

## **Suggested Criteria for Establishing Maintenance Cycle during Protocol Monitoring**

### Maintenance Monitoring

Technology monitoring needs to include factors which impact long-term operations and maintenance to address the question of life cycle costs. It is recognised that the total mass load into a system may not be entirely reflected from TSS measurements of the influent and effluent. Mass originating from settleable solids and gross pollutants such as leaves can add significant mass to a system as well as mass accumulated from events that are not sampled or qualified. Below are objectives for maintenance requirements prior, during and after monitoring.

- The system should be maintained at the beginning of the monitoring. If not possible, then a detailed measurement of the “state” of the system should be done to establish a baseline load.
- During the course of the study, the applicant should measure the sediment accumulation rate to help demonstrate device performance and resilience relative to long term operation and maintenance. The procedure to take these measurements need to be outlined in the approved QAPP
- Additionally, at the end of a study and/or prior to a maintenance cycle the total pollutant load delivered to the system should be estimated based on event mean concentrations and total volume treated. The total sample influent and effluent load weighted over the period of record for rainfall to account for storms not being monitored. The sediment mass load should be estimated or measured just prior to any subsequent cleanings during the monitoring period and at the end of the monitoring period. The procedure for estimating the mass load of sediment should be outlined in the QAPP as it may be unique to individual technologies. This information should then be used to verify the proponent’s maintenance schedule for the system is reasonably accurate.

It is recognized that periodic extraordinary events may deliver exceptional loads which can skew operations and maintenance data. These events can include high energy rainfall falls events delivering excessive sediments from erosion of landscaping or topographic features. Other extraordinary events may include land use related events such as pressure washing, landscaping materials on paved surfaces or dumping. If this becomes a case where an unusual event occurs and additional maintenance is required, then this should be recorded accordingly, with sufficient empirical evidence to support the event as an outlier. Where such outliers are demonstrated to have occurred, the associated atypical data should be excluded from the assessment of performance.

Recognising that in some instances the maintenance cycle of the monitored treatment device may exceed the duration of the required water quality monitoring (Typically 12-24 months) applicants have several options for determining and reporting expected maintenance cycles. If the applicant feels that the monitoring period is a sufficient representation of the MTDs maintenance cycle they may report the expected maintenance cycle as such taking into account influent loading as per above. If the applicant wishes to demonstrate that the maintenance cycle is considerably longer than the water quality monitoring period, then a modified monitoring program may continue until such a time as the system requires maintenance. The applicant could also choose to suspend monitoring and report the maintenance cycle as the total duration of monitoring, otherwise the published maintenance period and mass load will coincide with the termination of the monitoring period.