and any water pollution to substantiate any conclusions of the investigation. Written documentation on the back of the photo should include the signature of the photographer, time, date and site location. Photographs of this nature, which may be used as evidence, shall also be handled recognizing Chain of Custody procedures to prevent alteration.

Transfer of Custody and Shipment:

1. Samples will be accompanied by a Chain of Custody Record which includes the name of the survey, samplers signatures, station number, station location, date, time, type of sample, sequence number, number of containers and analyses required (Fig. IV). When turning over the possession of samples, the transferor and transferee will sign, date and time the sheet. This record sheet

## Chain of Custody Procedures (Continued)

allows transfer of custody of a group of samples in the field, to the mobile laboratory or when samples are dispatched to the NFIC - Denver laboratory. When transferring a portion of the samples identified on the sheet to the field mobile laboratory, the individual samples must be noted in the column with the signature of the person relinquishing the samples. The field laboratory person receiving the samples will acknowledge receipt by signing in the appropriate column.

2. The field custodian or field sampler, if a custodian has not been assigned, will have the responsibility of properly packaging and dispatching samples to the proper laboratory for analysis. The "Dispatch" portion of the Chain of Custody Record shall be properly filled out, dated, and signed.
3. Samples will be properly packed in shipment containers such as ice chests, to avoid breakage. The shipping containers will be padlocked for shipment to the receiving laboratory.
4. All packages will be accompanied by the Chain of Custody Record showing identification of the contents. The original will accompany the shipment, and a copy will be retained by the survey coordinator.
5. If sent by mail, register the package with return receipt requested. If sent by common carrier, a Government Bill of Lading should be obtained. Receipts from post offices and bills of lading will be retained as part of the permanent Chain of Custody documentation.
6. If samples are delivered to the laboratory when appropriate personnel are not there to receive them, the samples must be locked in a designated area within the laboratory in a manner so that no one can tamper with them. The same person must then return to the laboratory and unlock the samples and deliver custody to the appropriate custodian.

### Laboratory Custody Procedures:

1. The laboratory shall designate a "sample custodian." An alternate will be designated in his absence. In addition, the laboratory shall set aside a "sample storage security area." This should be a clean, dry, isolated room which can be securely locked from the outside.
2. All samples should be handled by the minimum possible number of persons.
3. All incoming samples shall be received only by the custodian, who will indicate receipt by signing the Chain of Custody Record Sheet

## Chain of Custody Procedures (Continued)

accompanying the samples and retaining the sheet as permanent records. Couriers picking up samples at the airport, post office, etc. shall sign jointly with the laboratory custodian.

4. Immediately upon receipt, the custodian will place the sample in the sample room, which will be locked at all times except when samples are removed or replaced by the custodian. To the maximum extent possible, only the custodian should be permitted in the sample room.
5. The custodian shall ensure that heat-sensitive or light-sensitive samples, or other sample materials having unusual physical characteristics, or requiring special handling, are properly stored and maintained.
6. Only the custodian will distribute samples to personnel who are to perform tests.
7. The analyst will record in his laboratory notebook or analytical worksheet, identifying information describing the sample, the procedures performed and the results of the testing. The notes shall be dated and indicate who performed the tests. The notes shall be retained as a permanent record in the laboratory and should note any abnormalities which occurred during the testing procedure. In the event that the person who performed the tests is not available as a witness at time of trial, the government may be able to introduce the notes in evidence under the Federal Business Records Act.
8. Standard methods of laboratory analyses shall be used as described in the "Guidelines Establishing Test Procedures for Analysis of Pollutants," 38 F.R. 28758, October 16, 1973. If laboratory personnel deviate from standard procedures, they should be prepared to justify their decision during cross-examination.
9. Laboratory personnel are responsible for the care and custody of the sample once it is handed over to them and should be prepared to testify that the sample was in their possession and view or secured in the laboratory at all times from the moment it was received from the custodian until the tests were run.
10. Once the sample testing is completed, the unused portion of the sample together with all identifying tags and laboratory records, should be returned to the custodian. The returned tagged sample will be retained in the sample room until it is required for trial. Strip charts and other documentation of work will also be turned over to the custodian.

### Chain of Custody Procedures (Continued)


11. Samples, tags and laboratory records of tests may be destroyed only upon the order of the laboratory director, who will first confer with the Chief, Enforcement Specialist Office, to make certain that the information is no longer required or the samples have deteriorated.

## EXHIBIT I

EPA, NATIONAL ENFORCEMENT INVESTIGATIONS CENTER			
Station No.	Date	Time	Sequence No.
Station Location			<input type="checkbox"/> Grab <input type="checkbox"/> Comp.
<input type="checkbox"/> BOD <input type="checkbox"/> Solids <input type="checkbox"/> COD <input type="checkbox"/> Nutrients	<input type="checkbox"/> Metals <input type="checkbox"/> Oil and Grease <input type="checkbox"/> D.O. <input type="checkbox"/> Bact. <input type="checkbox"/> Other	Remarks/Preservative:	
Samplers:			

Front

**ENVIRONMENTAL PROTECTION AGENCY**  
**OFFICE OF ENFORCEMENT**  
**NATIONAL ENFORCEMENT INVESTIGATIONS CENTER**  
**BUILDING 53, BOX 25227, DENVER FEDERAL CENTER**  
**DENVER, COLORADO 80225**



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# EXHIBIT II

FOR \_\_\_\_\_ SURVEY, PHASE \_\_\_\_\_, DATE \_\_\_\_\_

TYPE OF SAMPLE \_\_\_\_\_

## ANALYSES REQUIRED

STATION NUMBER	STATION DESCRIPTION	TOTAL VOLUME	TYPE CONTAINER	PRESERVATIVE	NUTRIENTS	BOD	COD	TOC	TOTAL SOLIDS	SUSPENDED SOLIDS	ALKALINITY	DO	pH*	CONDUCTIVITY*	TEMPERATURE*	TOTAL COLIFORM	FECAL COLIFORM	TURBIDITY	OIL AND GREASE	METALS	BACTI	PESTICIDES	HERB	TRACE ORGANICS	PHENOL	CYANIDE

REMARKS



\_\_\_\_\_

[illegible]

