

Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advanced Technology

For use in accordance with the Stormwater Management Rules,
N.J.A.C. 7:8

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Contents

1. Introduction	3
2. Protocols	3
3. Field Testing	3
4. Testing Oversight	3
A. Laboratory and Analytical Testing	3
B. Conflict of Interest	4
5. Verification Report Requirements	4
A. Description of Technology	5
B. Laboratory Test Setup.....	5
C. Performance Claims.....	5
D. Supporting Documentation	5
E. Design Limitations.....	6
F. Maintenance Plans.....	6
G. Statements.....	6
H. Verification Appendix.....	7
APPENDIX A – MTD Verification Process	8
APPENDIX B – MTD Verification Application	10
A. Organization Information	10
B. General Description of Technology.....	10
C. Laboratory Testing Location	10
D. Statement of Potential Conflicts of Interest	10
E. Quality Assurance Project Plan	10
APPENDIX C – Outstanding Issues Resolution Process	11
A. Communications	11
B. Review Panel and Costs Incurred.....	11
C. Procedure for the Resolution of an Outstanding Issue(s).....	11

1. Introduction

This document provides the details of the process for compliance with the stormwater manufactured treatment device (MTD) verification requirement within New Jersey Department of Environmental Protection's (NJDEP) Stormwater Management rules, N.J.A.C. 7:8. This document shall be followed by manufacturers and the New Jersey Corporation for Advanced Technology (NJCAT) to meet the verification requirement. For information regarding NJDEP's acceptance of MTDs, visit www.njstormwater.org.

MTDs that have received verification from NJCAT prior to the date of this procedure shall be re-verified in accordance with this document prior to the expiration date of the NJDEP certification to keep their verified status.

2. Protocols

Verification of a MTD shall be based upon the results of a series of laboratory and analytical tests performed in strict accordance with this document and the requirements of the following applicable laboratory testing protocol:

“New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device,” dated January 1, 2021; or

“New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device,” dated January 25, 2013.

3. Field Testing

This section is a placeholder for a future update to this document if field testing is included. If in the future field testing is included a corresponding field testing protocol (as a separate document) will be developed.

4. Testing Oversight

A. Laboratory and Analytical Testing

Laboratory testing will evaluate the MTD's treatment process and determine performance. These tests shall be conducted by either an independent test facility or by the manufacturer. Laboratory testing conducted by the manufacturer must be performed under the direct supervision of an independent third party observer.

Analytical testing is defined as the evaluation of total suspended solids in accordance with ASTM D3977. This test shall be conducted by the manufacturer or an independent analytical laboratory or independent test facility. Analytical testing conducted by the manufacturer must be performed under the direct supervision of an independent third party observer.

If the manufacturer is using their own laboratory for either laboratory or analytical testing and a third party observer is being used, the observer shall perform the specific tasks specified in the January 1, 2021 Hydrodynamic Sedimentation (HDS) MTD protocol, Section 3C.

NJCAT shall approve the qualifications of an independent analytical laboratory, independent test facility or third party observer, prior to beginning the laboratory testing process per the Verification Application (Appendix B). If NJCAT previously approved an independent analytical laboratory, independent test facility or third party observer, their qualifications shall not be unreasonably denied.

B. Conflict of Interest

There shall be no conflict of interest between the independent test facility or third party observer and the manufacturer. A conflict of interest is defined as any person within the testing portion of the verification process with the potential to undermine the quality of results for the MTD due to personal, professional, or financial interest. For the purposes of determining a conflict of interest, an entity proposed as an independent test facility or third party observer shall submit a disclosure statement. The disclosure statement shall include: all previous and current personal, professional, and financial relationships with the manufacturer of the MTD under review and all previous and current personal, professional, and financial relationships with other MTD manufacturers.

Not all items in the disclosure statement shall be construed as conflicts of interest; disclosures of existing relationships are necessary to ensure transparency in the testing process. For example, a consultant, university, or independent test facility that has received fees for testing or evaluating MTDs from one or more manufacturers is not considered a conflict of interest. Another example is the receipt of a fee for conducting or overseeing testing from one or more manufacturers; this would also not be considered a conflict of interest because this type of consulting arrangement is common in the professional services industry.

Examples of financial conflicts of interest can include, but are not limited to:

- having an ownership stake in the manufacturer.
- receiving a commission for selling an MTD for a manufacturer.
- having a licensing agreement with the manufacturer.
- receiving funding or grants not associated with a testing program from the manufacturer.

NJCAT shall determine if a conflict of interest exists prior to their approval of an independent test facility or third-party observer, through the acceptance of entities listed in the Verification Application described in Appendix B. If NJCAT eliminates a proposed independent test facility or third-party observer due to a conflict of interest, a manufacturer may appeal the decision to a three person review panel as defined in Appendix C. During the comment period (Appendix A Item 8), a third-party may also appeal to NJCAT if they believe that a conflict of interest exists between a manufacturer's proposed independent test facility or third-party observer and the manufacturer. If a manufacturer or third-party disputes NJCAT's decision, they can appeal to the three person review panel (as noted above).

5. Verification Report Requirements

The verification report is the document provided by NJCAT for each MTD seeking performance claim verification. The verification report confirms that the tested MTD has successfully met or exceeded the governing test protocol requirements. Upon completion of the Verification Report, NJCAT will update their website (www.njcat.org) with an electronic version of the report and notify the NJDEP of the MTD's verified status. More information on the Verification Process can be found in Appendix A.

The verification report shall include information supplied by both the manufacturer and NJCAT. Each verification report shall conform to the following outline:

A. Description of Technology

This section should describe how the MTD works, including its physical, chemical, and/or biological treatment functions. The description must include the main treatment processes in the MTD, and any ancillary processes required for the unit to function in accordance with the performance claim of the MTD with respect to the pollutants of concern. The report should also indicate what other types of Best Management Practices (BMPs), if applicable, are appropriate for use in series with the MTD to provide enhanced removal rates. The suitability of the BMP for use in series shall be based on the BMP's treatment process.

B. Laboratory Test Setup

This section should provide drawings (or schematics) of the laboratory testing configuration; they must include the location of the influent and effluent piping, the tested MTD and sampling locations (as applicable). This section must also include detailed drawings of the tested MTD in accordance with the appropriate protocol as discussed in Section 2. In addition, this section should include photographs of the laboratory configuration, including the sample locations and the tested MTD.

C. Performance Claims

1. For hydrodynamic sedimentation (HDS) MTDs, this section must provide the following information:
 - a. Total Suspended Solids (TSS) removal efficiency.
 - b. Maximum treatment flow rate (MTFR).
 - c. Maximum sediment storage depth and volume.
 - d. Effective sedimentation treatment area (ESTA)
 - e. Hydraulic loading rate (MTFR/ESTA).
 - f. Detention time and volume.
 - g. On-line or off-line installation.
 - h. The point of internal bypass (if applicable).

Note: If the performance tested TSS removal efficiency is greater than 50% for HDS MTDs, the TSS removal efficiency shall be rounded down to 50%. For HDS MTDs with TSS removal efficiencies that are less than 50%, NJCAT will not grant verification.

2. For filtration MTDs, this section must provide the following information:
 - a. Total Suspended Solids (TSS) removal efficiency.
 - b. Maximum treatment flow rate (MTFR)/Effective filtration treatment area (EFTA)
 - c. Maximum sediment storage depth and volume.
 - d. Effective filtration treatment area (EFTA);
 - e. Detention time and wet volume;
 - f. Effective sedimentation treatment area (ESTA).
 - g. Sediment Mass Load Capacity.
 - h. Maximum allowable inflow drainage area.
 - i. Off-line or on-line (with maximum on-line flow).
 - j. The point of internal bypass (if applicable).

Note: If the performance tested TSS removal efficiency is greater than 80% for filtration MTDs, the TSS removal efficiency shall be rounded down to 80%. For filtration MTDs with TSS Removal Efficiencies that are less than 80%, NJCAT will not grant verification.

D. Supporting Documentation

This section must include the following information provided by the manufacturer:

- a. Copies of analytical laboratory test reports, e.g., sediment concentrations, PSD analyses.

- b. Data from performance evaluation test runs, including any data excluded from the performance verification analysis. Where data were excluded from the computation of the removal rate or maintenance frequency, a discussion of the reason(s) for exclusion must be included.
- c. Spreadsheets (test data sheets) containing original data from performance evaluation test runs. Data shall include times that samples were collected, methods/devices used to obtain samples for laboratory analysis, and raw measurements and data from the laboratory test runs.
- d. Pertinent calculations, including test sediment feed, flow rates, head measurements, background TSS, effluent TSS, and mass capture results.
- e. Pertinent calculations, including average and adjusted influent and effluent concentrations, loading rates, weighted annual removal efficiency for the selected MTR, and sediment maintenance interval.
- f. Documentation of any special activities, outside test setup and sample collection that occur during the laboratory testing program, for example, maintenance that occurs on the MTD during the laboratory testing process. The documentation should include frequency, reason for maintenance, and amount of sediment removed.
- g. Documentation as required in a. through f. above must be submitted to NJCAT for MTD performance verification. However, it would not be prudent or necessary to include all this information in an NJCAT verification report. This documentation will be collected and retained by NJCAT as part of the performance testing process and made available to NJDEP or others upon request. Any information not submitted shall remain under the control of the independent observer or test laboratory so that it can be readily accessed by NJCAT and/or NJDEP, for a period of at least 5 years.

E. Design Limitations

The manufacturer shall provide design limitations including, but not limited to, required soil characteristics, slope, flow rate, maintenance requirements, driving head, installation limitations, configurations, load limitations, pretreatment requirements, limitations on tailwater, depth to seasonal high water table, and any other limitations that are important to ensure the verified performance of the MTD.

F. Maintenance Plans

Maintenance plans must contain specific preventative and corrective maintenance information and must be written in non-technical language. In order to ensure proper maintenance, a detailed maintenance plan for each MTD must be provided that incorporates the following:

1. Minimum required maintenance frequency in order to achieve the annual TSS removal rate, including, for example, the required sediment removal interval, required filtration media replacement interval, and associated maximum sediment depths prior to maintenance.
2. Description of what conditions trigger the need for maintenance and how neglect of specified maintenance activities (e.g., sediment removal, oil removal) causes underperformance of the MTD.
3. Location of access points and type of inspection needed – whether above ground or underground;
4. Description of any training needed to perform maintenance, which may include training videos. All training materials must be made available to maintenance staff.
5. Equipment needed for maintenance and a discussion regarding replacement parts, specifically which replacement parts are only available through the vendor.
6. The format of the maintenance sections of the report shall conform to the maintenance manual requirements of the non-proprietary BMPs in the current version of New Jersey Stormwater Best Management Practices Manual.

G. Statements

The following signed statements are required to complete the NJCAT verification process:

1. A signed statement from the manufacturer stating that the applicable testing protocol (Section 2) requirements were met or exceeded.

2. A signed statement from the third-party observer, if the manufacturer conducts the testing and/or laboratory analysis, stating that the applicable testing protocol (Section 2) requirements were met or exceeded and that they observed the testing for its full duration.
3. A signed statement from the third-party observer, if the manufacturer conducts the testing and/or laboratory analysis, stating that they had no financial conflict of interest regarding the test results and they fully disclosed all relevant relationships in the disclosure record.
4. A signed statement from the independent test facility, stating that the applicable testing protocol (Section 2) requirements were met or exceeded;
5. A signed statement from the independent test facility, stating that they had no financial conflict of interest regarding the test results and they fully disclosed all relevant relationships in the disclosure record.
6. A signed statement from NJCAT to NJDEP, the manufacturer and any applicable testing entity listing the protocol requirements and confirming that all of the requirements of the applicable laboratory testing protocol (Section 2) were met or exceeded; in addition, any deviations that exceeded protocol requirements must be identified.
7. A signed statement from NJCAT stating that the computed required maintenance interval is at least six months.

H. Verification Appendix

MTDs performance after the verification process is dependent on proper design, installation and maintenance; therefore the Verification Appendix should be a resource for designers, installers and property owners that will provide all information necessary to ensure that the device performs to the verified efficiency. This information should be clearly defined and easily accessible; therefore, the Verification Appendix must contain highlighted and translated design specifications found in the body of the verification report. In addition, the Verification Appendix shall contain, at a minimum, the below three sections with the associated information.

Introduction:

- Name of manufacturer, including address, telephone, and Website.
- Name of MTD
- A TSS removal rate of either 50% for HDS or 80% for filtration MTDs.
- On-line or off-line installation for the NJ Water Quality Design Storm.

Detailed Specification:

1. The MTFR for the New Jersey Water Quality Design Storm and, if applicable, the corresponding sizing table, which indicates model numbers/size, dimensions and associated MTFRs.
2. For HDS MTDs, 50% maximum sediment storage volume and required sediment removal interval.
3. For filtration MTDs, maximum allowable drainage area, mass loading capacity, maximum sediment depth, driving head requirements and approximate draindown times.
4. Conditions for the MTD installation (if applicable); and

Additional Specifications:

5. Reference Inspection and Maintenance Plan; and
6. A statement that an MTD cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

APPENDIX A – MTD Verification Process

1. A manufacturer shall file a MTD verification application with NJCAT in a form approved by NJCAT. See Appendix B.
2. NJCAT and the manufacturer will meet in person, by telephone or by video, to review the verification application for:
 - a. Administrative and clerical accuracy and completeness.
 - b. Compliance with the applicable laboratory testing protocol.
 - c. Prior approval from NJCAT of any necessary items such as laboratory certification; third party independent observer; testing entity; etc.
3. If the MTD is a new technology for which there is no approved protocol, NJCAT and a Manufacturers Working Group (MWG) shall meet with the manufacturer to create a laboratory testing protocol, which will be approved by NJDEP. Those interested in being part of the MWG shall contact NJCAT.
4. Upon completion of the initial review and attainment of all necessary prior approvals, the manufacturer shall commence the laboratory testing in strict accordance with the applicable laboratory testing protocol.
5. Upon completion of the laboratory testing, the manufacturer shall submit to NJCAT a complete laboratory test report with all data collected and analyzed, including the information listed in Section 5, with the exception of 5.G.6 and 5.G.7.
6. Within 30 days of receipt of the laboratory test report, NJCAT shall meet in person, by telephone or by web-based conference with the manufacturer to discuss the laboratory test report and issue a preliminary written opinion regarding the manufacturer's compliance with the applicable laboratory protocol and, if not, specifying in detail the areas of noncompliance with the protocol.
7. If outstanding issues exist, NJCAT and the manufacturer shall meet in person, by telephone or by web-based conference within 10 days of the issuance of the preliminary opinion to discuss possible resolution of the outstanding issues.
8. If the outstanding issues are resolved or there were no issues identified in the preliminary written opinion, NJCAT will issue a final verification report within 90 days of issuing the written opinion or if necessary, within 90 days of resolving the outstanding issues. If outstanding issues are not resolved, see Appendix C. The final verification report shall be posted on the NJCAT website and available for written public comment for 30 days. Anyone intending to comment must provide written notification to the manufacturer and NJCAT within 14 days of the verification report being posted on the website. Written public comments which clearly identify the issue(s) at hand, along with supporting documentation must be submitted to the manufacturer and NJCAT no later than 30 days after the initial posting of the verification report on the website. If NJCAT is able to resolve issues raised in the written comments within 45 days, those comments will be addressed by NJCAT and the manufacturer. If NJCAT is unable to resolve the issue(s) raised in the comment(s), the commenter(s) can request that NJCAT submit the issue(s), including all supporting documentation, to a Review Panel (Appendix C) for resolution.
9. If all issues are resolved, NJCAT shall issue a final verification report within 10 days of the end of the public comment/issue resolution period. If issues are referred to the Review Panel, NJCAT shall issue a final verification report within 30 days of the Review Panel issuing their resolution (See Appendix C

for the resolution process) or notify the manufacturer of additional steps that will be required to achieve verification.

10. Once a final verification report is issued, NJCAT shall add the verified MTD to the list of “Laboratory Verified” MTDs at www.njcat.org. NJCAT shall include on its website the final verification report.
11. NJCAT shall notify NJDEP once an MTD has been verified and the NJCAT website has been updated. NJCAT shall send NJDEP the MTD verification report and the MTD Inspection and Maintenance Manual (or its equivalent) and indicate that the MTD is ready for certification.
12. NJDEP will issue a certification letter and post the name of the manufacturer, name of the MTD and the respective TSS removal efficiency at www.njstormwater.org. NJCAT will then update its website listing the MTD as “Laboratory Verified and NJDEP Certified” at www.njcat.org.

APPENDIX B – MTD Verification Application

Prior to commencing the planned laboratory testing program, the manufacturer shall provide an MTD verification application that provides the following information.

A. Organization Information

Organization name, mailing address, contact person (incl. title), phone number, fax number and e-mail address.

B. General Description of Technology

Hydrodynamic sedimentation MTD; Filtration MTD; other

C. Laboratory Testing Location

Laboratory name, address and responsible party contact information; statement of laboratory qualifications and capabilities; third party observer qualifications and resume (if using manufacturer's laboratory); analytical laboratory or laboratories, address and contact information, and their qualifications/certification.

D. Statement of Potential Conflicts of Interest

Clearly indicate any potential conflicts of interests of testing laboratory/testing personnel; third party observer; analytical laboratory; other.

E. Quality Assurance Project Plan

Upon completion of NJCAT's review and approval of the manufacturer's verification application (Items 1-4), the manufacturer will be asked to submit a Quality Assurance Project Plan for NJCAT's review and approval to ensure that the laboratory testing will be conducted in strict accordance with the applicable laboratory testing protocol.

APPENDIX C – Outstanding Issues Resolution Process

The MTD verification process (Appendix A) identifies two potential origins of Outstanding Issues. The first consists of unresolved issues that may arise between the manufacturer of the MTD and NJCAT prior to the completion of a verification report and to the public comment period; the second consists of unresolved issues that may arise between the public commenter(s) and NJCAT/manufacturer during the public comment period. In either instance, an independent review panel will be convened to adjudicate any such outstanding issues.

A. Communication

All communication related to the resolution of outstanding issues, i.e., between the Review Panel the manufacturer and/or the public commenter(s), must be in writing and go through NJCAT.

B. Review Panel and Costs Incurred

The MTD verification process (Appendix A) identifies two potential origins of Outstanding Issues. The first consists of issues that may arise between the manufacturer of the MTD and NJCAT prior to the completion of a verification report and to the public comment period; the second consists of issues that may arise between the public commenter(s) and NJCAT/manufacturer during the public comment period.

1. Manufacturer stakeholders shall submit to NJCAT a list of approximately 20 persons experienced and learned in the science of stormwater treatment to form a pool of Review Panel members. In the event of an outstanding issue the manufacturer or public commenter may request the creation of a Review Panel, comprised of three (3) persons, to review and resolve the dispute as set forth below.
2. All costs incurred by the Review Panel, including remuneration for professional services, shall be distributed as follows.
 - a. All costs incurred by the Review Panel in the resolution of an outstanding issue between the manufacturer and NJCAT are the responsibility of the manufacturer seeking resolution of an issue with NJCAT, unless the Review Panel rules in favor of the manufacturer, in which case the costs are NJCAT's responsibility.
 - b. All costs incurred by the Review Panel in the resolution of an outstanding issue between a public commenter(s) and NJCAT/manufacturer during the public comment period during the written public comment period (Appendix A), will be as distributed as follows:
 - i. If the Review Panel accepts the public comment(s), the manufacturer is responsible for 100% of the Review Panel cost.
 - ii. If the Review Panel rejects the public comment(s), the commenting party(ies) is responsible for 100% of the Review Panel cost.
 - iii. If the Review Panel partially accepts the public comment(s), both the manufacturer and the commenting party(ies) are each responsible for 50% of the Review Panel cost.

C. Procedure for the Resolution of an Outstanding Issue(s)

Should an outstanding issue arise, the following procedure shall be followed. Should more than one outstanding issue arise, the procedure shall apply to each issue.

1. Procedure for the Resolution of an Outstanding Issue Between NJCAT and the Manufacturer
 - a. In the event that NJCAT and the manufacturer cannot resolve an outstanding issue, then both NJCAT and the manufacturer within 30 days shall complete and exchange a Statement of Outstanding Issues which shall set forth in detail each party's position supported by scientific principles.
 - b. Within 10 days of exchange of the Statement of Outstanding Issues the manufacturer will submit the names of individuals from the pool of Review Panel members, who they wish to

- exclude from the Review Panel and the reason(s) why, e.g., conflict of interest. NJCAT will select three persons from those remaining on the list, one who will be designated chair. The three persons selected shall be the Review Panel for resolution of the items set forth in the parties' Statement of Outstanding Issues.
- c. Within 30 days of selection of the Review Panel members, the Review Panel shall receive all information, test reports, collected and analyzed data and Statements of Outstanding Issues regarding the proposed MTD verification.
 - d. Within 30 days of receiving information the Review Panel shall schedule a meeting by telephone or video conference with NJCAT.
 - i. The Review Panel may schedule as many meetings as the Review Panel deems necessary and have additional communication(s) with NJCAT to gain any and all information necessary to make a determination on the outstanding issues.
 - e. The Review Panel shall issue its report within 30 days of its final meeting/communication with NJCAT. The Review Panel Report shall be in writing containing sufficient detail and supported by scientific principles on each outstanding issue set forth in the Statement of Outstanding Issues.
 - f. Based on the Review Panel's report and NJCAT's response, the manufacturer can decide to address any unresolved outstanding issues or end the verification process.
2. Procedure for the Resolution of an Outstanding Issue Between One or More Public Commenters and NJCAT/Manufacturer
- a. In the event that NJCAT/manufacturer and the public commenter(s) cannot resolve an outstanding issue, then NJCAT, the manufacturer and the public commenter(s) within 30 days shall complete and exchange a Statement of Outstanding Issues which shall set forth in detail each party's position supported by scientific principles.
 - b. Within 10 days of exchange of the Statement of Outstanding Issues the public commenter(s) will submit the names of individuals from the pool of Review Panel members, who they wish to exclude from the Review Panel and the reason(s) why, e.g., conflict of interest. NJCAT will select three persons from those remaining on the list, one who will be designated chair. The three persons selected shall be the Review Panel for resolution of the items set forth in the parties' Statement of Outstanding Issues.
 - c. Within 30 days of selection of the Review Panel members, the Review Panel shall receive all information, test reports, collected and analyzed data and Statements of Outstanding Issues regarding the proposed MTD verification.
 - d. Within 30 days of receiving information the Review Panel shall schedule a meeting by telephone or video with NJCAT:
 - i. The Review Panel may schedule as many meetings as the Review Panel deems necessary and have additional communication(s) with NJCAT to gain any and all information necessary to make a determination on the outstanding issues.
 - e. The Review Panel shall issue its report within 30 days of its final meeting/communication with NJCAT. The Review Panel Report shall be in writing containing sufficient detail and supported by scientific principles on each outstanding issue set forth in the Statement of Outstanding Issues.
 - f. Based on the Review Panel's report, the manufacturer can decide to address any unresolved outstanding issues or end the verification process.
 - g. For issues raised during the public comment period that were previously addressed between NJCAT and the manufacturer by the review panel following the steps noted above (Between NJCAT and the Manufacturer), NJCAT shall consult with the chair of the review panel to determine if any new information has been raised that was not raised during the original issue(s) review. If no new information has been brought forth during the public comment period, the issue(s) will be considered already addressed. If it is determined that new information has been brought forth that was not considered in the earlier review, NJCAT will

convene a second review panel to consider the issue(s) along with the other issues raised during the public comment process.