UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA)
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
MULTI-SECTOR GENERAL PERMIT (MSGP)
FOR STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY
FACT SHEET

I. Background

Congress passed the Federal Water Pollution Control Act of 1972 (Public Law 92-500, October 18, 1972) (hereinafter, Clean Water Act or CWA), 33 U.S.C. 1251 et seq., with the objective to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." section 101(a), 33 U.S.C. 1251(a). To help achieve this objective, the CWA provides that "the discharge of any pollutant by any person shall be unlawful" except in compliance with other provisions of the statute, CWA section 301(a). 33 U.S.C. 1311(a). The CWA defines "discharge of a pollutant" to include "any addition of any pollutant to navigable waters from any point source." CWA section 502(12). 33 U.S.C. 1362(12). The U.S. Environmental Protection Agency (EPA) is authorized under CWA section 402(a) to issue a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant from a point source. 33 U.S.C. 1342(a). These NPDES permits are issued by EPA or NPDES-authorized state or tribal agencies. Since 1972, EPA and the authorized states have issued NPDES permits to thousands of dischargers, both industrial (e.g., manufacturing, energy, and mining facilities) and municipal (e.g., wastewater treatment plants). As required under Title III of the CWA, EPA has promulgated Effluent Limitations Guidelines (ELGs) and New Source Performance Standards (NSPS) for many industrial point source categories and these requirements are incorporated into NPDES permits. The Water Quality Act (WQA) of 1987 (Public Law 100-4, February 4, 1987) amended the CWA, adding CWA section 402(p), requiring implementation of a comprehensive program for addressing municipal and industrial stormwater discharges. 33 U.S.C. 1342(p).

Section 405 of the WQA of 1987 added section 402(p) of the CWA, which directed the EPA to develop a phased approach to regulate municipal and industrial stormwater discharges under the NPDES program. EPA published a final regulation on the first phase of this program on November 16, 1990, establishing permit application requirements for "stormwater discharges associated with industrial activity." See 55 FR 47990. EPA defined the term "stormwater discharge associated with industrial activity" in a comprehensive manner to cover a wide variety of facilities. See 40 CFR 122.26(b)(14). EPA is issuing the 2021 Multi-Sector General Permit (MSGP) under this statutory and regulatory authority.

The Regional Administrators of all 10 EPA Regions are issuing EPA's NPDES MSGP for stormwater discharges associated with industrial activity. The 2021 MSGP replaces the 2015 MSGP, which was issued on June 4, 2015 (80 FR 34403), and expired and was administratively continued on June 4, 2020. The 2021 MSGP is actually 50 separate general NPDES permits covering areas within an individual state, tribal land, or U.S. territory, or federal facilities. These 50 general permits contain provisions that require industrial facilities in 29 different industrial sectors to, among other things, implement control measures and develop site-specific stormwater pollution prevention plans (SWPPPs) to comply with NPDES requirements. In addition, the MSGP includes a thirtieth sector, available for EPA to permit additional industrial activities that the Agency determines require permit coverage for industrial stormwater discharges not included in the other 29 industrial sectors.

II. 2015 MSGP Litigation

After EPA issued the 2015 MSGP in June 2015, several parties, collectively referred to as "petitioners," filed petitions for review of the permit which were consolidated in the United States Court of Appeals for the Second Circuit. Petitioners included Waterkeeper Alliance, Apalachicola Riverkeeper, Galveston Baykeeper, Raritan Baykeeper, Inc. d/b/a NY/NJ Baykeeper, Snake River Waterkeeper, Ecological Rights Foundation, Our Children's Earth Foundation, Puget Soundkeeper Alliance, Lake Pend Oreille Waterkeeper, and Conservation Law Foundation. The Federal Water Quality Coalition and Federal Storm Water Association intervened in the case as respondents on August 4, 2015. Before any briefs were filed in the MSGP Litigation, the parties entered into settlement discussions under the auspices of the Second Circuit's Civil Appeals Mediation Program. A Settlement Agreement resulted from these discussions, which all parties signed on August 16,

2016. The Settlement Agreement did not affect the 2015 MSGP, but stipulated several terms that EPA agreed to address in the proposed 2020 MSGP (the Settlement Agreement can be found in the docket for the 2021 MSGP (Docket ID# EPA-HQ-OW-2019-0372)). EPA understands that the terms of the Settlement Agreement, in particular the proposed "Additional Implementation Measures" (AIM) benchmark exceedance requirements, will increase regulatory certainty for those who must comply with the permit, as intervenors expressed, while resolving petitioners' concerns that the previous corrective actions for benchmark exceedances under the 2015 MSGP were not sufficient to ensure that the permit controlled discharges as sufficient to protect water quality, as is required by the CWA. Industrial stormwater discharges are explicitly required to meet all provisions of CWA §301, including applicable water quality standards (CWA §402(p)(3)(A)). See Part 5 of this Fact Sheet for a detailed discussion of the final 2021 MSGP AIM requirements.

Below, EPA outlines how the Agency addressed the key terms from the Settlement Agreement in the proposed permit. The terms of the Settlement Agreement can be found in the Settlement Agreement in the docket for the 2021 MSGP (Docket ID# EPA-HQ-OW-2019-0372).

- The NRC Study. EPA funded a study conducted by the National Academies of Sciences, Engineering, and Medicine's (NAS) National Research Council (NRC) (NRC Study). The study committee was tasked to 1) Suggest improvements to the current MSGP benchmarking monitoring requirements; 2) Evaluate the feasibility of numeric retention standards; and 3) Identify the highest-priority industrial facilities/subsectors for consideration of additional discharge monitoring. The study was released in February 2019 and can be found at the following link: https://www.nap.edu/catalog/25355/improving-the-epa-multi-sector-general-permit-for-industrial-stormwater-discharges. In the Settlement Agreement, EPA agreed to consider all recommendations suggested in the NRC Study when drafting the proposed MSGP. In addition, where the completed NRC Study made recommendations regarding the sectors/subsectors, frequency, parameters, and/or parameter levels in the 2015 MSGP's benchmark monitoring provisions, EPA solicited comment on such recommendations in the proposed MSGP. See Section III below for a detailed outline and discussion of the NRC Study recommendations.
- Comparative Analysis. EPA reviewed examples of numeric and non-numeric effluent limitations (including complete prohibitions, if any) applicable to the discharge of industrial stormwater that have been set in other jurisdictions (i.e., states with NPDES permitting authority) and evaluated the bases for those limitations. EPA included this analysis in the docket for this permit on regulations.gov (Docket ID#: EPA-HQ-OW-2019-0372).
- Preventing Recontamination of Federal CERCLA Sites. EPA proposed for comment an expansion to all EPA Regions of the existing eligibility criterion regarding operators discharging to Federal Comprehensive Environmental Response, Compensation and Liability (CERCLA or Superfund) sites that currently applies to operators in Region 10 in the 2015 MSGP. See Part 1.1.7 of the proposed permit.
- Eligibility Criterion regarding Coal Tar Sealcoat. EPA proposed for comment a new eligibility condition for operators who, during their coverage under the next MSGP, seek to use coal tar sealant to initially seal or to re-seal pavement and thereby discharge polycyclic aromatic hydrocarbons ("PAHs") in stormwater. EPA proposed that those operators are not eligible for coverage under the MSGP and must either eliminate such discharge or apply for an individual permit. See Part 1.1.8 of the proposed permit.
- Permit Authorization Relating to a Pending Enforcement Action. EPA solicited comment on a provision relating to the situation where a facility not covered under the 2015 MSGP submits a Notice of Intent (NOI) for permit coverage while there is a related, pending stormwater-related enforcement action by EPA, a state, or a citizen (to include both notices of violations ("NOVs") by EPA or the State and notices of intent to bring a citizen suit). In this situation, EPA solicited

comment on "putting a hold on" the facility's NOI for an additional 30 days to allow EPA an opportunity to (a) review the facility's control measures expressed in its SWPPP, (b) identify any additional control measures that EPA deems necessary to control site discharges in order to ensure that discharges meet technology-based and water quality-based effluent limitations, and/or (c) to conduct further inquiry regarding the site's eligibility for general permit coverage. See Part 1.3.3 and Table 1-2 of the proposed permit.

- Additional Implementation Measures (AIM). EPA included in the benchmark monitoring section of the proposed MSGP "Additional Implementation Measures" (AIM) required for operators responding to benchmark exceedances. EPA included proposed AIM requirements in Part 5.2 of the proposed permit.
- Part 4.2.~~4~~5.1.a~~1~~ Facilities Required to Monitor for Discharges to Impaired Waters Without an EPA-approved or Established Total Maximum Daily Load (TMDL) (previously Part 6.2.4.1 in the 2015 MSGP). EPA proposed for comment specific edits regarding monitoring for impaired waters. See Part 4.2.4.1(a) of the proposed permit.
- Revision of Industrial Stormwater Fact Sheets. EPA reviewed and proposed to revise the MSGP's sector-specific fact sheets associated with the permit. See Appendix Q of the proposed permit.

III. The National Research Council (NRC) National Academies of Sciences (NAS) Industrial Stormwater Study

Per the 2015 MSGP Settlement Agreement, EPA agreed to fund a study conducted by the National Academies of Sciences, Engineering, and Medicine's (NAS) National Research Council (NRC).

The study committee was tasked to 1) Suggest improvements to the current MSGP benchmarking monitoring requirements; 2) Evaluate the feasibility of numeric retention standards; and 3) Identify the highest-priority industrial facilities/subsectors for consideration of additional discharge monitoring. NAS released the study in February 2019, which can be found at the following link: https://www.nap.edu/catalog/25355/improving-the-epa-multi-sector-general-permit-for-industrial-stormwater-discharges.

In the Settlement Agreement, EPA agreed that, when drafting the proposed MSGP, it would consider all recommendations suggested in the completed NRC Study. In addition, where the completed NRC Study made recommendations regarding the sectors/subsectors, frequency, parameters, and/or parameter levels in the 2015 MSGP's benchmark monitoring provisions, EPA agreed to solicit comment on such recommendations in the proposed MSGP. EPA thoroughly reviewed the NRC Study recommendations and relied on the committee's analysis of the permit to support the proposed permit requirements originating from the Study. Because EPA funded the NRC study, EPA did not conduct additional analyses that would have duplicated any analyses found in the NRC study. In the proposed 2020 MSGP, EPA outlined how and where the Agency considered each recommendation from the NRC study. Where recommendations were related or linked to each other, EPA addressed them jointly, as described below. After considering comments received on the proposed MSGP, for the 2021 MSGP, EPA finalized several of the proposed requirements that were informed by the NRC study.

NRC Recommendations on Pollutant Monitoring Requirements and Benchmark Thresholds

1. **NRC recommendation:** EPA should require industry-wide monitoring under the MSGP for pH, total suspended solids (TSS), and chemical oxygen demand (COD) as basic indicators of the effectiveness of stormwater control measures (SCMs) employed on site.
    - **EPA Proposed MSGP:** EPA proposed to require "universal benchmark monitoring" for pH, TSS, and COD for all facilities. See Part 4.2.1 of the proposed permit and the proposed Fact Sheet.

- **EPA Final MSGP:** For the final 2021 MSGP, EPA requires certain operators to conduct "report-only" indicator analytical monitoring for three parameters - pH, TSS, and COD - quarterly for the duration of the permit. This requirement applies to all operators in the following subsectors that do not have sector-specific benchmark monitoring requirements in the 2021 MSGP: B2, C5, D2, E3, F5, I1, J3, L2, N2, O1, P1, R1, T1, U3, V1, W1, X1, Y2, Z1, AB, AC, and AD. See Part 4.2.1 of the final permit and this Fact Sheet for more information on the final MSGP provisions.

2. **NRC recommendation:** EPA should implement a process to periodically review and update sector-specific benchmark monitoring requirements that incorporates new scientific information.

   - **EPA Proposed MSGP:** As part of the permitting process to propose and finalize the MSGP, EPA reviews and updates sector-specific benchmark monitoring requirements to incorporate new scientific information.

     As part of the 2015 MSGP Settlement Agreement, EPA proposed to revise the MSGP's sector-specific fact sheets associated with the permit. See Appendix Q of the proposed permit and the proposed Fact Sheet.

     EPA proposed to require specific benchmark monitoring for Sectors I, P, and R. See Parts 8 and 4.2.1.1 of the proposed permit and the proposed Fact Sheet.

     EPA evaluated options for developing a benchmark for polycyclic aromatic hydrocarbons (PAHs). After conducting the cost analysis for the proposed permit for three options, EPA concluded in the proposal that COD was the most cost-effective option as a surrogate for PAHs, and since COD was already being proposed under the new "universal benchmark monitoring," no additional monitoring for PAHs was explicitly proposed. However, EPA requested comment on information and data related to specific sectors with petroleum hydrocarbon exposure that can release PAHs, any concentrations of individual PAHs and/or total PAHs at industrial sites, and the correlation of PAHs and COD. EPA indicated that it may consider additional monitoring for PAHs in the final permit if it received sufficient information to develop an appropriate benchmark threshold. For a full discussion and detailed analysis of the options and the costs, see Part 4.2.1.2 of the proposed Fact Sheet and Section E.3 of the proposed Cost Impact Analysis in the docket.

   - **EPA Final MSGP:** As described above, the 2021 MSGP requires certain operators to conduct "report only" indicator analytical monitoring for three parameters - pH, TSS, and COD - quarterly for the duration of the permit. Evaluation of these data will inform future consideration of any benchmark monitoring. The 2021 MSGP also includes a new provision that requires certain operators to conduct "report-only" indicator analytical monitoring for PAHs bi-annually (twice per year) during their first and fourth years of permit coverage. This requirement applies to the following operators: operators in all sectors with stormwater discharges from paved surfaces that will be sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit; operators in sectors A (facilities that manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation), C (SIC Code 2911), D, F, H, I, M, O, P (SIC Codes 4011, 4013, and 5171), Q (SIC Code 4491), R, and S. EPA plans to use the indicator monitoring data collected to conduct an initial quantitative assessment of the levels of PAHs in industrial stormwater, further identify industrial activities with the potential to discharge PAHs via stormwater, and inform future consideration of PAH benchmark monitoring for sectors with the potential to discharge PAHs via stormwater. See Part 4.2.1 of the permit and this fact sheet.

EPA is not finalizing Appendix Q in the 2021 MSGP. Instead, EPA maintains the existing industrial stormwater fact sheet series as guidance. In the 2021 MSGP, after AIM Level 2 is triggered, the Level 2 response requires the operator to generally implement additional pollution prevention/good housekeeping measures. EPA encourages facilities to consult the existing MSGP industrial stormwater fact sheet series for guidance on recommended stormwater control measures appropriate to comply with AIM Level 2. EPA plans to work with external stakeholders to thoroughly revise the sector-specific fact sheets.

3. **NRC recommendation:** EPA should update the MSGP industrial-sector classifications so that requirements for monitoring extend to nonindustrial facilities with activities similar to those currently covered under the MSGP.

   - **EPA Proposed MSGP:** Prior to the issuance of the 1995 MSGP, EPA performed an analysis of industrial sources not covered under the stormwater Phase I rule to determine whether any such industries should be covered under the 1999 stormwater Phase II rule (Report to Congress, March 1995, EPA 833-K-94-002). Ultimately, no new industrial sources were included in the stormwater Phase II rulemaking. While EPA recognizes the benefits of the recommendation to cover facilities with activities similar to those already covered by the MSGP, such an expansion would require a separate regulatory action to modify the definition of "stormwater discharges associated with industrial activity" in 40 CFR 122.26(b)(14) and is outside of the scope of this permit. Additionally, in Sector AD, the MSGP covers other stormwater discharges designated by the Director as needing a permit (see 40 CFR 122.26(a)(9)(i)(C) & (D)) or any facility discharging stormwater associated with industrial activity not described by any of Sectors A-AC.
   - **EPA Final MSGP:** The 2021 MSGP does not cover any new industrial sources beyond those named in 40 CFR 122.26(b)(14).

4. **NRC recommendation**: Benchmarks should be based on the latest toxicity criteria designed to protect aquatic ecosystems from adverse impacts from short-term or intermittent exposures, which to date have generally been acute criteria.

   - **EPA Proposed MSGP:** EPA proposed to update the benchmark thresholds for cadmium; leave the benchmark threshold for aluminum as it was in the 2015 MSGP; remove benchmark thresholds for magnesium and iron; and requested comment on the benchmark thresholds for selenium, arsenic, and copper. See Parts 4.2.1.2 and 8 of the proposed Fact Sheet.
   - **EPA Final MSGP:** EPA modified the benchmark monitoring thresholds in the 2021 MSGP for aluminum, copper for discharges to freshwater, selenium for discharges to freshwater, and cadmium based on revised CWA section 304(a) national recommended aquatic life water quality criteria and suspended the benchmark monitoring thresholds for magnesium and iron based on lack of documented acute toxicity. The 2021 MSGP is also allowing operators who exceed the revised benchmark thresholds for discharges to freshwater for aluminum and copper to demonstrate to EPA that their discharges do not result in an exceedance of a facility-specific value calculated by the operator using the national recommended water quality criteria multi-variable models in-lieu of the applicable MSGP benchmark threshold. See Parts 4.2.2 and 8 of the permit and this fact sheet.

5. **NRC recommendations:**

   - Additional monitoring data collection on the capacity of stormwater control measures (SCMs) to reduce industrial stormwater pollutants is recommended to inform periodic reviews of the benchmark thresholds and identify sectors for which new national effluent limits could help address treatment attainability.

- Because of the paucity of rigorous industrial SCM performance data, the NRC did not recommend the development of new numeric effluent limitations (NELs) for any specific sector based on existing data, data gaps, and the likelihood of filling them.

- **EPA Proposed MSGP:** EPA acknowledges that a more complete and robust dataset is needed to establish NELs for industrial stormwater in an NPDES general permit. NELs are determined only on an industry-by-industry basis (or subsector-by-subsector) and require discharge pollutant levels corresponding to specific control measures. Many samples are needed because of the high variability (i.e., coefficients of variation) for industrial stormwater (which is much greater than for drinking water and wastewater). The benchmark monitoring data that are currently collected in the MSGP are not suitable or sufficient for determining NELs, which are reviewed and developed through the effluent guidelines planning and development process. See https://www.epa.gov/eg/effluent-guidelines-plan. NRC notes that the MSGP as an NPDES general permit is not the appropriate vehicle for collecting the rigorous performance monitoring data which is necessary to develop new NELs based on the capabilities of treatment technology and other on-site stormwater management practices. While EPA recognizes the importance and utility of NELs, the MSGP benchmark monitoring requirements were designed to be as least burdensome as possible for operators while still providing the intended utility: a tool to for determining whether operators could have SWPPP/stormwater control measure deficiencies. Generally, NELs are feasible only where predictably reliable treatment technologies (as opposed to standard pollution prevention SCMs other than product substitution) are employed. Where standard SCMs provide adequate water quality protection, NELs may be unnecessary. Some of the requisite components of a stormwater monitoring program that are sufficient to characterize a discharge and to accommodate the development of NELs include the following:

    - Rainfall monitoring in the drainage area (rate and depth, at least at two locations);
    - Flow monitoring at the discharge point (calibrated with known flow or using dye dilution methods);
    - Flow-weighted composite sampling, with sampler modified to accommodate a wide range of rain events;
    - Water quality sonde to obtain high-resolution and continuous measurements of such parameters as turbidity, conductivity, pH, oxidation reduction potential, dissolved oxygen (DO), and temperature (recommended);
    - Preparation of adequate experimental design that quantifies the needed sampling effort to meet the data quality objectives (adequate numbers of samples in all rain categories and seasons); and
    - Selection of constituents that meet monitoring objectives.

  Additionally, operators cannot be compelled to collect additional detailed performance data for common SCMs under typical stormwater conditions, as this would be very complicated to do in context of a permit and possibly expensive for operators in balance with other proposed requirements.

- **EPA Final MSGP:** The 2021 MSGP does not require any additional monitoring that is specific to SCM performance data collection. As described in Part 4.2.2, existing benchmark monitoring requirements are primarily intended to provide the operator with data to determine the overall effectiveness of their stormwater control measures and to assist in determining when additional action(s) may be necessary to comply with the effluent limitations in Part 2.

NRC Recommendations on Stormwater Sampling and Data Collection

1. **NRC recommendation:** EPA should update and strengthen industrial stormwater monitoring, sampling, and analysis protocols and training to improve the quality of monitoring data.

    - **EPA Proposed MSGP:** EPA has an existing guide on industrial stormwater monitoring and sampling, which can be found at https://www3.epa.gov/npdes/pubs/msgp_monitoring_guide.pdf. The guide explains how to conduct visual and analytical monitoring of stormwater discharges and can be used by facilities required to comply with the MSGP's monitoring requirements as well as facilities subject to state-issued NPDES industrial stormwater permits. EPA indicated that the Agency may consider updating this guidance as a separate activity from the permit proposal. Although EPA recognizes the benefits of developing a new comprehensive industrial stormwater training or professional certificate program, establishing such a program would require significant time, resources, and indefinite EPA staff commitment, and is outside the scope of the permit and capabilities of EPA's industrial stormwater program at this time.

    - **EPA Final MSGP:** EPA intends to update the existing guide on industrial stormwater monitoring and sampling referenced above to be in line with the 2021 MSGP.

2. **NRC recommendation:** EPA should allow and promote the use of composite sampling for benchmark monitoring for all pollutants except those affected by storage time.

    - **EPA Proposed MSGP:** EPA proposed an explicit clarification that composite sampling is allowed for benchmark monitoring. See Part 4.1.4 of the proposed permit and the proposed Fact Sheet.

    - **EPA Final MSGP:** For the final 2021 MSGP, EPA clarifies that composite sampling for indicator monitoring and benchmark monitoring is explicitly allowed for all pollutants except in limited circumstances. See Part 4.1.4 of the final permit and this Fact Sheet.

3. **NRC recommendation:** Quarterly stormwater event samples collected over 1 year are inadequate to characterize industrial stormwater discharge or describe industrial SCM performance over the permit term.

    - **EPA Proposed MSGP:** As part of the proposed "universal benchmark monitoring" for pH, TSS, and COD for all facilities in Part 4.2.1.1 of the proposed permit, EPA proposed that facilities monitor and report for these three parameters on a quarterly basis for the entire permit term, regardless of any benchmark threshold exceedances, to ensure facilities have current indicators of the effectiveness of their stormwater control measures throughout the permit term. See Part 4.2.1.2 of the proposed permit and the proposed Fact Sheet.

    - **EPA Final MSGP:** For the final 2021 MSGP, EPA requires certain operators to conduct indicator monitoring for pH, TSS, and COD quarterly for the duration of the permit. See Part 4.2.1 of the final permit and this Fact Sheet. Additionally, for the 2021 MSGP, EPA requires that applicable operators conduct benchmark monitoring quarterly in their first and fourth years of permit coverage. The extended benchmark monitoring schedule under the 2021 MSGP will ensure that operators have current data on their industrial stormwater discharges and stormwater control measure effectiveness throughout their permit coverage and will help identify any adverse effects from modifications in facility operations and personnel over time. See Part 4.2.2.3 of the final permit and this Fact Sheet.

4. **NRC recommendation:** State adoption of national laboratory accreditation programs for the Clean Water Act with a focus on the stormwater matrix and interlaboratory calibration efforts would improve data quality and reduce error.

- **EPA Proposed MSGP:** EPA has existing guidance on laboratory procedures and quality assurance in the NPDES Compliance Inspection Manual (January 2017), which can be found at https://www.epa.gov/sites/production/files/2017-01/documents/npdesinspect.pdf. Because this guidance is relatively recent, EPA has no plans to further update it at this time.
- **EPA Final MSGP:** EPA reiterates that the Agency has no current plans to further update the existing guidance referenced above.

5. **NRC recommendation:** To improve stormwater data quality while balancing the burden of monitoring, EPA should expand its tiered approach to monitoring within the MSGP, based on facility risk, complexity, and past performance.

   - **EPA Proposed MSGP:** EPA proposed to have the following tiered approach to monitoring: 1) a possible "inspection-only" option in lieu of benchmark monitoring available to low-risk facilities (see Part 4.2.1.1 of the proposed permit and the proposed Fact Sheet and associated request for comment in that Part); 2) require new "universal benchmark monitoring" for pH, TSS, and COD; 3) continue existing benchmark monitoring requirements from the 2015 MSGP; and 4) require continued benchmark monitoring as part of the proposed AIM requirements for repeated benchmark exceedances. See Parts 4.2 and 5.2 in the proposed permit and the proposed Fact Sheet.

     EPA also considered an "inspection-only" option as an alternative to benchmark monitoring for low-risk facilities. EPA acknowledges the benefits of an in-person inspection and aims to provide flexibility in the permit, where appropriate. EPA requested comment on whether the permit should include an "inspection-only" option, ways to identify eligible low-risk facilities, what frequency would be appropriate for such an inspection, what the inspection should entail, and what qualifications or certifications an inspector should have. Based on the information received during the comment period for the proposed permit, the Agency indicated that it may include this option in the final permit. For a full discussion and detailed analysis of this option and the costs, see the proposed Fact Sheet Part 4.2.1.1 and Section E.5 of the proposed Cost Impact Analysis in the docket.

   - **EPA Final MSGP:** After consideration of public comments, EPA is not finalizing an inspection-only option in the 2021 MSGP. EPA acknowledges the validity of the NRC Study recommendation to provide an alternative compliance option for low-risk facilities; however, the Agency does not currently have sufficient information or a fully-vetted approach to identify which facilities should be considered low-risk. EPA will continue to collect information, including "report only" indicator monitoring data for pH, TSS, and COD required in the 2021 MSGP, to support future consideration of an inspection-only option for low-risk facilities.

6. **NRC recommendation:** To improve the ability to analyze data nationally and the efficiency and capability of oversight by permitting agencies, EPA should enhance electronic data reporting and develop data management and visualization tools.

   - **EPA Proposed MSGP:** EPA recognizes the benefits of improved electronic data reporting and management and continues to work on upgrading its electronic reporting systems and tools with each permit reissuance. EPA proposed that the Agency will consider implementing improved compliance reminders, checks on missing or unusual data, and the possibility of developing a data visualization tool.
   - **EPA Final MSGP:** EPA developed and implemented several new features and advancements for the NPDES eReporting Tool (NeT) for the MSGP so that many activities and communications between operators, the EPA Region, and/or the U.S. Fish and Wildlife

Service (FWS) and the National Marine Fisheries Service (NMFS) (the "Services") that were conducted over email can now be done electronically within NeT-MSGP.

- EPA incorporated into NeT-MSGP several "pre-NOI" activities or eligibility approvals for certain operators that were previously required to be submitted to the applicable EPA Regional Office prior to NOI submission (e.g., for new dischargers to impaired waters in Part 1.1.6.2; the endangered species criterion determination and Criterion C form in Part 1.1.4; the historic properties procedures and criterion determination in Part 1.1.5; and notification of discharges to certain CERCLA sites in Part 1.1.7). To reduce burden, for the 2021 MSGP, an operator now submits that information electronically in NeT-MSGP at the same time they submit the NOI. Where no timeline existed in the previous permit for the "pre-NOI" approvals, EPA now set a 30-day timeframe to review the information submitted by the operator, before the standard 30-day review period begins in NeT-MSGP. This process is intended to streamline all eligibility-related information so that the operator only needs to submit one NOI package and the EPA Region has a comprehensive submission to review in one place.
- EPA also developed a user role for the Services in NeT-MSGP so that review of NOIs, review of endangered species criterion determinations, and communication with the EPA Regional Office can be occur within NeT-MSGP and be tracked with the NOI submission, rather than over emails.
- EPA is also developing a complementary data processing feature in NeT-MSGP that will read submitted benchmark monitoring data in NetDMR to help the operator determine if sampling results indicate that an AIM triggering condition occurred during the quarter and which AIM Level may have been triggered. EPA hopes this feature will help the operator process their benchmark data in a timely manner, comply with any AIM requirements, and help EPA evaluate the impact of the new AIM requirements on benchmark exceedance data over time.

NRC Recommendations on Consideration of Retention Standards in the MSGP

1. **NRC recommendations:**

    a. Rigorous permitting, (pre)treatment, and monitoring requirements are needed along with careful site characterization and design to ensure groundwater protection in industrial stormwater infiltration systems.

    b. Site-specific factors and water quality-based effluent limits render national retention standards for industrial stormwater infeasible within the existing regulatory framework of the MSGP.

    c. EPA should consider incentives to encourage industrial stormwater infiltration or capture and use where appropriate.

    - **EPA Proposed MSGP:** EPA acknowledges the importance of protecting groundwater during the use of stormwater infiltration systems. EPA proposed infiltration, where the operator can demonstrate to EPA that it is appropriate and feasible for site-specific conditions, as an alternative or adjunct to structural source controls and/or treatment controls required in proposed Tier 3 AIM responses. See Part 5.2.3.2.b of the proposed permit and the proposed Fact Sheet.
    - **EPA Final MSGP:** The 2021 MSGP does not allow infiltration as an alternative to permanent stormwater controls required in AIM Level 3.

2. **NRC recommendation:** EPA should develop guidance for retention and infiltration of industrial stormwater for protection of groundwater.

- **EPA Proposed MSGP:** EPA indicated in the proposed permit that it may develop guidance for retention and infiltration of industrial stormwater after it reviews any existing state or other federal guidance as a separate activity from the permit issuance.
- **EPA Final MSGP:** If EPA does develop guidance for retention and infiltration for industrial stormwater, it will work closely with stakeholders and representatives of state water quality and underground injection control (UIC) agencies to ensure guidance is consistent with groundwater protection regulations, standards, and practices.

IV. Summary of Changes in the 2021 MSGP Compared to the 2015 MSGP

EPA proposed the MSGP for a 90-day comment period from March 2 to June 1, 2020. EPA received 195 total comment letters and 1,865 unique comments. Response to comments are discussed in detail in a separate document "2021 MSGP Response to Comments" which can be found in the docket (Docket ID# EPA-HQ-OW-2019-0372).

The 2021 MSGP includes a number of new or modified requirements compared to the 2015 MSGP. The following list summarizes the most significant changes to the MSGP.

1. **Streamlining of Permit –** EPA streamlined and simplified language throughout the permit to present the requirements in a more clear and readable manner. Regarding the structure of the permit, Part 4 (Monitoring) was previously Part 6 in the 2015 MSGP; Part 5 (Corrective Actions and AIM) was previously Part 4 in the 2015 MSGP; and Part 6 (SWPPP) was previously Part 5 in the 2015 MSGP. In EPA's view, formatting the permit in this new order (Monitoring, followed by Corrective Actions and AIM, then SWPPP requirements) provides the information in a more sequential way as the latter parts often refer back to requirements in previous parts of the permit. This new structure should enhance understanding of and compliance with the permit's requirements. EPA also made additional edits to improve permit readability and clarity. EPA revised the wording of many eligibility requirements to be an affirmative expression of the requirement instead of assumed ineligibility unless a condition was met. For example, Part 1.1.6.2 reads "If you discharge to an 'impaired water'…you must do one of the following:". In comparison, the 2015 MSGP read "If you are a new discharger or a new source…you are ineligible for coverage under this permit to discharge to an 'impaired water' … unless you do one of the following:". EPA also numbered permit conditions that were previously in bullet form to make it easier to follow and reference the permit conditions. Finally, the language of the permit was changed from passive to active voice where appropriate (e.g., "Samples must be collected…" now reads "You must collect samples…").

2. **Public Sign of Permit Coverage –** The 2021 MSGP includes a new requirement that MSGP operators must post a sign of permit coverage (except in the instance where other laws or local ordinances prohibit such signage) at a safe, publicly accessible location in close proximity to the facility, as other NPDES permittees are required to do. This notice must include basic information about the facility (e.g., the NPDES ID number), information that informs the public on how to request the facility's Stormwater Pollution Prevention Plan (SWPPP), and how to contact the facility and EPA if stormwater pollution is observed in the stormwater discharge. See Part 1.3.5.

3. **Consideration of Stormwater Control Measure Enhancements for Major Storm Events –** The 2021 MSGP requires that operators consider implementing enhanced stormwater control measures for facilities that could be impacted by major storm events, such as hurricanes, storm surge, and flood events. EPA is not requiring operators to implement additional controls if the operator determines such controls to be unnecessary, but EPA is requiring operators to consider the benefits of selecting and designing control measures that reduce risks to their industrial facility and the potential impact of pollutants in stormwater discharges caused by major storm events. See Part 2.1.1.8.

4. **Monitoring Changes**

- **Indicator Monitoring for pH, TSS, and COD –** The 2021 MSGP includes a new provision that requires certain operators to conduct indicator analytical monitoring for three parameters - pH, Total Suspended Solids (TSS), and Chemical Oxygen Demand (COD) - quarterly for the duration of the permit. This requirement applies to all operators in the following subsectors that do not have sector-specific benchmark monitoring requirements in the 2021 MSGP: B2, C5, D2, E3, F5, I1, J3, L2, N2, O1, P1, R1, T1, U3, V1, W1, X1, Y2, Z1, AB, AC, and AD. For this permit, indicator monitoring is "report-only" and does not have a threshold or baseline value for comparison nor does it require follow-up actions under this part. The requirement in Part 2.2.1 to meet applicable water quality standards still applies. These three parameters will provide operators and EPA with a baseline and comparable understanding of industrial stormwater discharge quality, broader water quality problems, and stormwater control measure effectiveness at these facilities. See Part 4.2.1.

- **Indicator Monitoring for Polycyclic Aromatic Hydrocarbons (PAHs) –** The 2021 MSGP includes a new provision that requires certain operators to conduct "report-only" indicator analytical monitoring for polycyclic aromatic hydrocarbons (PAHs) bi-annually (twice per year) during their first and fourth years of permit coverage. This requirement applies to the following operators: operators in all sectors with stormwater discharges from paved surfaces that will be sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit; operators in sectors A (facilities that manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation), C (SIC Code 2911), D, F, H, I, M, O, P (SIC Codes 4011, 4013, and 5171), Q (SIC Code ~~4491~~4493), R, and S.

  Indicator monitoring is "report-only" and does not have a benchmark threshold or baseline value for comparison nor does it require follow-up actions under Part 4.2.1.1.b. As with any pollutant monitored under the MSGP, the requirement in Part 2.2.1 to meet applicable water quality standards still applies. EPA determined that the sectors and activities listed above are likely to have industrial activities with potential petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater based on a review of EPA's sector-specific fact sheets and a detailed literature review included in the docket for this permit (ID# EPA-HQ-OW-2019-0372).

  PAH monitoring data will provide operators and EPA with a baseline and comparable understanding of industrial stormwater discharge quality with respect to discharges of PAHs at these facilities. EPA plans to use the indicator monitoring data collected to conduct an initial quantitative assessment of the levels of PAHs in industrial stormwater, further identify industrial activities with the potential to discharge PAHs in stormwater, and inform future consideration of potential PAH benchmark monitoring for sectors with the potential to discharge PAHs in stormwater. See Part 4.2.1.

- **Updating Benchmark Threshold Values –** EPA modified the benchmark monitoring thresholds in the 2021 MSGP for aluminum, copper for discharges to freshwater, selenium for discharges to freshwater, and cadmium based on revised current CWA section 304(a) national recommended aquatic life water quality criteria and suspended the benchmark monitoring thresholds for magnesium and iron based on lack of documented acute toxicity. The 2021 MSGP is also allowing operators who exceed the revised benchmark thresholds for discharges to freshwater for aluminum and copper to demonstrate to EPA that their discharges do not result in an exceedance of a facility-specific value calculated by the operator using the national recommended water quality criteria multi-variable models in-lieu of the applicable MSGP benchmark threshold. See Parts 4.2.2 and 8.

- **Updating the Benchmark Monitoring Schedule –**The 2021 MSGP requires that applicable operators conduct benchmark monitoring quarterly in their first and fourth years of permit

coverage. Benchmark monitoring begins in the first full quarter of permit coverage for four quarters. In the 2015 MSGP, an operator that did not exceed the four-quarter annual average for a given parameter in the first four quarters of permit coverage could discontinue benchmark monitoring for that parameter for the remainder of the permit. Under the 2021 MSGP, an operator that does not exceed the four-quarter annual average for a given parameter in the first four quarters of permit coverage can now discontinue benchmark monitoring for that parameter for the next two years (i.e., the next eight quarters).

Quarterly benchmark monitoring then resumes for all parameters for another four quarters in the fourth year of permit coverage, and if the operator does not exceed the four-quarter annual average for a given parameter, it can discontinue benchmark monitoring for that parameter for the remainder of their permit coverage. If, during either the first or fourth year of monitoring, the annual average for any parameter exceeds the benchmark threshold, the operator must comply with Part 5 (Additional Implementation Measures responses and deadlines), and continue quarterly benchmark monitoring for four quarters until results indicate that annual average for the parameter(s) is no longer exceeded. Under the new schedule, regardless of when the operator discontinued monitoring for any benchmark parameter, monitoring resumes for all parameters for four quarters in the fourth year of permit coverage, unless the permit has already expired. It is possible that an operator with continued benchmark exceedances in years 2 and 3 of permit coverage will be required to continue monitoring through their second and third years of permit coverage. In the scenario where the operator receives results in their third year of permit coverage that the benchmark threshold is no longer exceeded, the operator is still required to monitor again in their fourth year of permit coverage.

The principle underpinning this schedule is that the relief period from benchmark monitoring between the first and fourth years decreases if benchmark exceedances continue and additional monitoring is required. During this time, operators may also be conducting continued benchmark monitoring in compliance with AIM for certain parameters that have ongoing exceedances. The extended benchmark monitoring schedule under the 2021 MSGP will ensure that operators have current data on their industrial stormwater discharges and stormwater control measure effectiveness throughout their permit coverage and will help identify potential adverse effects from modifications in facility operations and/or personnel over time. See Part 4.2.2.3.

- **Impaired Waters Monitoring –** Under the 2021 MSGP, operators discharging to impaired waters without an EPA-approved or -established TMDL must complete annual monitoring for discharges of certain pollutants to impaired waters. Impaired waters monitoring begins in the first year of permit coverage, starting in the first full quarter of permit coverage. Monitoring is required for one year at each discharge point for all pollutants for which the waterbody is impaired, just as in the 2015 MSGP, after which the operator can discontinue monitoring for the next two years for any pollutant that is not detected. Annual monitoring must continue for any pollutant for which the waterbody is impaired that is detected in the discharge. Required annual monitoring then resumes in the fourth year of permit coverage for one year for those pollutants that are both causing impairments and are associated with the industrial activity and/or are a required benchmark parameter for the operator's subsector(s), including any pollutant(s) for which the operator previously discontinued monitoring. After monitoring in the fourth year of permit coverage is completed, the operator can discontinue monitoring for the duration of their permit coverage for any pollutant that is not detected. Again, annual monitoring must continue for any pollutant for which the waterbody is impaired that is detected in the discharge. For waters identified as impaired by acidity or heat, annual monitoring must continue where the measured pH or temperature exceeds the range of acceptable values assigned to the water consistent with applicable water quality standards. The extended impaired waters monitoring schedule under the 2021 MSGP will ensure that operators affirmatively determine in their first year of permit coverage that a parameter

causing an impairment is not present at the facility before narrowing the list of monitored parameters in the fourth year. The updated schedule ensures operators periodically check on their potential contributions to impairments in their industrial stormwater discharges throughout their permit coverage. See Part 4.2.5.1.

- **Additional Implementation Measures (AIM) –**The 2021 MSGP includes revisions to the Additional Implementation Measures (AIM) requirements for benchmark monitoring exceedances that were included in the proposed 2020 MSGP. EPA revised these provisions to address concerns raised in public comments. Both the proposed 2020 MSGP and this final 2021 MSGP maintain a three-level structure of advancement and responses triggered by benchmark exceedances and keep follow-up actions clear, timely, and proportional to exceedance frequency and duration. The final 2021 MSGP AIM requirements reduce costs and complexity from the proposal by creating stepwise, sequential advancement through the AIM levels with clear "resetting" to baseline status if benchmark thresholds and responses are met within the required deadlines. The other corrective action conditions, subsequent action deadlines, and documentation requirements in Part 5.1 remain the same as in the 2015 MSGP.

  In Part 5.2, AIM is triggered by an exceedance of a benchmark monitoring parameter, which can occur from two "triggering events": either an exceedance of the four-quarterly annual average for a parameter, or from fewer than four quarterly samples if a single sample or the sum of any sample results within the sampling year exceeds the benchmark threshold by more than four times for a parameter (this result indicates that an exceedance of the annual average is mathematically certain).

  There are three AIM levels in the 2021 MSGP: AIM Level 1, Level 2, and Level 3. All operators subject to benchmark monitoring requirements begin in baseline status at the start of their permit coverage. An operator would progress linearly through the three AIM levels if an exceedance triggering event occurs and continues. If an exceedance triggering event occurs while in baseline status, an operator would enter AIM Level 1. If a triggering event occurs while in Level 1, an operator proceeds to AIM Level 2. If a triggering event occurs while in Level 2, an operator proceeds to AIM Level 3. The operator is required to respond with increasingly robust control measures and continued benchmark monitoring with each subsequent AIM level.

  After an exceedance triggering event occurs, an operator must continue quarterly monitoring for the parameter(s) that caused the AIM triggering event at all affected discharge points, until four additional quarters of monitoring do not result in an exceedance triggering event. The deadlines for implementing AIM responses remains the same as in the proposed permit for Levels 1 and 2 (within 14 days of receipt of lab results, unless infeasible, then within 45 days). The deadline for Level 3 has been extended to allow time for scheduling and completing installation of stormwater controls (identify the schedule for installing controls within 14 days; install controls within 60 days, unless infeasible, then within 90 days). EPA may grant an extension to the deadlines for AIM Level 2 and AIM Level 3 based on an appropriate demonstration by the operator as outlined in Parts 5.2.4.2 (AIM Level 2 Deadlines) and 5.~~3~~2.5.2 (AIM Level 3 Deadlines).

  The following five exceptions to the AIM requirements are available for an exceedance triggering event at any AIM level: 1) natural background sources, 2) run-on, 3) a one-time abnormal event, 4) a demonstration that discharges of copper and aluminum do not result in an exceedance of facility-specific criteria using the national recommended water quality criteria in-lieu of the applicable MSGP benchmark threshold, and 5) a demonstration that the benchmark exceedance does not result in any exceedance of an applicable water quality standard. AIM requirements increase regulatory certainty while ensuring that discharges are sufficiently controlled to protect water quality. See Part 5.2.

- **Topics not finalized in the 2021 MSGP –** After considering comments received, the following topics that EPA contemplated in the proposed 2020 MSGP were not finalized in the 2021 MSGP:
  - Expanding permit eligibility requirement for discharges to a federal CERCLA site beyond EPA Region 10 (EPA has added that such facilities notify the EPA Region 10 Office a minimum of 30 days in advance of submitting the NOI form);
  - Adding an eligibility criterion regarding coal-tar sealcoat; modifying permit authorization related to a pending enforcement action;
  - Providing an inspection-only option in lieu of benchmark monitoring; requiring sector-specific benchmark monitoring for Sector I (Oil and Gas Extraction), Sector P (Land Transportation and Warehousing), and Sector R (Ship and Boat Building and Repair Yards); modifying the method for determining natural background pollutant contributions from the 2015 MSGP; and
  - including the use sector-specific stormwater control measures from Appendix Q.

V. Geographic Coverage of this Permit

The 2021 MSGP provides coverage for classes of point source discharges to waters of the United States in jurisdictions not covered by an approved state NPDES program. The areas of geographic coverage of the 2021 MSGP are listed in Appendix C and include the states of Idaho, Massachusetts, New Hampshire, and New Mexico, as well as all Indian country lands and federal operators in selected states. Permit coverage is also provided in Puerto Rico, the District of Columbia, and the Pacific Island territories.

Note: The expected date for the transfer of NPDES Permitting Authority to Idaho for general stormwater permits, including the EPA's MSGP, is July 1, 2021. EPA will work closely with operators in Idaho to transfer coverage at that time.

Industrial activities on Indian country lands located in Alabama, Florida, Mississippi, North Carolina, South Carolina, and Virginia, and most Indian country lands in New York were not included in the 2015 MSGP but are included in the 2021 MSGP.

VI. Categories of Facilities That Can Be Covered Under this Permit

The 2021 MSGP is available for stormwater discharges from the following 29 sectors of industrial activity (Sector A – Sector AC), as well as any discharge not covered under the 29 sectors (Sector AD) that has been identified by EPA as appropriate for coverage. The sector descriptions are based on Standard Industrial Classification (SIC) codes and Industrial Activity Codes consistent with the definition of "stormwater discharge associated with industrial activity" at 40 CFR 122.26(b)(14)(i-ix, xi). See Appendix D in the 2021 MSGP for specific information on each sector. The sectors are listed below:

Table VI-1 Categories of Sector That Can Be Covered Under this Permit

Sector A – Timber Products	**Sector P** – Land Transportation
Sector B – Paper and Allied Products Manufacturing	**Sector Q –** Water Transportation
Sector C – Chemical and Allied Products Manufacturing	**Sector R** – Ship and Boat Building or Repairing Yards

Sector D – Asphalt Paving and Roofing Materials Manufactures and Lubricant Manufacturers	**Sector S** – Air Transportation Facilities
Sector E – Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing	**Sector T** – Treatment Works
Sector F – Primary Metals	**Sector U** – Food and Kindred Products
Sector G – Metal Mining (Ore Mining and Dressing)	**Sector V** – Textile Mills, Apparel, and other Fabric Products Manufacturing
Sector H – Coal Mines and Coal Mining-Related Facilities	**Sector W** – Furniture and Fixtures
Sector I – Oil and Gas Extraction	**Sector X** – Printing and Publishing
Sector J – Mineral Mining and Dressing	**Sector Y** – Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries
Sector K – Hazardous Waste Treatment Storage or Disposal	**Sector Z** – Leather Tanning and Finishing
Sector L – Landfills and Land Application Sites	**Sector AA** – Fabricated Metal Products
Sector M – Automobile Salvage Yards	**Sector AB** – Transportation Equipment, Industrial or Commercial Machinery
Sector N – Scrap Recycling Facilities	**Sector AC** – Electronic, Electrical, Photographic and Optical Goods
Sector O – Steam Electric Generating Facilities	**Sector AD** – Reserved for Facilities Not Covered Under Other Sectors and Designated by the Director

VII. Permit Requirements

Part 1 How to Obtain Coverage Under the 2021 MSGP

Part 1.1 Eligibility Conditions

As with previous permits, to be eligible for coverage under the 2021 MSGP, operators of industrial facilities must meet the eligibility provisions described in Part 1.1 of the permit. If they do not meet all the eligibility requirements, operators may not submit a Notice of Intent (NOI) to be covered by the MSGP, and, unless they obtained coverage for those discharges under another permit, those discharges of stormwater associated with industrial activity needing permit coverage will be in violation of the CWA.

Part 1.1.1 Location of Your Facility

This Part specifies that in order to be eligible for permit coverage, the facility must be located in a jurisdiction where EPA is the permitting authority and where coverage under this permit is available (see Appendix C). The permit also specifies that this condition also applies in the limited circumstances where your facility is located in a jurisdiction where EPA

is not the permitting authority but your discharge point location is to a water of the United States where EPA is the permitting authority.

Part 1.1.2 Your Discharges are Associated with Industrial Activity

This Part specifies that eligible facilities must have an authorized stormwater discharge or an authorized non-stormwater discharge per Part 1.2 associated with industrial activity from the primary industrial activity (as defined in Appendix A and as listed in Appendix D), or have been notified by EPA that they are eligible for coverage under Sector AD.

Part 1.1.3 Limitations on Coverage

This Part describes the limitations on what is covered under this permit. Any discharges not expressly authorized under the 2021 MSGP cannot become authorized or shielded from liability under CWA Section 402(k) by disclosure to EPA, state, or local authorities after issuance of the MSGP via any means, including the NOI to be covered by the permit, the SWPPP, or during an inspection. This is consistent with EPA's long-standing interpretation of the scope of the MSGP.

Part 1.1.3 used to be Part 1.1.4 in the 2015 MSGP. In the 2021 MSGP, EPA focused the "limitations on coverage" section to specific discharges not authorized by the permit. Other eligibility requirements that were previously listed under "limitations on coverage" are now organized under their own headers so it is clearer to the reader what conditions need to be met in order to obtain eligibility. EPA modified the wording of some conditions previously in the 2015 MSGP from the negative to the positive (e.g., instead of using "you are ineligible unless…" EPA changed the phrasing of the condition to "to be eligible, you must…"). EPA hopes this will clarify the eligibility conditions of the permit.

Part 1.1.3.1 Discharges Mixed with Non-Stormwater

The MSGP does not authorize stormwater discharges that are mixed with non-stormwater discharges, other than those mixed with authorized non-stormwater discharges listed in Part 1.2.2 and/or those mixed with a discharge authorized by a different NPDES permit and/or a discharge that does not require NPDES authorization. Where a regulated stormwater discharge is commingled with non-stormwater that is not authorized by the MSGP, the operator must obtain authorization under another NPDES permit to discharge the commingled discharge.

Part 1.1.3.2 Stormwater Discharges Associated with Construction Activity

The 2021 MSGP does not apply to stormwater discharges associated with construction activity, defined in 40 CFR 122.26(b)(14)(x) and (b)(15), which acknowledges the distinction between construction and other types of stormwater discharges associated with industrial activity. An exception to this is for construction associated with mining activities, where operators in Sectors G, H and J are able to cover earth-disturbing activities in the MSGP in lieu of obtaining separate coverage under the Construction General Permit (CGP) (EPA included the salient earth disturbance-related requirements for the mining sectors in Part 8). However, for mining-related construction that disturbs less than one acre in size, such discharges are covered by the regular MSGP (i.e., the requirements that are not expressly for earth-disturbances). The mining-related construction exception provides a more streamlined approach for mining operators preferring to be covered by one permit, instead of two.

Part 1.1.3.3 Discharges Already Covered by Another Permit

This provision describes cases where an operator is ineligible for coverage under the MSGP because their industrial stormwater discharges are covered under another NPDES permit. The objective is to avoid conflict with the anti-backsliding provisions of the CWA. The cases this applies to include operators currently covered under an individual NPDES permit or an alternative NPDES general permit; discharges covered by an individual NPDES permit or alternative NPDES general permit within the past five years prior to the effective date of the 2021 MSGP, which established site-specific numeric water quality-based effluent limitations developed for the stormwater component of the discharge; or discharges from facilities where any NPDES permit has been or is in the process of being denied, terminated (permit termination does not refer to the routine expiration and reissuance of NPDES permits every five years), or revoked by EPA.

Part 1.1.3.4 Stormwater Discharges Subject to Effluent Limitations Guidelines

This section specifies that only the discharges from facilities subject to the stormwater-specific effluent limitations guidelines in Table 1-1 of the permit are eligible for coverage under this permit. All other stormwater and non-stormwater discharges subject to effluent limitations guidelines must be covered under any applicable alternate NPDES general permit or an individual NPDES permit.

Part 1.1.4 Eligibility related to Endangered Species Act (ESA) Listed Species and Critical Habitat Protection

The Endangered Species Act (ESA) of 1973 requires all Federal Agencies to ensure, in consultation with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (the "Services"), that any federal action carried out by the Agency is not likely to jeopardize the continued existence of any species that is federally-listed as endangered or threatened ("listed"), or result in the adverse modification or destruction of habitat of such species determined to be critical habitat. See 16 U.S.C. 1536(a)(2), 50 CFR 402 and 40 CFR 122.49(c).

EPA developed the requirements of Part 1.1.4 in consultation with the Services to ensure that discharges covered under the permit are protective of listed species and their critical habitats. The criteria in Appendix E require the operator to determine that their facility's stormwater discharges, authorized non-stormwater discharges, and stormwater discharge-related activities were either the subject of a separate ESA consultation or an ESA Section 10 permit, or are not likely to adversely affect any listed species or critical habitat under the ESA. To make this determination for the 2021 MSGP, operators must follow the questions outlined in ESA worksheet section of the NOI in EPA's NPDES eReporting Tool for the MSGP (NeT-MSGP), based on the steps in Appendix E. New to the 2021 MSGP, operators can determine their ESA eligible criterion in NeT-MSGP at the same time they prepare their NOI.

For the 2021 MSGP, EPA moved the list of detailed ESA criteria only in Appendix E of the permit and removed the criteria list from the permit text and fact sheet. EPA is concerned that operators may just read the list of criteria in the permit and try to determine just from that list which applies to their facility. Directing operators to the "smart" ESA worksheet section in the NOI in EPA's NeT-MSGP based on Appendix E ensures that operators read the important instructions and procedures for how they should determine their ESA eligibility criterion.

EPA made some revisions to the criteria in Appendix E to better ensure that the criteria are adequately protective of listed species and their critical habitats and to improve clarity of the eligibility process. The changes are summarized below.

- **Criterion A (No ESA-listed species and/or critical habitat present in action area)** – No significant changes to the criterion. Details were added on the appropriate basis statement supporting the selection of the criterion.
- **Criterion B (Eligibility requirements met by another operator under the 2021 MSGP)** – No significant changes to the criterion. Details were added on the appropriate basis statement supporting the selection of the criterion.
- **Criterion C (ESA-listed species and/or designated critical habitat likely to occur, but discharges not likely to adversely affect them)** – Criterion C is now broken into three sub-criterion depending on whether the operator was eligible under Criterion C in the previous permit. EPA added two additional scenarios under which Criterion C could apply to streamline the process for existing operators:
    1. **Criterion C1:** Allows the eligibility of a facility that was previously covered under the 2015 MSGP under Criterion C as long as there have been no changes to the action area and no additional ESA-listed species or designated critical habitat within the action area since the operator submitted the certification under the 2015 MSGP. Operators that are eligible under C1 do not have to resubmit a Criterion C form, but must provide in the NOI in NeT-MSGP the USFWS and/or NMFS resources consulted that helped the operator determine that no additional species and/or critical habitat have been listed by the Services in the action area;
    2. **Criterion C2:** Allows the eligibility of a facility that was previously covered under the 2015 MSGP under Criterion C and there have been changes to the action area and/or additional ESA-listed species or designated critical habitat listed since the operator submitted certification under the 2015 MSGP. Operators that are eligible under C2 do not have to resubmit a Criterion C form, but are required to provide in the NOI in NeT-MSGP a description of the changes to the action area and/or the ESA-listed species or critical habitat. NOIs for operators that certify under C2 will be held for review for 30-days prior to the standard 30-day review period for all NOIs, as with the previous Criterion C eligibility process under the 2015 MSGP.
    3. **Criterion C3:** The permit retains the scenario previously included in the 2015 MSGP to allow a facility without previous MSGP coverage to certify eligibility under criterion C of the 2021 MSGP if it has ESA-listed species or designated critical habitat in the action area. Operators that are eligible under C3 must follow the questions outlined in Criterion C portion of the NOI in NeT-MSGP, based on the steps in Appendix E. New to the 2021 MSGP, operators can prepare and submit their Criterion C form in NeT-MSGP at the same time they prepare their NOI. NOIs for operators that certify under C3 will be held for review for 30-days prior to the standard 30-day review period for all NOIs, as with the previous Criterion C eligibility process under the 2015 MSGP. This change was made so that operators do not need to submit this information to EPA ahead of NOI submission and can send all necessary information to EPA at one time.

The 2021 MSGP also includes minor updates to Criteria C Form Section V "Evaluation of Discharge Effects." EPA added "stormwater discharges may adversely affect the immediate vicinity of the discharge point through streambank erosion and scour" to Hydrological Effects. EPA added "due to exposures to multiple stressors at the same time" to the description of Toxicity of Pollutants. EPA also added "I comply with the applicable monitoring requirements and have not had any exceedances" to Criteria C3 Eligibility Form Section V.B of Appendix E.

- **Criterion D (ESA Section 7 consultation has successfully concluded) -** EPA eliminated the option that consultation resulted in a biological opinion that concludes that the action is likely to jeopardize listed species or to result in the destruction or adverse modification of critical habitat, and any recommended reasonable and prudent alternatives or reasonable and prudent measures are being implemented. Details were added on the appropriate basis statement supporting the selection of the criterion.
- **Criterion E (Issuance of ESA Section 10 permit)** - no significant changes to the criterion. Details were added on the appropriate basis statement supporting the selection of the criterion.

Part 1.1.5 Eligibility Related to National Historic Preservation Act (NHPA)-Protected Properties

Coverage under the 2021 MSGP is available only if operators certify that they meet one of the eligibility criteria related to compliance with historic properties protection pursuant to the National Historic Preservation Act (NHPA). These criteria are used to identify whether land disturbances associated with the installation or revision of subsurface stormwater control measures would affect properties listed in, or eligible for listing in, the National Register of Historic Properties; and, if so, to determine the measures that will prevent or mitigate adverse effects to the properties.

EPA does not anticipate any effects on historic properties from the pollutants in the stormwater discharges covered by the 2021 MSGP. However, existing and new operators could undertake activities in connection with the 2021 MSGP that might affect historic properties if they install new or modify stormwater control measures that involve subsurface disturbance. The overwhelming majority of sources covered under the 2021 MSGP will be operators that are seeking renewal of previous permit coverage. If these existing dischargers are not planning to construct new stormwater controls or conveyance systems, they have already addressed NHPA issues. In the 2015 MSGP, operators were required to certify that they were either not affecting historic properties or they had obtained written agreement from the applicable State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other tribal representative regarding methods of mitigating potential impacts. EPA is not aware of any adverse effects on historic properties under the 2015 MSGP, nor the need for a written agreement with a SHPO or THPO. Therefore, to the extent the 2021 MSGP authorizes renewal of prior coverage without relevant changes in operation, it has no potential to affect historic properties.

Where operators install or modify control measures that involve subsurface disturbance, the area of potential effect (APE) for the activities performed to comply with the permit, for historic preservation purposes, is limited to the location and depth of the earth disturbance associated with the installation or modification of the stormwater control measures. Operators need only consider the APE when doing the historic properties screening procedures to determine their eligibility criteria in Appendix F. This is the only scenario where activities authorized or undertaken in connection with the 2021 MSGP may affect historic properties. Since both new and existing dischargers could undertake such activities, all operators are required to follow the historic property screening procedures to document eligibility. Historic preservation requirements are unchanged from 2015, however, new to the 2021 MSGP, operators must follow the questions outlined in the historic properties worksheet section of the NOI in NeT-MSGP, based on the steps in Appendix F. Operators can prepare and submit their historic properties criterion selection in NeT-MSGP at the same time they prepare their NOI.

Part 1.1.6 Eligibility for "New Dischargers" and "New Sources"[1] (as defined in Appendix A) ONLY:

Part 1.1.6.1 Eligibility for "New Dischargers" and "New Sources" Based on Water Quality Standards

This provision describes permit eligibility for operators of facilities classified as new sources and/or new dischargers (as defined in Appendix A), pursuant to 40 CFR 122.4(i). Facilities classified as "new source" or "new discharger" are not eligible for coverage under the MSGP for any discharges that EPA determines will not be controlled as necessary such that the receiving water of the United States will not meet an applicable water quality standard. EPA may notify such operators that an individual permit application is necessary in accordance with Part 1.3.8, or, alternatively, EPA may authorize coverage under the MSGP after the operators have implemented measures designed to ensure the discharge is controlled as necessary such that the receiving water of the United States will meet water quality standards. EPA notes that while Part 1.1.6.1 is designed to specifically implement 40 CFR 122.4(i), other water quality-based requirements apply to new and existing dischargers. Part 2.2 of the permit includes water quality-based effluent limits applicable to all dischargers, which are designed to ensure that discharges from both new and existing operators are controlled as necessary to meet water quality standards in receiving waters of the United States.

Part 1.1.6.2 Eligibility for "New Dischargers" and "New Sources" for Water Quality-Impaired Waters

Part 1.1.6.2 of the permit requires any new source or new discharger to demonstrate its ability to comply with 40 CFR 122.4(i) (i.e., prohibiting the issuance of permits to new sources and new dischargers that will not be controlled as necessary such that the receiving water of the United States will not meet water quality standards) prior to coverage under the permit. To satisfy the requirements of 40 CFR 122.4(i), an operator must complete one of the following: (a) prevent all exposure to stormwater of the pollutant(s) for which the waterbody is impaired, and retain documentation with the SWPPP on how this was accomplished; (b) submit technical information or other documentation to the applicable EPA Regional Office via NeT-MSGP at the same time the operator prepares and submits the NOI to support a claim that the pollutant(s) for which the waterbody is impaired is not present at the site; or (c) submit data or other technical documentation to the applicable EPA Regional Office via NeT-MSGP at the same time the operator prepares and submits the NOI to support a conclusion that the discharge will be controlled as necessary such that the receiving water or the United States will meet applicable water quality standards. For discharges to waters without a TMDL, the information must demonstrate that the discharge of the pollutant for which the water is impaired will meet water quality standards at the point of discharge to the water of the United States. For discharges to waters with a TMDL, the information must demonstrate that there are sufficient remaining wasteload allocations

[1] "New Discharger" means a facility from which there is or may be a discharge, that did not commence the discharge of pollutants at a particular site prior to August 13, 1979, which is not a new source, and which has never received a finally effective NPDES permit for discharges at that site. See 40 CFR 122.2.

"New Source" means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced: i) after promulgation of standards of performance under section 306 of the CWA which are applicable to such source, or ii) after proposal of standards of performance in accordance with section 306 of the CWA which are applicable to such source, but only if the standards are promulgated in accordance with section 306 within 120 days of their proposal. See 40 CFR 122.2.

in the TMDL to allow the discharge and that existing dischargers to the waterbody are subject to compliance schedules designed to bring the waterbody into attainment with water quality standards (e.g., a reserve allocation for future growth). In order to be eligible under Part 1.1.6.2.c, the operator must receive a determination from the applicable EPA Regional Office that the discharge will be controlled as necessary such that the receiving water of the United States will meet applicable water quality standards. If the operator's NOI contains information to satisfy either (b) or (c) above, the NOI will be held for review for 30 days, prior to the standard 30-day review period for all NOIs. This change was made so that operators do not need to submit this information to the EPA Regional Office ahead of NOI submission and can send all necessary information to EPA at one time.

Part 1.1.6.3 Eligibility for "New Dischargers" and "New Sources" for Waters with High Water Quality

Part 1.1.6.3 includes the eligibility requirements for new dischargers or new sources discharging to a Tier 2, 2.5, or 3 water. Operators discharging to Tier 2 or Tier 2.5 waters must not lower the water quality of the water. Coverage under the permit is not available to new dischargers or new sources who discharge to a state- or tribe-designated Tier 3 water (outstanding national resource waters, or "ONRWs") for antidegradation purposes. Any such discharges must apply for coverage under an individual permit.

The need for such a provision is that state/tribal water quality standards must include an antidegradation policy. In addition, each state/tribe must identify implementation methods for their policy that, at a minimum, provide a level of protection that is consistent with the three-tiered approach of the federal antidegradation regulation. Tier 3 maintains and protects water quality in ONRWs. Waters classified as ONRWs by states and tribes are generally the highest quality waters of the United States. However, the ONRWs classification also offers special protection for waters of exceptional ecological significance (i.e., those that are important, unique, or sensitive ecologically, but do not necessarily have high water quality). Except for certain temporary changes, water quality cannot be lowered in such waters. 40 CFR 131.12(a)(3). Because of their high quality or ecological significance, EPA expects few industrial stormwater discharges into ONRWs will be covered under an NPDES permit. See list of Tier 2, Tier 2.5, and Tier 3 waters in Appendix L.

Part 1.1.7 Eligibility for Stormwater Discharges to Federal CERCLA Sites[2]

In the 2021 MSGP, facilities in EPA Region 10 and Indian country that discharge stormwater to certain specified sites that have undergone or are undergoing remedial cleanup actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) are required to notify the EPA Region 10 Office in the NOI via NeT-MSGP. If the operator's NOI contains information regarding their eligibility with respect to discharges to a CERCLA site, the NOI will be held for review for 30 days, prior to the standard 30-day review period for all NOIs. This change was made so that operators do not need to submit this information to the EPA Region 10 Office ahead of NOI submission and

[2] References:

Burton, G.A. and Pitt, R.E. (2002) Stormwater Effects Handbook. A Tool for Watershed Managers, Scientists and Engineers. Lewis Publishers, CRC Press, Boca Raton.

Burton, G. A. and R. E. Pitt. 2002. Chapter 5: Sampling effort and collection methods. Pp. 224-338 in Stormwater effects handbook: A toolbox for watershed managers, scientists, and engineers, G. A. Burton and R. E. Pitt, eds. Boca Raton, FL: Lewis Publishers.

Chiou, C.T., and Kile, D.E., 2000, Contaminant sorption by soil and bed sediment--Is there a difference?: U.S. Geological Survey Fact Sheet 087-00, 4 p.

can send all necessary information to EPA at one time. EPA evaluated 2015 MSGP NOI data and found that only 12 facilities in Region 10 have been subject to this requirement in the current permit. All facilities were able to get coverage under the MSGP, and only one facility was required to do additional monitoring.

Just as in the 2015 MSGP, in the 2021 MSGP a facility is considered to discharge to a federal CERCLA Site if the discharge flows directly into the site through its own conveyance, or a through a conveyance owned by others, such as a municipal separate storm sewer system. This does not include discharges to a tributary that flows into a CERCLA Site. "CERCLA Site" means a facility as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9), that is undergoing a remedial investigation and feasibility study, or for which a Record of Decision for remedial action has been issued in accordance with the National Contingency Plan at 40 CFR 300. This definition includes sites that have been listed on the National Priorities List in accordance with Section 105 of CERCLA, 42 U.S.C. §9605, or that are being addressed using CERCLA authority, including use of an agreement consistent with the Superfund Alternative Approach Guidance. The federal CERCLA sites to which this provision currently applies are listed in Appendix P.

To determine eligibility for coverage under this Part, the EPA Region 10 Office may evaluate whether the discharger has in place sufficient controls and implementation procedures (e.g., enhanced controls, corrective actions, monitoring requirements, and/or numeric benchmarks or effluent limits) designed to ensure that the discharge will not interfere with achieving the cleanup goals or lead to recontamination of sediments or aquatic media being remediated under CERCLA, such that it causes or contributes to an exceedance of a water quality standard. Such discharges can undo cleanups accomplished and can result in new or continuing impairments of designated uses of the receiving waters. In addition, EPA and potentially responsible parties performing cleanups cannot obtain cost recovery for responding to releases of hazardous substances resulting from federally-permitted discharges that are operating in compliance, so the permitting of industrial stormwater to CERCLA sites creates a barrier to cost recovery.

If following authorization to discharge under the 2021 MSGP, it is determined that a facility discharges stormwater to a CERCLA Site listed in Appendix P, the facility must notify the EPA Region 10 Office. Upon notification, the EPA Region 10 may impose additional monitoring requirements, controls, or other actions to prevent recontamination of the CERCLA Site such that it meets all applicable water quality standard. In order to become eligible, the facility must confirm in writing that it agrees to implement the additional requirements. There are a variety of scenarios under which an MSGP-permitted facility could subsequently determine that it is discharging to an Appendix P CERCLA Site. For example, the facility could become aware of new information regarding the location of its stormwater discharge point or the fate of the stormwater it discharges into a municipal stormwater system. Or the facility could be notified of the fact that it is discharging to an Appendix P CERCLA Site by a potentially responsible party, EPA, or another government agency.

NPDES-permitted stormwater discharges may occur within the bounds of sites that have been remediated or are undergoing remediation under CERCLA. Source sampling and sediment data from some NPDES discharge points have indicated exceedances of sediment cleanup goals established for CERCLA Sites. NPDES permits, particularly general permits, may not control discharges sufficiently to avoid sediment recontamination because effluent limits are written to protect the aquatic ecosystem rather than to prevent sediment impacts or contamination. As a result, after extensive and costly clean-up of federal CERCLA Sites, it is possible that these sites can be recontaminated by NPDES

discharges, and cost recovery would not be available where the contamination comes from a federally-permitted release

Contaminated water and sediment can impair the designated uses of a waterbody, which are included in state/tribal water quality standards. Large quantities of soils and sediments can be "sinks" for contaminants because of their ability to pick up large amounts of a wide variety of contaminants (sorption). Sorption to soils and sediments may be the most influential factor on the transport and fate of organic contaminants in the environment (Chiou and Kile, 2000). Suspended sediment can be a major carrier of nutrients and metals (Schueler, 1997).

Aquatic organisms can be exposed to contaminants through their contact with both water and sediment, and also through ingestion of food, according to The Stormwater Effects Handbook (Burton and Pitt, 2002). Inorganic and organic chemicals can accumulate in organisms at chronic levels that cause toxicity or death. Sediment-associated contaminants are one of the most common sources of tissue contamination. Such contamination is linked to impacts to other biota higher in the food chain via the "food web transfer," an effect especially quantifiable with mercury and some organochlorines such as PCBs and DDT. This occurs in both freshwater and marine systems and is not limited to the aquatic environment, as it has been observed in terrestrial species, especially birds (Burton and Pitt, 2002).

Non-benthic organisms can also ingest contaminated sediment directly when the sediment at rest at the bottom of a waterbody is mobilized. Superfund sites generally seek to reduce risk to humans and other aquatic and terrestrial receptors from eating the fish and other aquatic organisms contaminated by pollutants and/or being directly exposed to contaminated water and sediment, which could cause adverse effects to their health and mortality.

Given the above concerns and to avoid potential contamination/recontamination of the sites and potential subsequent exceedances of water quality standards, the 2021 MSGP describes the process that facilities discharging to a CERCLA Site in EPA Region 10 and identified in Appendix P are required to follow to obtain or maintain permit coverage. The process remains unchanged from the 2015 MSGP and provides an opportunity for the facility and/or EPA to identify or develop the control measures that prevent contamination/recontamination. Once these measures are in place, the facility should be able to obtain MSGP coverage (or, if coverage was obtained prior to the commencement of the CERCLA remediation or determination of an applicable discharge, to continue operating under the MGSP). Alternatively, the facility or EPA Region 10 may determine that coverage under the MSGP is not appropriate, and individual permit coverage may be sought or required per Part 1.3.8 of the permit. See 40 CFR 122.28(b)(3).

As noted above, this eligibility criterion is only applicable to MSGP facilities in EPA Region 10 states and Indian Country. EPA has extensive information that stormwater discharges are a source of CERCLA Site recontamination in Region 10. EPA Region 10 has seen both the actual recontamination of Superfund Sites from stormwater discharge points and the potential for recontamination from source control information gathered at Superfund Sites not yet cleaned up. Recontamination (exceedances of sediment cleanup standards) has occurred at the Thea Foss Waterway in Tacoma, Washington, which is within the Commencement Bay/Nearshore Tideflats Superfund Site and was cleaned up in 2006. It is known that the source of the recontamination is stormwater from two 96-inch municipal storm drains that drain approximately 5,000 acres of commercial/residential property, state highways, and city roads. Source control information gathered at the Lower Duwamish

Waterway Superfund Site and the Portland Harbor Superfund Site indicate there are facilities discharging stormwater containing suspended solids with PAHs, polychlorinated biphenyls (PCBs), and metals that exceed the preliminary remedial goals for sediment at those sites. Stormwater discharging from the municipal stormwater discharge points at the Thea Foss Waterway are covered by a Washington MS4 permit and have been since 1995. Many of the facilities discharging stormwater to the Lower Duwamish and Portland Harbor sites are covered by Washington and Oregon industrial stormwater general or MS4 permits. See EPA's 2015 MSGP docket for more information about CERCLA contamination/recontamination in Region 10 from permitted stormwater discharges (Docket ID: EPA-HQ-OW-2012-0803, https://www.regulations.gov/docket?D=EPA-HQ-OW-2012-0803). EPA's Region 10 Office also has expertise in determining site-specific measures that are necessary to ensure industrial stormwater discharges covered under the MSGP are not leading to recontamination of aquatic media at CERCLA Sites such that they meet all applicable water quality standard.

To identify which CERCLA Sites in EPA Region 10 this Part applies in the 2015 MSGP, EPA started with the Tier 1 and 2 sediment sites, then overlaid them with areas of federal CWA authority in Region 10. The sediment site tiering system is based on national EPA Office of Solid Waste and Emergency Response (OSWER) guidance on managing sediment cleanups, which establishes the tiering system for sediment sites that will have enhanced input and oversight by EPA. These sites contain a large amount of contaminated sediment, are expensive to remediate, and often impact significant numbers of humans and other ecological receptors. Tier 1 sediment sites are the largest contaminated sediment sites the CERCLA program is addressing. The Tier 2 sediment sites are in the evaluation process and are anticipated to meet the Tier 1 site criteria. The size of these sites makes it more likely that there will be multiple sources of contamination, including NPDES permitted discharge points. EPA Region 10 is actively engaged in the clean-up process at these sites and believes that when cleanup efforts are complete, these sites could have a higher probability of recontamination from NPDES permitted discharge points.

Part 1.2 Types of Discharges Authorized Under the MSGP

Part 1.2.1 Authorized Stormwater Discharges

This Part specifies which stormwater discharges are eligible for coverage under the permit. As described in Part 1.1.3 of this Fact Sheet, not all stormwater discharges associated with industrial activity are eligible for coverage under the 2021 MSGP (e.g., stormwater discharges regulated by certain national effluent limitations guidelines). Dischargers must refer to this Part of the permit to determine whether a particular stormwater discharge from their site can be covered under the MSGP. For example, Part 1.2.1.3 specifies that discharges that are not otherwise required to obtain NPDES permit authorization, but are mixed with discharges that are authorized under the 2021 MSGP, are eligible for coverage under the 2021 MSGP.

Part 1.2.1 used to be Part 1.1.2 in the 2015 MSGP. EPA moved this part out of the "eligibility conditions" section and created a new section in the permit specifically for types of discharges authorized (and not authorized) under the permit, still referenced in the eligibility conditions section. EPA hopes this will streamline the eligibility conditions section of the permit.

Part 1.2.2 Authorized Non-Stormwater Discharges

This Part lists the non-stormwater discharges authorized under the permit, specifically those non-stormwater discharges authorized for all sectors, for Sector A for spray water, and for

Sectors G, H, and J for earth-disturbing activities conducted prior to active mining activities. A change from the 2015 MSGP is a requirement that non-stormwater discharges from external building washdown/power wash water must be treated with appropriate control measures to minimize discharges of mobilized solids and other pollutants. This is similar to an existing requirement applicable to non-stormwater discharges of pavement wash waters. EPA encourages that other control measures be considered when doing such cleaning including using the least amount of water in pressure washing to reduce the quantity of discharge and running the wash water through a filter to remove pollutants prior to discharge. Other options are to direct the wash water flow through a green infrastructure feature(s) (or some similar treatment), or to capture and infiltrate the flow so there is no discharge. EPA reminds operators using green infrastructure features that proper operation and maintenance of the features is vital. In any case, if there are doubts regarding the presence of contaminants in the wash water, even after treatment, operators should not discharge it to be safe.

Previous MSGP versions authorized any pavement and building wash water to be discharged as long as there were no detergents or toxic/hazardous spill material present in the discharge. But cleaning agents other than detergents could also be utilized and could clearly have the potential to cause water quality issues if discharged. Therefore, in the 2021 MSGP EPA retains the 2015 MSGP provision that in addition to detergents, hazardous cleaning products are specifically prohibited from being discharged under the permit. EPA is also retaining the 2015 MSGP provision that prohibits the discharge of wash waters that have come into contact with oil and grease deposits, sources of pollutants associated with industrial activities, or any other toxic or hazardous materials, unless the residues have been cleaned up using dry clean-up methods. Additionally, because the act of washing (especially power washing) mobilizes particulates and other substances present on pavement, specific effluent limits have been newly included to ensure such mobilized particulates are controlled before they are discharged.

Part 1.3 Obtaining Authorization to Discharge

This Part specifies conditions that the operator must meet in order to obtain authorization under the 2021 MSGP.

Part 1.3.1 Prepare Your Stormwater Pollution Prevention Plan (SWPPP) Prior to Submitting Your Notice of Intent (NOI)

This Part requires that the operator develop or update the SWPPP prior to submitting the NOI for permit coverage. The operator must make the SWPPP publicly available by either attaching it to your NOI, including a URL in your NOI, or providing additional information from the SWPPP on the NOI, per Part 6.4.

Part 1.3.2 How to Submit Your NOI to Get Permit Coverage

This Part specifies that to be covered (i.e., authorized to discharge) under the 2021 MSGP, the operator must use NeT-MSGP to electronically prepare and submit to EPA a complete and accurate NOI by the deadlines listed in Table 1-2. Table 1-2 also provides the discharge authorization date for each category of facility.

Part 1.3.3 Deadlines for Submitting Your NOI and Your Official Date of Permit Coverage

This Part and Table 1-2 provide the deadlines for submitting NOIs for permit coverage and the minimum timeframes following NOI submission for discharge authorization for the different discharge categories. All NOI submittals are subject to a 30-day review period. EPA

may use the waiting period to determine whether any additional measures are necessary to meet applicable water quality standards, to be consistent with an applicable WLA, or to comply with state or tribal antidegradation requirements. Additionally, during this waiting period, the Fish and Wildlife Service or the National Marine Fisheries Service, or the SHPO or THPO or other tribal representative, may request EPA place a hold on an NOI authorization based on concerns about listed species, critical habitat, and/or historic properties. Depending on the nature of the issue, EPA may require appropriate action either prior to or following discharge authorization. EPA may decide a delay in authorization is warranted, or that the discharge is not eligible for authorization under the 2021 MSGP, in which case an individual NPDES permit would be required.

Part 1.3.4 Modifying your NOI

This Part specifies that after submitting an NOI, if an operator needs to correct or update any fields, it may do so by submitting a "Change NOI" form using NeT-MSGP. Per Part 7.~~1~~2, the operator must submit your Change NOI electronically via NeT-MSGP, unless the applicable EPA Regional Office grants a waiver from electronic reporting, in which case the operator may use the suggested format for the paper Change NOI form. When there is a change to the facility's operator, the new operator must submit a new NOI, and the previous operator must submit a Notice of Termination (NOT) form as specified in Part 1.4. In response to operator requests, EPA added a clarification of the timelines for updating the NOI when site conditions or operators change.

Part 1.3.5 Requirement to Post a Sign of your Permit Coverage

This Part requires operators to provide a sign or other notice of permit coverage at a safe, publicly accessible location in close proximity to the facility, as is required of other NPDES permittees, except in the instance where other laws or local ordinances prohibit such signage. If posting a sign is not allowed by the local jurisdiction or otherwise, the operator must document in the SWPPP a brief explanation for why it cannot post the sign and a reference to the law or ordinance. By providing notice of permit coverage and other information about the facility, interested parties are better informed and educated on how to obtain the SWPPP and how to contact the facility and EPA if stormwater pollution is observed in the discharge. Signage at facilities will increase public awareness of those facilities that have coverage under the 2021 MSGP.

Under the 2021 MSGP, EPA is requiring that the sign of permit coverage include a statement about how to obtain a copy of the SWPPP either from a URL or from the EPA Regional Office. This addition will help make the procedure for requesting a SWPPP easily understandable by the public. Part 5.4 in the 2015 MSGP required MSGP facilities to make their SWPPPs publicly available through a URL or by providing additional information in the NOI. Under this requirement, the sign must also include information on how to report a possible stormwater pollution problem to EPA.

Part 1.3.6 Your Official End Date of Permit Coverage

This Part describes how long permit coverage lasts. This part also covers the content described below under "Continuation of Coverage for Existing Operators After the Permit Expires." This clarification was previously stated in Part 1.2.2 of the 2015 MSGP and is now located in the fact sheet for the 2021 MSGP. The clarification describes for facilities the continuation of coverage for existing facilities if the permit expires. Where EPA fails to issue a final general permit prior to the expiration of a previous general permit, EPA has the authority to administratively extend the permit for operators authorized to discharge under

the prior general permit. However, EPA does not have the authority to provide coverage to industrial facilities not already authorized to discharge under that prior general permit. If the five-year expiration date for this permit has passed and a new MSGP has not been reissued, any such projects would need to obtain coverage under an individual permit, or other general permit that is still in effect.

Part 1.3.7 Continuation of Coverage for Existing Operators After the Permit Expires

Note that if the 2021 MSGP is not reissued or replaced prior to the expiration date, it will be administratively continued in accordance with section 558(c) of the Administrative Procedure Act (see 40 CFR 122.6) and remain in force and effect for operators that were covered prior to its expiration. All operators authorized to discharge prior to the expiration date of the 2021 MSGP will automatically remain covered under the 2021 MSGP until the earliest of:

1. The date the operator is authorized for coverage under a new version of the MSGP following the timely submittal of a complete and accurate NOI. Note that if a timely NOI for coverage under the reissued or replacement permit is not submitted, coverage will terminate on the date that the NOI was due; or
2. The date of the submittal of a Notice of Termination; or
3. Issuance of an individual permit for the facility's discharge(s); or
4. A final permit decision by EPA not to reissue the MSGP, at which time EPA will identify a reasonable time period for covered operators to seek coverage under an alternative general permit or an individual permit. Coverage under the 2021 MSGP will terminate at the end of this time period.

EPA reserves the right to modify or revoke and reissue the 2021 MSGP under 40 CFR 122.62 and 63, in which case operators will be notified of any relevant changes or procedures to which they may be subject. If EPA fails to issue another general permit prior to the expiration of a previous one, EPA does not have the authority to provide coverage to industrial operators not already covered under that prior general permit. If the five-year expiration date for the 2021 MSGP has passed and a new MSGP has not been reissued, new operators seeking discharge authorization should contact EPA regarding the options available, such as applying for individual permit coverage.

Part 1.3.8 Coverage Under Alternative Permits

This Part describes the procedures for obtaining an alternative permit. The following are scenarios in which an alternative permit may be required: 1) a new or previously permitted operator is denied coverage under the MSGP; 2) an existing operator covered under the 2021 MSGP loses their authorization under the MSGP; or 3) an operator requests to be covered under an alternative permit.

Following submittal of a complete and accurate NOI, EPA may notify an operator in writing that it is not covered under the 2021 MSGP, and that it must apply for and/or obtain coverage under either an individual NPDES permit or an alternate general NPDES permit. This notification will include a brief statement of the reasons for this decision and will provide application information or NOI requirements.

If an operator is currently covered under a previously issued MSGP or the 2021 MSGP, the notice will set a deadline to file the permit application or NOI for an individual permit or alternative general permit, and will include a statement that on the effective date of the

individual NPDES permit or the date of coverage under an alternative general NPDES permit, coverage under this general permit will terminate. EPA will terminate your MSGP permit coverage in NeT-MSGP at that time. EPA may grant additional time to submit the application or NOI if the operator requests it. If an operator fails to submit an individual NPDES permit application or NOI as required by EPA, the applicability of the MSGP is terminated at the end of the day specified by EPA as the deadline for application or NOI submittal. EPA may take appropriate enforcement action for any unpermitted discharges. If the operator submits a timely permit application or NOI, coverage under the MSGP is terminated on the effective date of the coverage under the alternative permit.

After obtaining coverage under the MSGP, the operator may request to be excluded from such coverage by applying for an individual permit. In this case, the operator must submit an individual permit application per 40 CFR 122.28(b)(3)(iii), along with a statement of reasons supporting the request, to the applicable EPA Regional Office listed in Part 7.8. The request for an individual permit may be granted (or an alternative general permit may be proffered) if the reasons are adequate to support the request. When an individual permit is issued or coverage under an alternative general permit is granted, MSGP coverage is automatically terminated on the effective date of the alternative permit, per 40 CFR 122.28(b)(3)(iv).

Part 1.4 Terminating Coverage

Part 1.4.1 How to Submit your Notice of Termination (NOT) to Terminate Permit Coverage

This Part describes how to submit a Notice of Termination (NOT) to terminate permit coverage. Termination of MSGP coverage indicates that the operator no longer has an obligation to manage industrial stormwater per the MSGP's provisions, based on at least one of the reasons described in Part 1.~~3~~4.1. To terminate MSGP coverage, the operator must use NeT-MSGP to electronically prepare and submit a complete and accurate NOT, unless the applicable EPA Regional Office grants the operator a waiver from electronic reporting, in which case it may use the paper NOT form in Appendix H; the operator's authorization to discharge terminates at midnight of the day that the complete NOT is processed. If EPA determines that the NOT is incomplete or that the operator has not satisfied one of the termination conditions in Part 1.~~3~~4.2, then the notice is not valid and the operator must continue to comply with the conditions of the permit.

Part 1.4.2 When to Submit Your Notice of Termination

If an operator desires to terminate MSGP coverage, it must submit a NOT, as described in Part 1.4.2, within 30 days after one or more of the following conditions have been met: (1) a new owner or operator has received authorization to discharge under this permit; (2) operations have ceased at the facility (including facility closure) and there no longer are discharges of stormwater associated with industrial activity and necessary sediment and erosion controls have already been implemented at the facility as required by Part 2.1.2.5; (3) operators are covered under one of the three mining-related sectors in the permit (i.e., Sectors G, H, and J) and they have met the specific termination requirements described in the specific sector under which they are covered; or (4) permit coverage has been obtained under an individual permit or alternative general permit for all discharges requiring NPDES permit coverage.

Part 1.5 Conditional Exclusion for No Exposure

This Part states that by submitting a No Exposure Certification (NEC), an operator is no longer required to comply with the MSGP (including the NOT requirements), providing the

operator maintains a condition of "no exposure" (i.e., all industrial materials and operations are not exposed to stormwater). An operator must use NeT-MSGP to electronically prepare and submit to EPA a complete and accurate NEC once every five years per Part 7.2, unless the applicable EPA Regional Office grants you a waiver from electronic reporting, in which case you may use the paper NEC form in Appendix K.

Part 1.6 Permit Compliance

This Part explains that any failure to comply with the conditions of the 2021 MSGP constitutes a violation of the CWA (further discussed in Appendix B). Where requirements and schedules for taking corrective actions are specified, the time intervals are not grace periods, but are schedules considered reasonable for making repairs and improvements. For provisions specifying a time period to remedy noncompliance, the initial failure, such as a violation of a numeric or non-numeric effluent limit, constitutes a violation of the MSGP and the CWA, and subsequent failure to remedy such deficiencies within the specified time periods constitutes an independent, additional violation of the 2021 MSGP and CWA. However, where an event occurs which does not itself constitute permit noncompliance, such as an exceedance of an applicable benchmark, there is no permit violation provided the operator takes the required responses within the deadlines in Part 5. Also applicable to all operators is the "duty to comply," a standard NPDES permit condition listed in Appendix B.

Part 1.7 Severability

Severability is a standard permit condition applicable to every NPDES permit. The term means that if any portion of the 2021 MSGP is deemed to be invalid, it does not necessarily render the whole permit invalid and it is EPA's intent for the MSGP to remain in effect to the extent possible, pursuant to 40 CFR 124.16(a)(2) and 124.60. In the event that any part of the 2021 MSGP is invalidated, EPA will advise the regulated community as to the effect of such invalidation. EPA typically puts all standard permit conditions in an Appendix (Appendix B in 2021 MSGP), but the Agency put the severability requirement in Part 1 to make sure operators do not overlook this provision.

Part 2 Control Measures and Effluent Limits

The 2021 MSGP contains effluent limits that correspond to required levels of technology-based control for various discharges under the CWA (Best Practicable Control Technology Currently Available (BPT) as set forth in CWA section 304(b)(1) and Appendix A; Best Available Technology Economically Achievable (BAT), as set forth in CWA section 304(b)(2) and Appendix A; and Best Conventional Pollutant Control Technology (BCT), as set forth in CWA section 304(b)(4) and Appendix A). Where an ELG or NSPS applies to discharges authorized by this permit, the requirement must be incorporated into the permit as an effluent limitation. These limits are included, as applicable, in the sector-specific requirements of Part 8. Where EPA has not yet issued an effluent limitation guideline, EPA determines the appropriate technology-based level of control based on best professional judgment (BPJ, sometimes also referred to as "best engineering judgment") of the permit writer. CWA section 402(a)(1); 40 CFR 125.3. For the 2021 MSGP, most of the technology-based limits are based on BPJ decision-making because no ELG applies.

Stormwater discharges can be highly intermittent, are usually characterized by high flows occurring over relatively short time intervals, and can carry a variety of pollutants whose source, nature and extent varies. This is in contrast to process wastewater discharges from a particular industrial or commercial facility where the effluent is generally more predictable and can be more effectively analyzed to develop numeric effluent limitations. EPA includes

non-numeric effluent limits in NPDES permits,[3] such as the MSGP, such as requirements mandating facilities to "minimize" various types of pollutant discharges, or to implement control measures unless "infeasible." Consistent with the control level requirements of the CWA, since 2008 for purposes of the MSGP EPA has defined the term "minimize" as "for the purposes of this permit minimize means to reduce and/or eliminate to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practices." Similarly, "feasible" means "technologically possible and economically practicable and achievable in light of best industry practices. EPA notes that it does not intend for any permit requirement to conflict with state water rights law." EPA has determined that the technology-based numeric and non-numeric effluent limits in the 2021 MSGP, taken as a whole, constitute BPT for all pollutants, BCT for conventional pollutants, and BAT for toxic and nonconventional pollutants that may be discharged via industrial stormwater.

The BAT/BPT/BCT effluent limits in the 2021 MSGP are expressed as specific pollution prevention requirements for minimizing the pollutant levels in the discharge. Some effluent limits have greater specificity because in past MSGPs they were written in general terms, leaving operators wide latitude in interpreting what constituted compliance, which led to widely varying levels of stormwater program effectiveness. EPA continues to assert that the combination of pollution prevention and structural management practices required by these limits are the best technologically available and economically practicable and achievable controls, as well as the most environmentally sound way to control the discharge of pollutants in stormwater discharges from industrial facilities. This approach is supported by the results of a comprehensive technical survey EPA completed in 1979. Pollution prevention continues to be the cornerstone of the NPDES stormwater program.

Requirements are technologically available

EPA asserts that the requirements of the 2021 MSGP represent BPT, BCT and BAT. Most of the effluent limits in the 2021 MSGP have been permit requirements since EPA first issued the MSGP in 1995 (with minor modifications). Additionally, because most facilities covered under the permit are existing dischargers, these facilities are already implementing control measures to meet the effluent limits in the permit.

Requirements meet the BPT and BAT economic requirements set forth in the CWA

There are different economic considerations under BPT, BCT, and BAT. EPA finds that the limits in the 2021 MSGP meet the BPT and BAT economic requirements. Essentially, the same types of controls are employed to minimize toxic, nonconventional and conventional pollutants. As a result, EPA is evaluating effluent limits using only the BPT and BAT standards. Since conventional pollutants will also be adequately controlled by these same effluent limits for which EPA applied the BPT and BAT tests, EPA has determined that it is not necessary to conduct separate BCT economic tests.

[3] *Natural Res. Def. Council, Inc. v. EPA*, 673 F.2d 400, 403 (D.C. Cir. 1982) (noting that "[CWA] section 502(11) defines 'effluent limitation' as ' any restriction' on the amounts of pollutants discharged, not just a numerical restriction'"; holding that section of CWA authorizing courts of appeals to review promulgation of "any effluent limitation or other limitation" did not confine the court's review to the EPA's establishment of numerical limitations on pollutant discharges, but instead authorized review of other limitations under the definition) . In *Natural Res. Def. Council, Inc. v. Costle*, 568 F.2d 1369 (D.C. Cir. 1977), the D.C. Circuit stressed that when numerical effluent limitations are infeasible, EPA may issue permits with conditions designed to reduce the level of effluent discharges to acceptable levels.

Under BPT, EPA determined that the requirements of the 2021 MSGP are economically practicable. EPA considered the reasonableness of the relationship between the costs of application of technology in relation to the effluent reduction benefit derived. CWA section 304(b)(1)(B); 40 CFR 125.3(d)(1). EPA estimates the total universe of dischargers that the 2021 MSGP will affect includes approximately 2,270 existing dischargers. Based on estimates provided in prior permits, updated to reflect changes to the permit and current dollars, EPA estimates the approximate incremental cost of complying with the 2021 MSGP is around $3.85 to $7.17 million for 2,270 facilities over the 5-year permit term or $1,690 to $3,157 per facility over the 5-year permit term. It is well documented that stormwater control measures (SCMs), like the ones required to comply with the 2021 MSGP, are effective at controlling pollutants in stormwater discharges. For example, the 2009 National Academies of Sciences' report, Urban Stormwater Management in the United States, noted that "SCMs, when designed, constructed, and maintained correctly, have demonstrated the ability to reduce discharge volume and peak flows and to remove pollutants. A multitude of case studies illustrates the use of SCMs in specific settings and demonstrates that a particular SCM can have a measurable positive effect on water quality or a biological metric" (9).

The $3.85 to $7.17 million total incremental cost accounts for the cost of some requirements that do not apply to all facilities; different facilities will have different compliance costs therefore an average cost per facility is not necessarily reflective of total cost. The total incremental cost was averaged over 2,270 facilities to obtain a per facility cost of $1,690 to $3,1572 over the five-year permit term. This cost is comparable to the previous 2015 MSGP estimate of $2,750 per facility. Although $3.85 to $7.17 million total incremental cost does not account for some requirements that require site-specific controls and can only be calculated per unit cost, EPA expects many facilities will have already implemented controls under the previous permit to comply with some new requirements and that some controls can satisfy multiple requirements. Therefore, it is possible total costs may be lower, depending on which controls the operator has at their facility.

Based on the cost analysis, EPA determined that the requirements of the 2021 MSGP are economically achievable. In determining "economic achievability" under BAT, EPA considered whether the costs of the controls can reasonably be borne by the industry. Because most facilities covered under the permit are existing dischargers and those facilities are already implementing control measures to meet the effluent limits in the permit, and considering the relatively modest incremental (over the 2015 permit) cost of compliance with the 2021 MSGP (around $338 to $632 per year per facility), EPA concludes that the technology-based effluent limitations in the MSGP are unlikely to result in a substantial economic impact to the permitted universe, including small businesses. Hence, EPA interprets this analysis to indicate that BAT limits are economically achievable. The cost analysis for the 2021 MSGP is available on the docket for the 2021 MSGP (EPA-HQ-OW-2019-0372).

Stormwater Control Measures Used to Meet the Technology-Based Effluent Limits

Stormwater control measures (SCMs) can be actions (including processes, procedures, schedules of activities, prohibitions on practices and other best management practices), or structural or installed devices to minimize or prevent water pollution. There are many options that help prevent pollutants from entering waters of the United States, and of meeting applicable effluent limits, water quality standards, or WLAs. Industrial facility operators are required to select, design, install and implement site-specific control measures to meet these limits.

EPA generally does not mandate the specific SCMs that operators must select, design, install and implement to meet the technology-based effluent limits in the permit. The permit provides operators the flexibility to determine their site-specific controls, taking into consideration what controls are most suited for their industry in terms of economic practicability and technology availability, and in some cases, considerations such as available space and safety. For example, Part 2.1.2.1 requires operators to minimize the exposure of raw, final and waste materials to stormwater. For some facilities, some or all activities and material storage may be moved indoors, while for others this will not be feasible. However, even when moving all activities/materials indoors is infeasible, some of them could be shielded by roofing or tarps, while still other activities may be limited to times when exposure to precipitation is not likely. Each of these SCMs is acceptable and appropriate depending on the circumstances. In this respect the non-numeric effluent limits in the 2021 MSGP are analogous to more traditional numeric effluent limits, which also do not require specific control technologies to meet the limits.

For many facilities, controls already in place for product loss prevention, accident and fire prevention, worker health and safety or to comply with other environmental regulations may be sufficient to meet the stormwater effluent limits in the MSGP. For many facilities, the effluent limits can be achieved without using highly engineered or complex treatment systems. The specific limits in Part 2.1 of the MSGP emphasize "low-tech" controls, such as minimizing exposure to stormwater, regular cleaning of outdoor areas where industrial activities may take place, proper maintenance, etc. However, sometimes treatment devices or constructed/installed controls may be necessary, particularly where a facility's discharge might cause a violation of water quality standards in receiving waters.

The permit and Fact Sheet provide examples of stormwater control measures, but operators are expected to tailor these to their facilities as well as improve upon them as necessary to meet permit limits.

Part 2.1 Stormwater Control Measures (SCMs)

Part 2.1 requires operators to select, design, install, and implement SCMs, in accordance with good engineering practices and manufacturer's specifications, to meet the technology-based effluent limits listed in Parts 2.1.2 and 2.1.3 and the water quality-based effluent limitations in Part 2.2. Note that compliance with the Part 2 effluent limits involving SCMs does not compel operators to undertake any activities that are considered unsafe. Operators must be aware that regulated stormwater discharges include stormwater run-on from outside sources that commingles with their own stormwater discharges associated with industrial activity, and they must account for the commingled discharges accordingly when selecting SCMs. If operators find their SCMs are not reducing pollutant discharges adequately, the control measures must be modified in accordance with the Part 5.1 corrective action requirements.

Some of the SCMs required in this Part are straightforward and as a result, the associated Part 6 SWPPP documentation requirements may be minimal. This means that it is acceptable to copy and paste the language of the effluent limit from the permit in the SWPPP without any additional detail or selection of a control measure. EPA maintains in the 2021 MSGP the following documentation provision that was included in the 2015 MSGP to provide for such convenience and burden reduction for operators: "Effluent limit requirements in Part 2.1.2 that do not involve the site-specific selection of a control measure or are specific activity requirements (e.g., 'Cleaning catch basins when the depth of debris reaches two-thirds (2/3) of the sump depth, in line with manufacturer specifications, whichever is lower, and keeping the debris surface at least six inches below the outlet

pipe') are marked with an asterisk (*). When documenting in your SWPPP, per Part 6, how you will comply with the requirements marked with an asterisk, you have the option of including additional information or you may just 'copy-and-paste' those effluent limits word-for-word from the permit into your SWPPP without providing additional documentation (see Part 6.2.4)." The relative lack of leeway or choices that operators have for compliance justifies the option of allowing operators to reproduce verbatim the requirement as written in the MSGP into their SWPPPs. While minimal documentation may be sufficient and reduces some burden, operators may wish to add more information about where, when, and to which activities at the site the effluent limit/control measure will be applied, if they deem this information useful.

The permit's approach to SCMs is consistent with the CWA and its implementing regulations at 40 CFR 122.44(k)(4). Section 402(a)(2) of the CWA states: "The administrator shall prescribe conditions for such permits to assure compliance with the requirements in paragraph (1) . . .including conditions on data and information collection, reporting and such other requirements as he deems appropriate." (Section 402(a)(1) includes effluent limitation requirements.) This statutory provision is reflected in the CWA implementing regulations, which state that BMPs, i.e., control measures, can be included in permits when "[t]he practices are reasonably necessary to achieve effluent limitations and standards or to carry out the purposes and intent of the CWA." 40 CFR 122.44(k)(4).

Part 2.1.1 SCM Selection and Design Considerations

In Part 2.1.1 operators are required to consider certain factors when selecting and designing control measures. EPA recognizes that not all of these considerations will be applicable to every facility nor will they always affect the choice of control measures. However, operators should still document that these factors were considered when selecting and designing their control measures per Part 6.2.4. The selection and design considerations include:

- Preventing stormwater from coming into contact with polluting materials is generally more effective and less costly than trying to remove pollutants from stormwater;
- Using combinations of control measures is more effective than using control measures in isolation for minimizing pollutants;
- Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to determining which control measures will achieve the limits in the permit;
- Minimizing impervious areas at the facility and infiltrating stormwater on site (via bioretention cells, green roofs, pervious pavement, etc.) can reduce the frequency and volume of discharges, and improve ground water recharge and stream base flows in local streams (although care must be taken to avoid ground water contamination);
- Attenuating flow using open vegetated swales and natural depressions can reduce in-stream impacts of erosive flows;
- Conserving and/or restoring riparian buffers can help protect streams from stormwater discharges and improve water quality;
- Using treatment interceptors (e.g., swirl separators, oil-water separators, sand filters) may be appropriate in some instances to minimize the discharge of pollutants; and
- Implementing structural improvements, enhanced/resilient pollution prevention measures, and other mitigation measures will help to minimize impacts from stormwater

discharges from major storm events, such as hurricanes, storm surge, extreme/heavy precipitation, and flooding. If such controls or measures are already in place due to existing requirements mandated by other state, local or federal agencies, you should document in your SWPPP a brief description of the controls and a reference to the existing requirement(s). If your facility may be exposed to or has previously experienced such major storm events,[4] additional measures to consider include, but are not limited to:

- Reinforce materials storage structures to withstand flooding and additional exertion of force;
- Prevent floating of semi-stationary structures by elevating to the Base Flood Elevation (BFE)[5] level or securing with non-corrosive device;
- When a delivery of exposed materials is expected, and a storm is anticipated within 48 hours, delay delivery until after the storm or store materials as appropriate (refer to emergency procedures);
- Temporarily store materials and waste above the BFE level;
- Temporarily reduce or eliminate outdoor storage;
- Temporarily relocate any mobile vehicles and equipment to higher ground;
- Develop scenario-based emergency procedures for major storms that are complementary to regular stormwater pollution prevention planning and identify emergency contacts for staff and contractors; and
- Conduct staff training for implementing your emergency procedures at regular intervals.

The 2021 MSGP requires operators that may be located in areas susceptible to or have experienced major storm events to consider implementing enhanced measures, such as structural improvements, additional pollution prevention measures, and other mitigation measures that are complementary to regular stormwater pollution prevention planning. Part 2.1.1 requires that operators must consider Parts 2.1.1.1 through 2.1.1.8 when selecting and designing control measures to minimize pollutant discharges via stormwater. Part 2.1.1 does not require nor prescribe specific control measure to be implemented; however, operators must document in their SWPPPs per Part 6.2.4 the considerations made to select and design control measures at the facility to minimize pollutants discharged via stormwater. Examples of major storm events are hurricanes, storm surge, extreme/heavy precipitation, and flooding. EPA is not requiring operators to implement the controls given as examples in the permit but is requiring operators to consider the benefit of selecting and designing control measures that reduce risks to their industrial facility and the potential impact of pollutants in stormwater discharges caused by major storm events. Heavy precipitation refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal. What constitutes a period of heavy precipitation varies according to location and season. Heavy precipitation does not

[4] To determine if your facility is susceptible to an increased frequency of major storm events that could impact the discharge of pollutants in stormwater, you may reference FEMA, NOAA, or USGS flood map products at https://www.usgs.gov/faqs/where-can-i-find-flood-maps?qt-news_science_products=0#qt-news_science_products.

[5] Base Flood Elevation (BFE) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1–A30, AR, AR/A, AR/AE, AR/A1– A30, AR/AH, AR/AO, V1–V30 and VE. (Source: https://www.fema.gov/node/404233). The FEMA Flood Map Service Center can be accessed through https://msc.fema.gov/portal/search.

necessarily mean the total amount of precipitation at a location has increased—just that precipitation is occurring in more intense or more frequent events.

Where facilities already have emergency and risk management plans or have already implemented such controls due to existing requirements mandated by other state, local or federal agencies, operators should include in their SWPPP a description of measures in place for such events and a reference to the existing requirement(s). Operators should also consider how they might bolster existing procedures to account for the impacts on their SCMs (for instance, controls being filled with sediment or clogged by debris) and potential pollutant discharges during major storm events. Operators are encouraged to consider all reasonably available data and utilize various reference maps, including those published by FEMA, NOAA, and USGS, to help determine if their facility may experience an increased frequency of major storm events that could impact the discharge of pollutants in stormwater.

Part 2.1.2 Non-Numeric Technology-Based Effluent Limits (BPT/BAT/BCT)

The 2021 MSGP requires operators to implement stormwater control measures (SCMs) to comply with non-numeric technology-based effluent limits, expressed narratively pursuant to 40 CFR 122.44(k). The achievement of these non-numeric limits will result in the reduction or elimination of pollutants from stormwater discharges. Such limits were developed using EPA's best professional judgment (BPJ). The requirements in Part 2 are the effluent limits applicable to all discharges associated with industrial activity for all sectors, while additional sector-specific effluent limits are found in Part 8.

Throughout Part 2.1 (and Part 8), the term "minimize" means to "reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practice." The term "infeasible" means not technologically available or not economically practicable and achievable in light of best industry practices. EPA notes that it does not intend for any permit requirement to conflict with state water rights law. The following is a summary of the permit's non-numeric technology-based effluent limits:

Part 2.1.2.1 Minimize Exposure

This Part requires operators to limit the exposure of manufacturing, processing, and material storage areas to stormwater in order to minimize (per the definition of "minimize" in Appendix A) pollutant discharges by either locating industrial materials and activities inside or protecting them with storm-resistant coverings. Limiting contact with precipitation can reduce the need for control measures to treat or otherwise reduce pollutants in stormwater discharges. Examples include covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected or moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds). Even a simple practice such as keeping a dumpster lid closed can be very effective. Effluent limit requirements that do not involve the site-specific selection of a control measure or are specific activity requirements are marked with an asterisk (*). When documenting in your SWPPP, per Part 6, how the operator will comply with the requirements marked with an asterisk, the operator has the option of including additional information or it may just 'copy-and-paste' those effluent limits word-for-word from the permit into the SWPPP without providing additional documentation (see Part 6.2.4). In minimizing exposure, operators must also:

- Use grading, berming, or curbing to prevent discharges of contaminated flows and divert run-on away from these areas;

- Locate materials, equipment, and activities so that potential leaks and spills are contained or able to be contained or diverted before discharging;
- Store leaky vehicles and equipment indoors;
- Perform all vehicle and/or equipment cleaning operations indoors, under cover, or in bermed areas that prevent discharges and run-on and also that capture any overspray; and
- Drain fluids from equipment and vehicles that will be decommissioned, and, for any equipment and vehicles that will remain unused for extended periods of time, inspect at least monthly for leaks.*

EPA moved several requirements that were under Part 2.1.2.1 in the 2015 MSGP to Part 2.1.2.4 in the 2021 MSGP due to public comments that those requirements more appropriately belonged in the section of the permit that outlined requirements for spill prevention and response.

Part 2.1.2.2 Good Housekeeping

This Part requires that the operator keep all exposed areas that are potential pollutant sources clean to help receiving waters meet water quality standards. Good housekeeping is an inexpensive way to maintain a clean and orderly facility and keep contaminants out of stormwater discharges. Often the most effective first step towards minimizing pollution in stormwater from industrial sites simply involves commonsense improvements to a facility's basic housekeeping methods. A clean and orderly work area can reduce the possibility of accidental spills caused by mishandling of chemicals and equipment and well-maintained material and chemical storage areas can reduce the possibility of stormwater mixing with pollutants.

There are some simple procedures operators can implement to meet the good housekeeping effluent limit, including improved operation and maintenance of industrial machinery and processes, improved materials storage practices, better materials inventory controls, more frequent and regular clean-up schedules, maintaining well organized work areas, and education programs for employees about these practices. Effluent limit requirements that do not involve the site-specific selection of a control measure or are specific activity requirements are marked with an asterisk (*). When documenting in your SWPPP, per Part 6, how the operator will comply with the requirements marked with an asterisk, the operator has the option of including additional information or it may just 'copy-and-paste' those effluent limits word-for-word from the permit into the SWPPP without providing additional documentation (see Part 6.2.4). At a minimum, to comply with this effluent limit operators must:

- Sweep or vacuum at regular intervals, or alternatively, wash down the area and collect and/or treat, and properly dispose of the wash down water;
- Store materials in appropriate containers;
- Keep all dumpsters with a lid closed when not in use. For dumpsters and roll off boxes that do not have lids and could leak, ensure that discharges have a control (e.g., secondary containment, treatment). In no cases can there be dry weather discharges from dumpsters or roll off boxes;*
- Minimize the potential for waste, garbage, and floatable debris to be discharged by keeping exposed areas free of such materials or by intercepting them before they are discharged.

- This part also includes a plastic materials requirement for facilities that handle pre-production plastic ("nurdles") to implement SCMs to eliminate such plastic discharges in stormwater. EPA includes this language to identify and increase awareness of the potential for this type of pollution to occur. Examples of plastic material required to be addressed as stormwater pollutants include plastic resin pellets, powders, flakes, additives, regrind, scrap, waste and recycling. EPA added examples in a footnote of the permit of appropriate control measures, which include but are not limited to: installing a containment system, or other control, at each on-site storm drain discharge point down gradient of areas containing plastic material, designed to trap all particles retained by a 1mm mesh screen; using a durable sealed container designed not to rupture under typical loading and unloading activities at all points of plastic transfer and storage; using capture devices as a form of secondary containment during transfers, loading, or unloading plastic materials, such as catch pans, tarps, berms or any other device that collects errant material; having a vacuum or vacuum-type system for quick cleanup of fugitive plastic material available for employees; for facilities that maintain outdoor storage of plastic materials, do so in a durable, permanent structure that prevents exposure to precipitation that could cause the material to be discharged via stormwater.

EPA also recommends that operators store containers that are potential sources of stormwater pollution away from direct traffic routes, stack them according to manufacturer's specifications, and store them on pallets or other similar devices to prevent corrosion.

Part 2.1.2.3 Maintenance

This Part describes how operators must maintain all SCMs so they remain effective. Effluent limit requirements that do not involve the site-specific selection of a control measure or are specific activity are marked with an asterisk (*). When documenting in your SWPPP, per Part 6, how the operator will comply with the requirements marked with an asterisk, the operator has the option of including additional information or it may just 'copy-and-paste' those effluent limits word-for-word from the permit into the SWPPP without providing additional documentation (see Part 6.2.4). Operators must comply with the following maintenance activity requirements:

- Performing inspections and preventive maintenance of stormwater drainage, source controls, treatment systems, and plant equipment and systems that could fail and result in discharge of pollutants via stormwater;
- Diligently maintaining nonstructural control measures (e.g., keep spill response supplies available, personnel appropriately trained);
- Inspecting and maintaining baghouses at least quarterly to prevent the escape of dust from the system and immediately removing accumulated dust at the base of the exterior baghouse;*
- Cleaning catch basins when the depth of debris reaches two-thirds (2/3) of the sump depth, or in line with manufacturer specifications, whichever is lower, and keeping the debris surface at least 6 inches below the outlet pipe.*

If the operator finds that its control measures need maintenance, it must conduct necessary maintenance immediately. If control measures need to be repaired or replaced, the operator must immediately take all reasonable steps to minimize or prevent the discharge of pollutants until it can implement the final repair or replacement, including cleaning up any contaminated surfaces so that the material will not be discharged during

subsequent storm events. Final repairs/replacement of stormwater controls should be completed as soon as feasible but must be no later than the timeframe established in Part 5.1.3 for corrective actions, i.e., within 14 days or, if that is infeasible, no longer than 45 days (or longer per notification of the Region). If a control measure was never installed, was installed incorrectly, or not in accordance with Parts 2 and/or 8, or is not being properly operated or maintained, the operator must conduct corrective action as specified in Part 5.1.

The 2021 MSGP now specifies that "immediately" means that the day the operator finds a condition requiring corrective action, you must take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a permanent solution. However, if the operator identifies a problem too late in the work-day to initiate corrective action, the operator must perform the corrective action the following work-day morning. "All reasonable steps" means that the operator responds to the conditions triggering the corrective action, such as cleaning up any exposed materials that may be discharged via stormwater (e.g., through sweeping, vacuuming) or making arrangements (i.e., scheduling) for a new SCM to be installed. "All reasonable steps" does not mean taking action when it is unsafe to do so (e.g., due to inclement weather).

This Part includes language on baghouses to highlight the need for their inspection and maintenance, because baghouses can be significant sources of pollutants. EPA encourages operators to inspect and maintain baghouses more frequently than quarterly and encourages the use of baghouse leak detectors so that problems are detected as soon as possible. This Part also includes industry-standard catch basin cleaning requirements to prevent this maintenance action from being overlooked. Where possible, EPA encourages operators to clean catch basins prior to the debris depth reaching 2/3 in order to avoid a SCM failure. EPA added a part to this requirement regarding cleaning catch basins based on manufacturer specifications if those specifications were lower than 2/3 debris depth.

Part 2.1.2.4 Spill Prevention and Response Procedures

This Part requires that operators minimize the potential for stormwater exposure from leaks, spills and other releases, which can be significant sources of stormwater pollution. As a reminder, the term "minimize" is defined, for the purposes of this permit, as "to reduce and/or eliminate to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practices." In addition to preventing spills and leaks, this effluent limit has requirements after a spill/release occurs, to limit environmental damage. EPA encourages operators to identify potential spill areas and keep an inventory of materials handled, used, and disposed. This information would be valuable for complying with the requirement to specify the material handling procedures, storage requirements, containment or diversion equipment, and spill cleanup procedures that will minimize the potential for spills/releases and, in the event of a spill/release, ensure a proper and timely response. Effluent limit requirements that do not involve the site-specific selection of a control measure or are specific activity are marked with an asterisk (*). When documenting in your SWPPP, per Part 6, how the operator will comply with the requirements marked with an asterisk, the operator has the option of including additional information or it may just 'copy-and-paste' those effluent limits word-for-word from the permit into the SWPPP without providing additional documentation (see Part 6.2.4). To comply with this effluent limit, operators must:

- Clean up spills and leaks promptly using dry methods (e.g., absorbents) to prevent the discharge of pollutants;

- Use drip pans and absorbents if leaky vehicles and/or equipment are stored outdoors;
- Use spill/overflow protection equipment;
- Plainly label containers (e.g., "Used Oil," "Spent Solvents," "Fertilizers and Pesticides") that could be susceptible to spillage or leakage to encourage proper handling and facilitate rapid response if spills or leaks occur;*
- Implement procedures for material storage and handling, including the use of secondary containment and barriers between material storage and traffic areas, or a similarly effective means designed to prevent the discharge of pollutants from these areas (e.g., curbing, spill diversion pond, double-walled tank, drip pan);
- Develop training on the procedures for expeditiously stopping, containing, and cleaning up leaks, spills, and other releases. When needed, execute such procedures as soon as possible;
- Keep spill kits on-site, located near areas where spills may occur or where a rapid response can be made; and
- Notify appropriate facility personnel when a leak, spill, or other release occurs.

Part 2.1.2.4 also specifies that when a leak, spill or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR 110, 40 CFR 117, or 40 CFR 302, occurs during a 24-hour period, the operator must notify the National Response Center (NRC) at (800) 424-8802 or, in the Washington, DC, metropolitan area, call (202) 267-2675 as soon as there is knowledge of the discharge. State or local requirements may necessitate reporting spills or discharges to local emergency response, public health, or drinking water supply agencies. Contact information must be in locations that are readily accessible and available.

In addition to implementing spill prevention and response measures to minimize stormwater contamination, EPA encourages operators to implement controls that will minimize the potential for leaked or spilled material from storage tanks to be discharged into receiving waterbodies. Such discharges can and have caused water quality impairments and serious drinking water problems downstream from the tank release. To prevent spills and leaks, EPA encourages MSGP facilities with material storage tanks, especially those with chemical storage tanks, to implement controls such as the following to both minimize the potential for stormwater contamination and to minimize the potential for direct discharges from storage tank spills or leaks:

- *Secondary containment*: For all chemical liquids and petroleum products that are held in a storage area, tank or other container, store the fluids within an impermeable secondary containment area with a retention capacity of at least 110% of the volume of the largest tank or container, or 10% of the total volume of all tanks and containers in the area, whichever is larger. There should be no overflow from the secondary containment area, which should be designed, constructed, operated and maintained so that the materials can be recovered and so that polluting materials cannot escape directly or indirectly to any public sewer system or to surface waters or ground water. Records should be maintained that document all such tanks and stored materials and their associated secondary containment area.
- *Secondary containment valves*: Secondary containment area valves that could provide stormwater and retained fluids access to a stormwater conveyance system should be controlled by manually activated valves or other similar devices (these should be secured and remain closed with a locking mechanism). Stormwater that

accumulates in the containment area should be visually inspected to ensure no leaks or spills have occurred before release of the accumulated stormwater. Records should be maintained that document the individual making the observation, the description of the accumulated stormwater, and the date and time of the release.

This effluent limit also requires that operators keep all industrial equipment and systems in effective operating condition in order to minimize pollutant discharges. Therefore, the operator must conduct regular maintenance and self-inspections (per Part 3) for all storage tanks and secondary containment areas. Operators must look for leaks/spills, cracks, corrosion, etc., to identify deficiencies and/or problem components such as fittings, pipe connections and valves. For any deficiencies identified, operators must conduct the necessary maintenance, or if applicable, take corrective action in accordance with Part 5.1.

Part 2.1.2.5 Erosion and Sediment Controls

This Part requires operators to minimize pollutant discharges from erosion by stabilizing exposed soils at the facility in order to minimize pollutant discharges and placing flow velocity dissipation devices at discharge locations. Velocity dissipation should control channel and streambank erosion and scour in the immediate vicinity of discharge points. Part 2.1.2.5 also requires the use of structural and non-structural controls to minimize the discharge of sediment. EPA requires that whenever polymers and/or other chemical treatment will be used for erosion control, the polymers and/or chemicals and their purpose must be identified in the SWPPP.

The purpose of this requirement is to prevent discharges of sediment from exposed areas of industrial sites that, due to construction activities, steep slopes, sandy soils or other causes, are prone to soil erosion. Construction and other earth-disturbing activities often result in the exposure of underlying soil to wind and precipitation, while steep slopes or sandy soils may not be able to hold plant life so that soils are exposed, leading to erosion and the need for erosion controls.

The types of erosion controls for exposed areas that operators should consider first include seeding, mulching, and sodding to prevent soil from becoming dislodged. Sediment control practices such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control practices, such as flow velocity dissipaters and sediment catchers, must be used to back up erosion control practices. There are many resources available to help operators select appropriate control measures for erosion and sediment, including EPA's Stormwater Discharges from Construction Activities website at: https://www.epa.gov/npdes/stormwater-discharges-construction-activities.

EPA acknowledges that portions of some industrial facilities are intended to be left unvegetated or unstabilized. For example, sizable unpaved earthen areas are common at large steel mills. For such areas, compaction of the soil, covering with gravel, and/or application of a soil binder may be adequate erosion control measures for meeting Part 2.1.2.5.

Part 2.1.2.6 Management of Stormwater

This Part requires operators to divert, infiltrate, reuse, contain, or otherwise reduce stormwater to minimize pollutants in the discharge, and to employ practices that direct the flow of stormwater away from areas of exposed materials or pollutant sources. Such practices can also be used to divert polluted stormwater to natural areas or locations where other kinds of treatment occurs.

To meet this effluent limit, operators may consider vegetative swales, collection and reuse of stormwater, inlet controls, snow management, infiltration devices, and wet detention/retention basins.

In selecting, designing, installing, and implementing appropriate stormwater control measures, operators are encouraged to consult with EPA's resources relating to stormwater discharge management, including the sector-specific *Industrial Stormwater Fact Sheet Series*, (https://www.epa.gov/npdes/stormwater-discharges-industrial-activities#factsheets) and any similar state or tribal resources.

If infiltration is a selected control, operators should pay special attention to the discussion at the end of the section of the Fact Sheet entitled: *Stormwater infiltration control measures that meet the definition of a Class V Injection Well could be subject to the Underground Injection Control (UIC) Regulations*.

Stormwater Infiltration Control Measures Subject to the Underground Injection Control (UIC) Regulations

EPA promotes stormwater infiltration through green infrastructure as a cost-effective, sustainable, and environmentally friendly approach to stormwater management. The primary goals of this effort are to reduce stormwater discharge volume and contaminants, and sewer overflow events by using vegetation, soils, natural processes, and infiltration technologies to soak, store, infiltrate and/or treat stormwater. When implementing stormwater infiltration, operators should ensure that ground water is protected because under certain conditions, infiltration could allow contaminants to reach underground sources of drinking water. For example, certain geologic and hydrologic conditions could create ready pathways for pollutants in the stormwater to enter the receiving aquifers.

The Safe Drinking Water Act (SDWA) was established, in part, to protect the nation's drinking water. As required by SDWA, EPA established a regulatory program to prevent underground injection which endangers underground drinking water sources and promulgated regulations containing minimum requirements for state underground injection control (UIC) programs. (See 42 U.S.C. ' 300h-1; 40 C.F.R. Parts 144-146). Once EPA approves a state or tribal UIC program as meeting the requirements of SDWA and EPA's implementing regulations, the state or tribe has primary enforcement responsibility for the UIC program. If a state does not apply for primacy, EPA retains direct implementation authority. State, tribal, or federal UIC regulations would apply to any stormwater infiltration control measures that could be classified as an Injection Well.

EPA's regulations at 40 CFR 144.3 define "well injection" as the subsurface emplacement of fluids through a well. A "well" is defined as a bored, drilled or driven shaft, or dug hole whose depth is greater than its largest surface dimension; an improved sinkhole; or a subsurface fluid distribution system. *Subsurface fluid distribution system* means an assemblage of perforated pipes, drain tiles or other similar mechanisms intended to distribute fluids below the surface of the ground. Commercially manufactured or proprietary infiltration devices may fall into this category. *Improved sinkhole* means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings that has been engineered for the purpose of directing and emplacing fluids into the subsurface.

Infiltration control measures that are also injection wells would be subject to UIC regulations and would likely be classified as Class V Injection Wells. Most Class V wells are authorized by rule if operators submit inventory information to the proper authority (state, tribe, or EPA), do not endanger underground sources of drinking water, and are properly abandoned when

no longer in use. An operator may also be required to get a Class V permit or take other actions to prevent potential degradation of underground sources of drinking water. Operators can find out the status of their state's UIC program at https://www.epa.gov/uic. On June 13, 2008, EPA issued a policy memo that clarified which green infrastructure stormwater infiltration practices have the potential to be regulated as Class V wells by the UIC program. A copy of this memo is available on EPA's website at: https://www.epa.gov/sites/production/files/2015-10/documents/epamemoinfiltrationclassvwells.pdf.

Part 2.1.2.7 Salt Storage Piles or Pile Containing Salt

This Part requires that operators enclose or cover piles completely or partially comprised of salt in order to minimize pollutant discharges. Operators must also implement appropriate measures to minimize the exposure of the piles during the adding to or removing from processes. Operators do not need to enclose or cover piles if stormwater from the piles is not discharged or if discharges from the piles are authorized under another NPDES permit.

Options for meeting the salt pile effluent limit include covering the piles or eliminating the discharge from such areas of the facility. Preventing exposure of piles to stormwater or run-on also eliminates the economic loss from materials being dissolved and washed away. A permanent under-roof storage facility is the best way to protect chemicals from precipitation and stormwater, but where this is not possible, salt piles can be located on impermeable bituminous pads and covered with a waterproof cover.

Part 2.1.2.8 Employee Training

This Part requires operators to train all employees who work in areas where industrial materials or activities are exposed to stormwater, or who are responsible for implementing activities necessary to meet the limits and conditions of the permit. This includes all members of the stormwater pollution prevention team identified in Part 6.2.1. The permit specifies the types of personnel and the tasks they perform that must be trained, so that they understand the MSGP's requirements and their specific responsibilities with respect to those requirements (e.g., personnel who are responsible for the design, installation, maintenance, and/or repair of controls including pollution prevention measures). For those personnel needing training, the following areas must be covered, if applicable to the person's duties:

- An overview of what is in the SWPPP;
- Spill response procedures, good housekeeping, maintenance requirements, and material management practices;
- The location of all controls on the site required by the permit, and how they are to be maintained;
- The proper procedures to follow with respect to the permit's pollution prevention requirements;
- When and how to conduct inspections, record applicable findings, and take corrective actions; and
- The facility's emergency procedures, if applicable per Part 2.1.1.

Training sessions should be conducted at least annually to assure adequate understanding of the objectives of the control measures and the individual responsibilities of each employee. More frequent training may be appropriate at facilities with high employee turnover or where stormwater programs are more complicated or multi-faceted. Often,

training could be a part of routine employee meetings for safety or fire protection. Contractor personnel also must be trained in relevant aspects of stormwater pollution prevention, as appropriate.

Part 2.1.2.9 Non-Stormwater Discharges

This Part specifies that the operator must evaluate for the presence of non-stormwater discharges; the operator must eliminate any non-stormwater discharges not explicitly authorized in Part 1.2.2 or covered by another NPDES permit. Other than the exclusive list of authorized non-stormwater discharges listed in Part 1.2.2, non-stormwater discharges requiring NPDES permit coverage are not, per Part 1.1.3, authorized under the MSGP.

Additionally, Part 2.1.2.9 requires that all wash water, with the exception of discharges from pavement wash water and routine building washdown per Part 1.2.2, drain to a sanitary sewer, sump or other appropriate collection system (i.e., not the stormwater drainage system). Additionally, this permit does not authorize the discharge of vehicle and equipment wash water, including tank cleaning operations. These wastewaters must be covered under a separate NPDES permit, discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements, or disposed of otherwise in accordance with applicable law. Operators who need help in finding and eliminating unauthorized discharges may find the following guidance helpful: *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Chapters 7, 8, 9 at: https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf.

Part 2.1.2.10 Dust Generation and Vehicle Tracking of Industrial Materials

This Part requires operators to control generation of dust and off-site tracking of raw, final, or waste materials in order to minimize pollutant discharges. Dust control practices can reduce the activities and air movement that cause dust to be generated. Airborne particles pose a dual threat to the environment and human health. Dust carried off-site increases the likelihood of water pollution. Control measures to minimize the generation of dust include:

- *Vegetative Cover.* In areas not expected to handle vehicle traffic, vegetative stabilization of disturbed soil is often desirable. Such a practice reduces wind velocity at ground level, thus reducing the potential for dust to become airborne.
- *Mulch.* Mulching can be a quick and effective means of dust control for a recently disturbed area.
- *Wind Breaks*. Wind breaks are barriers (either natural or constructed) that reduce wind velocity through a site which then reduces the possibility of suspended particles. Wind breaks can be trees or shrubs left in place during site clearing or constructed barriers such as a wind fence, snow fence, tarp curtain, hay bale, crate wall or sediment wall.
- *Stone*. Stone can be an effective dust deterrent in areas where vegetation cannot be established.
- *Spray-on Chemical Soil Treatments (Palliatives).* Examples of chemical adhesives include anionic asphalt emulsion, latex emulsion, resin-water emulsions and calcium chloride. Chemical palliatives should be used only on mineral soils. When considering chemical application to suppress dust, determine whether the chemical is biodegradable or water-soluble and what effect its application could have on the surrounding environment, including waterbodies and wildlife.

To reduce vehicle tracking of materials, the operator should keep stored materials or materials that could be spilled away from all roads within the site. Specific measures such as setting up a wash site or separate pad to clean vehicles prior to their leaving the site may be effective at minimizing pollutant discharges from vehicle tracking as well (provided the wash water is not discharged).

Part 2.1.3 Numeric Effluent Limitations Based on Effluent Limitations Guidelines

This Part provides the applicable federal effluent limitations guidelines that facilities must comply with. The following table describes where these limits can be found in the permit.

Table 2-1 Stormwater-Specific Effluent Limitations Guidelines

Regulated Activity	40 CFR Part/Subpart	Effluent Limitation
Discharges resulting from spray down or intentional wetting of logs at wet deck storage areas	Part 429, Subpart I	See Part 8.A.8
Runoff from phosphate fertilizer manufacturing facilities	Part 418, Subpart A	See Part 8.C.5
Runoff from asphalt emulsion facilities	Part 443, Subpart A	See Part 8.D.5
Runoff from material storage piles at cement manufacturing facilities	Part 411, Subpart C	See Part 8.E.6
Mine dewatering discharges at crushed stone, construction sand and gravel, or industrial sand mining facilities	Part 436, Subparts B, C, or D	See Part 8.J.10
Runoff from hazardous waste landfills	Part 445, Subpart A	See Part 8.K.7
Runoff from non-hazardous waste landfills	Part 445, Subpart B	See Part 8.L.11
Runoff from coal storage piles at steam electric generating facilities	Part 423	See Part 8.O.8
Runoff containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Part 449	See Part 8.S.9

Part 2.2 Water Quality-Based Effluent Limitations

The 2021 MSGP includes water quality-based effluent limits (WQBELs) to ensure that MSGP authorized discharges will be controlled as necessary to meet applicable water quality standards, pursuant to CWA section 301(b)(1)(C) and 40 CFR 122.44(d)(1). The provisions of Part 2.2 constitute the WQBELs of the 2021 MSGP and supplement the permit's technology-based effluent limits in Part 2.1. The following is a list of the permit's WQBELs:

- Control discharges as necessary to meet applicable water quality standards of all affected states or tribes (See Part 2.2.1);

- Implement any additional measures that are necessary to be consistent with the assumptions and requirements of the applicable Total Maximum Daily Load (TMDL) and its wasteload allocation (WLA) (See Part 2.2.2.1). For discharges to impaired waters without a TMDL, conduct impaired waters monitoring (See Part 2.2.2.2). Additionally, new discharges to impaired waters must implement any measures required per the Part 1.1.6.2 eligibility requirements;
- Implement any additional measures that EPA determines are necessary to comply with applicable antidegradation requirements for discharges to Tier 2 or 2.5 waters (see Part 2.2.3).

Prior to or after initial discharge authorization, EPA may require operators to implement additional measures on a facility-specific basis, or require operators to obtain coverage under an individual permit, if information in the NOI, required reports, or other sources indicates that, after complying with the technology-based limits in Part 2.1 and the WQBELs in Part 2.2, discharges will not be controlled as necessary to meet water quality standards.

Facilities that achieve the permit's technology-based limits through the careful selection, design, installation, and implementation of effective stormwater control measures are likely to be controlling their stormwater discharges to a degree that would make additional water quality-based measures unnecessary. However, to ensure that this is so, the permit contains additional provisions in Part 2.2, which, along with the BAT/BPT/BCT limits in the permit, are as stringent as necessary to achieve water quality standards.

The WQBELs included in the permit continue to be non-numeric. EPA relies on a narrative limit to ensure discharges are controlled as necessary to meet applicable water quality standards, and to ensure that additional measures are employed where necessary to meet the narrative WQBELs, or to be consistent with the assumptions and requirements of an applicable TMDL and its WLA, or to comply with a state or tribe's antidegradation requirements. This is a reasonable approach for the 2021 MSGP, based on the following considerations:

- *Limited waterbody information available about individual dischargers*: EPA will not know prior to receiving NOIs where any new facilities are located and where they will discharge. In addition, existing facilities' NOI data from earlier permits has typically been difficult to access, and this factor plus other NOI system limitations have restricted the number and quality of NOI reviews that EPA could do. Facility type and location, and receiving water information are necessary for EPA to determine what, if any, special protections apply to that water. To assist operators in determining their receiving water information, EPA has a tool in NeT that will automatically identify their receiving water(s) and impairment status. EPA's receipt of the NOI and receiving water information may then trigger a review. For now, however, it is not possible to know what specific requirements apply to facilities *a priori*, and to include any such requirements in a general permit.
- *Review of the NOI and applicable watershed documents is the appropriate forum for deriving facility-specific WQBELs*: Once EPA receives an NOI for the new permit, the Agency will be better able to assess whether any more protective control measures are necessary. For instance, if an NOI indicates that the facility will discharge to an impaired waterbody with an EPA-approved or established TMDL, EPA can analyze the relevant information to determine whether any additional control measures are necessary to meet the permit's effluent limits and whether discharges will be consistent with the TMDL and WLAs. If the operator is unwilling or unable to implement such additional control measures (or other measures that would yield the same results), EPA may notify the

facility that it is not eligible for MSGP coverage and must instead apply for an individual permit. EPA may undertake a similar assessment process when facilities indicate that they are discharging to a waterbody designated as Tier 2 or 2.5 for antidegradation purposes.

Part 2.2.1 Water Quality Standards

This Part specifies that operators must control their discharge as necessary to meet applicable water quality standards of all affected states. EPA expects that compliance with the other conditions in the 2021 MSGP (e.g., the technology-based limits, corrective actions) will result in discharges that are controlled as necessary to meet applicable water quality standards. However, if an operator becomes aware, or EPA determines, that a discharge is not controlled as necessary such that the receiving water of the United States will not meet applicable water quality standards, corrective actions are required per Part 5. In addition, any time EPA determines that the discharge is not meeting the WQBEL (i.e., the discharge is not controlled as necessary such that the receiving water of the United States will not meet applicable water quality standards), the Agency may inform the operator that additional measures are needed, or require that the operator instead apply for an individual permit. The same applies to situations where additional measures are necessary for discharges to be consistent with an available WLA in an EPA-established or approved TMDL. In such situations, EPA will be available to help operators understand what they need to do to ensure that their discharges are consistent with any available WLAs.

Part 2.2.2 Discharges to Water Quality-Impaired Waters

This Part includes the requirements applicable to stormwater discharges to impaired waters. Operators will be considered to discharge to an impaired water if the first water of the United States discharged to is:

- Identified by a state, tribe, or EPA, pursuant to Section 303(d) of the CWA, as not meeting an applicable water quality standard, or;
- Addressed by an EPA-approved or established TMDL, or;
- Not in either of the above categories but the waterbody is covered by a pollution control program that meets the requirements of 40 CFR 130.7(b)(1).

Part 2.2.2.1 Existing Discharge to an Impaired Water with an EPA-Approved or Established TMDL

This Part specifies EPA may inform operators that additional requirements are necessary for the discharge to be consistent with the assumptions and requirements of an applicable TMDL and its WLA. Water quality-based effluent limits must be "consistent with the assumptions and requirements of any available wasteload allocation for the discharge," pursuant to 40 CFR 122.44(d)(1)(vii)(B). Where an operator indicates on its NOI that a discharge is to one of the types of waters this Part covers, EPA will review the applicable TMDL to determine whether it includes provisions that apply to the individual discharger or its industrial sector. If so, EPA will determine whether compliance with the existing permit limits is sufficient or what additional measures are necessary for the discharge to be consistent with the WLA. Alternatively, EPA may decide an individual permit application is necessary. Because WLAs for stormwater discharges may be specified in many different formats, it has not always been clear to operators what they need to do to ensure that their discharge is consistent with available WLAs. EPA has thus established a process to ensure that these requirements are properly interpreted and communicated by EPA to the facility in a way that is implementable.

Part 2.2.2.2 Existing Discharge to an Impaired Water without an EPA-Approved or Established TMDL

This Part reiterates that facilities discharging to impaired waters without an EPA-approved or established TMDL must still control their discharges as necessary to meet water quality standards (as also required per Part 2.2.1). EPA expects an operator will achieve this if it complies with the other requirements in the permit, including monitoring requirements applicable to impaired waters discharges in Part 4.2.5. However, if information in the NOI, required reports, or from other sources indicates that discharges are not controlled as necessary to meet applicable water quality standards, EPA may inform an operator that it needs to implement additional measures on a site-specific basis to ensure the WQBEL is met, or, alternatively, of the need to apply for an individual permit.

Part 2.2.2.3 New Discharger or New Source to an Impaired Water

This Part requires an operator that is a "new source" or meet the definition of a "new discharger" (see Appendix A) that discharge to impaired waters to maintain for the permit term any control measures in good working order that it has implemented to meet the eligibility requirements of Part 1.1.6.2.

Part 2.2.3 Tier 2 Antidegradation Requirements for New Dischargers or Increased Discharges

This provision applies to new dischargers, new sources, and existing dischargers whose discharges directly to waters designated by a state or tribe as Tier 2 or 2.5 (defined in Appendix A) have increased. In general, any existing discharger required to notify EPA of an increased discharge consistent with Part 7.6 (i.e., a "planned changes" report) will be considered to have an increased discharge. For antidegradation purposes, such dischargers must implement any additional measures that EPA determines are necessary to comply with the permit's WQBEL, including the applicable state or federal antidegradation requirements (state and tribal water quality standards are required to contain an antidegradation policy pursuant to 40 CFR 131.12). EPA may also, per the applicable antidegradation policy, notify operators that they cannot be covered under the MSGP due to the unique characteristics of the discharge or the receiving waters, and that they must apply for an individual permit. Conversely, if EPA does not notify an operator that additional measures are needed to ensure compliance with antidegradation requirements, the operator is authorized to discharge under the permit. New dischargers to waters designated as Tier 3 outstanding national resource waters, as defined in 40 CFR 131.12(a)(3), are not eligible for coverage under the 2021 MSGP (see Part 1.1.6.3) and must apply for an individual permit.

Waters designated as Tier 2 by states and tribes can generally be described as follows: Tier 2 protects "high quality" waters -- waterbodies where existing conditions are better than necessary to support CWA section 101(a)(2) "fishable/swimmable" uses. Some states have designated waters using criteria which EPA considers to be more stringent than the federal Tier 2 designation, but less stringent than the federal Tier 3 designation. EPA calls such waters "Tier 2.5." Water quality may be lowered in Tier 2 or Tier 2.5 waters where "allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located." 40 CFR 131.12(a)(2). The process for making this determination is what is commonly known as "Tier 2 review." The essence of a Tier 2 review is an analysis of alternatives to the proposed new or increased discharge. 63 Fed. Reg. 36, 742, 36,784 (col. 1)(July 8, 1998). In no case may water quality be lowered to a level that would interfere with existing or designated uses. 40 CFR 131.12(a)(1), 122.44(d). States have broad discretion in identifying Tier 2 waters. 63 Fed. Reg.

at 36,782-83. In addition, states and tribes may adopt what is known as a "significance threshold." A "significance threshold" is a *de minimis* level of lowering of water quality below which the effects on water quality do not require Tier 2 review. *Id.* at 36,783.

Note about alternate antidegradation designations used by some states

Some states have adopted alternative approaches to designating Tier 2 or Tier 3 waters. These are collectively referred to as "Tier 2.5" waters since they fall between Tiers 2 and 3 in terms of characteristics and regulations supporting them. Tier 2.5 waters are commonly described as providing protection more stringent than Tier 2 but allowing some added flexibility that a Tier 3 outstanding national resource water would not. Refer to *Memorandum from William Diamond* (Former Director, Standards and Applied Science Division) *to Victoria Binetti* (Chief, Region III, Program and Support Branch), June 13, 1991.

Examples of Tier 2.5 waters exist in Massachusetts, which designates "outstanding resource waters" (ORWs). These waters have exceptional sociologic, recreational, ecological and/or aesthetic values and are subject to more stringent requirements under both the Massachusetts Water Quality Standards and the Massachusetts Stormwater Management Standards. ORWs include vernal pools certified by the Natural Heritage Program of the Massachusetts Department of Fisheries and Wildlife and Environmental Law Enforcement, all Class A designated public water supplies with their bordering vegetated wetlands, and other waters specifically designated. All of the provisions in the MSGP pertaining to Tier 2 waters apply equally to Tier 2.5 waters. And, where there is a reference in this Fact Sheet to Tier 2 waters, the reader should infer that EPA intends to include Tier 2.5 waters as well.

Part 2.3 Requirements Relating to Endangered Species, Historic Properties, and Federal CERCLA Sites

This Part requires operators to continue to implement any agreed-upon measures that were imposed as a condition or prerequisite for becoming eligible under Parts 1.1.4, 1.1.5, and/or 1.1.7 throughout the permit term. Any time an operator becomes aware, or EPA determines, that discharges and/or discharge-related activities are likely to adversely affect listed species and/or critical habitat, have an effect on historic properties, or that your facility discharges to a CERCLA Site in EPA Region 10 and listed in Appendix P after you have obtained coverage under this permit, EPA may impose additional measures on a site-specific basis, or require the operator to obtain coverage under an individual permit.

Part 3 Inspections

Part 3.1 Routine Facility Inspections

This Part was previously all one, larger section in the 2015 MSGP. For the 2021 MSGP, EPA has broken the section up into different parts (i.e., inspection personnel, areas that you must inspect, what you must look for during an inspection, and inspection frequency) to more clearly identify the requirements and improve permit readability for operators.

Part 3.1.1 Inspection Personnel

This Part requires that qualified personnel must perform the inspections. EPA clarifies that qualified personnel may be a member of the stormwater pollution prevention team, or if the qualified personnel is a third-party the operator hires (i.e., a contractor), at least one member of the stormwater pollution prevention team must participate in the inspection. Qualified personnel, as defined in Appendix A, are those who are knowledgeable in the principles and practices of industrial stormwater controls and pollution prevention, and who

possess the education and ability to assess conditions at the industrial facility that could impact stormwater quality, and the education and ability to assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit. The inspector must consider the results of visual and analytical monitoring (if any) for the past year when planning and conducting inspections.

Part 3.1.2 Areas that You Must Inspect

This Part requires operators to conduct inspections during normal facility hours in areas including, but not limited to, the following:

- Areas where industrial materials or activities are exposed to stormwater;
- Areas identified in the SWPPP that are potential pollutant sources (see Part 6.2.3);
- Areas where spills and leaks have occurred in the past 3 years;
- Discharge points; and
- Control measures used to comply with the effluent limits contained in the permit.

Part 3.1.3 What Qualified Personnel Must Look for During an Inspection

This Part requires that the qualified personnel examine or look out for during an inspection including, but not limited to, the following:

- Industrial materials, residue or trash that may have or could come into contact with stormwater;
- Leaks or spills from industrial equipment, drums, tanks and other containers;
- Offsite tracking of industrial or waste materials, or sediment where vehicles enter or exit the site;
- Tracking or blowing of raw, final or waste materials from areas of no exposure to exposed areas;
- Erosion of soils at your facility, channel and streambank erosion and scour in the immediate vicinity of discharge points, per Part 2.1.2.5;
- Non-authorized non-stormwater discharges, per Part 2.1.2.9;
- Control measures needing replacement, maintenance or repair.

EPA added erosion and non-stormwater discharges as issues the operator must look out for during an inspection, as these requirements are mentioned in other parts of the permit but were not specifically called out as regular concerns to look for. EPA includes them in the inspection section so that operators do not overlook these issues on a regular basis during inspections which may help them comply with the other applicable parts.

Part 3.1.4 Inspection Frequency

This Part requires the qualified personnel to conduct inspections at least quarterly (i.e., once each calendar quarter), or in some instances more frequently (e.g., monthly). Increased frequency (i.e., more than quarterly) may be appropriate for some types of equipment, processes and stormwater control measures, or areas of the facility with significant activities and materials exposed to stormwater. For instance, because vehicle and equipment maintenance and cleaning are particularly dirty activities, EPA recommends that they are inspected more frequently. In addition, properly functioning controls for these activities, such as oil-water separators, are very important for an effective stormwater program, and

should also be inspected more frequently (but in no case may be inspected less than quarterly). In another example, inspection of outdoor areas associated with regular industrial activity may benefit from more frequent inspections to ensure that the site is swept, garbage is picked up, drips and spills are cleaned, etc., on a regular basis. The operator must document the relevant inspection schedules in the SWPPP. During each calendar year, the operator must conduct at least one of the routine inspections during a period when a stormwater discharge is occurring. This inspection will enable operators to better identify sources of pollutants discharged via stormwater from the facility and to actively observe the effectiveness of control measures implemented to comply with effluent limits. Operators must also observe discharge points, as defined in Appendix A, during this inspection, or, if such discharge locations are inaccessible, inspect nearby downstream locations.

Part 3.1.5 Exceptions to Routine Facility Inspections for Inactive and Unstaffed Sites

Operators of inactive and unstaffed sites may invoke an exception from routine inspections if they eliminate all exposure of industrial activities and materials to stormwater and document this in the SWPPP. This waiver is available to all sectors covered under the 2021 MSGP. In addition, inactive and unstaffed mines covered under Sectors G, H, and J are eligible for this waiver even if all exposure has not been eliminated, due to the unique issues affecting such facilities, such as the remoteness of many mining sites. Facilities that make use of this waiver must still implement any necessary control measures to comply with applicable permit requirements and must still conduct an annual inspection.

Part 3.1.6 Routine Facility Inspection Documentation

This Part describes the specific information the operator must document for each routine inspection. Additionally, some industry sectors have specific routine inspection requirements, which are described in Part 8 of the permit for the relevant sectors. This Part specifies that the operator conduct any corrective action required as a result of a routine facility inspection consistent with Part 5 of the permit. This Part also clarifies that if a discharge visual assessment is performed during a routine facility inspection, the results of this assessment may be included in the same report as the routine facility inspection report. At a minimum, the operator must document the following for each routine inspection:

- The inspection date and time;
- The name(s) and signature(s) of the inspector(s);
- Weather information;
- All observations relating to the implementation of stormwater control measures at the facility, including:
    - A description of any stormwater discharges occurring at the time of the inspection;
    - Any previously unidentified stormwater discharges from and/or pollutant sources at the site;
    - Any evidence of, or the potential for, pollutants entering the stormwater drainage system;
    - Observations regarding the physical condition of and around all stormwater discharge points, including any flow dissipation devices, and evidence of pollutants in discharges and/or the receiving water;

- Any stormwater control measures needing maintenance, repairs, or replacement.

- Any additional stormwater control measures needed to comply with the permit requirements;
- Any incidents of noncompliance; and
- A statement signed and certified in accordance with Appendix B, Subsection 11.

Part 3.2 Quarterly Visual Assessment of Stormwater Discharges

This Part was previously all one, larger section in the 2015 MSGP. For the 2021 MSGP, EPA has broken the section up into different parts (i.e., visual assessment frequency, visual assessment procedures, and visual assessment documentation) to more clearly identify the requirements and improve permit readability for operators.

Quarterly visual assessments of stormwater discharges provide a useful and inexpensive means for operators to evaluate the effectiveness of their control measures. Although the visual examination cannot assess the chemical properties of the facility's stormwater discharges, the examination will provide meaningful results upon which the operator may act quickly. All industrial sectors covered by the 2021 MSGP must conduct these examinations.

Part 3.2.1 Visual Assessment Frequency

This Part requires that operators collect and visually examine a grab sample of stormwater discharges from each discharge point (except as noted in Part 3.2.4) once each quarter for the entire permit term. These samples are not required to be collected consistent with 40 CFR Part 136 procedures but must be collected in such a manner that the samples are representative of the stormwater discharge. Guidance on monitoring is available at https://www.epa.gov/sites/production/files/2015-11/documents/msgp_monitoring_guide.pdf.

Part 3.2.2 Visual Assessment Procedures

This Part requires the operator to visually assess the sample in a clean, colorless glass or plastic container for the presence of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of stormwater pollution. No analytical tests are required to be performed on these samples. The operator must take the grab samples within the first 30 minutes or a soon as practicable after the occurrence of an actual discharge from the site (including documentation of why sampling was not practicable within the first 30 minutes, if applicable). For storm events, operators must make the assessment on discharges that occur at least 72 hours (three days) from the previous discharge. The 72-hour (three-day) storm interval does not apply if the operator can document that less than a 72-hour (three-day) interval is representative for local storm events during the sampling period. Whenever the visual assessment shows evidence of pollutants discharged via stormwater, corrective action procedures must be initiated per Part 5.

Part 3.2.3 Visual Assessment Documentation

This Part requires the operator to document the results of the visual assessments in a report maintained onsite with the SWPPP. The report must include the sample location, date and time of both sample collection and visual assessment, personnel collecting the sample and performing visual assessments and their signatures, nature of the discharge (i.e., runoff or

snowmelt), results of the observations, and probable sources of any observed stormwater contamination.

When conducting a stormwater visual examination, the pollution prevention team, or individual team member, must attempt to relate the results of the examination to potential sources of stormwater contamination on the site. For example, should an oil sheen be observed, facility personnel (preferably members of the pollution prevention team) must conduct an inspection of the area of the site draining to the examined discharge to look for sources of spilled oil, leaks, etc. If a source can be located, then this information would necessitate that the operator immediately conduct a clean-up of the pollutant source, and/or to revise control measures to minimize the contaminant source.

Part 3.2.4 Exceptions to Quarterly Visual Assessments

This Part includes the same exceptions from the 2015 MSGP to these requirements in order to account for circumstances during which conducting quarterly visual assessments may not be feasible, namely during adverse (e.g., dangerous) weather conditions, or in parts of the country subject to climates with irregular stormwater discharges, or to large amounts of snowfall. Where these types of conditions prevent a facility from performing these assessments quarterly, operators may modify their assessment schedule such that the four assessments are conducted over the course of the year during periods when discharges, be it from rain or snow, actually occur and can be safely observed.

Operators of inactive and unstaffed facilities may invoke a visual assessment exception if they eliminate all exposure of industrial activities and materials to stormwater and document this in the SWPPP. This waiver is available to all sectors covered under the 2021 MSGP. In addition, inactive and unstaffed mines covered under Sectors G, H, and J are eligible for this waiver even if all exposure has not been eliminated due to the unique issues affecting such facilities, such as the remoteness of many mining sites. Facilities that make use of this waiver must still implement any necessary stormwater control measures to comply with applicable permit requirements.

Operators with two or more essentially identical discharge points may also elect to conduct a visual assessment at just one of these discharge points each quarter, but must perform their quarterly assessments on a rotating basis to ensure that they periodically observe each substantially identical discharge point (SIDP) throughout the period of permit coverage. If the operator identifies stormwater contamination through visual monitoring performed at a SIDP, the operator must assess and modify his/her control measures as appropriate for each discharge point represented by the monitored discharge point. This approach ensures that operators will assess discharges from the entire site over the term of the permit and will address any identified problems at all SIDPs where the problem may be occurring.

Part 4 Monitoring

This Part was previously Part 6 in the 2015 MSGP. For the 2021 MSGP, EPA has moved it to Part 4, so that operators read the monitoring requirements before the corrective action and Additional Implementation Measures (AIM) requirements in Part 5 and the SWPPP documentation requirements in Part 6.

This Part requires that operators collect, analyze, and document stormwater samples consistent with the procedures described in within Part 6 and Appendix B, Subsections 10 – 12, and any additional sector-specific or state/tribal-specific requirements in Parts 8 and 9, respectively. All monitoring data collected under this Part is publicly available.

Part 4.1 Monitoring Procedures

The 2021 MSGP requires certain facilities to sample and analyze their stormwater discharges as a way to assess the effectiveness of stormwater control measures in meeting the effluent limits contained in the permit. Analytical monitoring measures the concentration of a pollutant in a stormwater discharge. Analytical results are quantitative and therefore can be used to compare discharge results and to quantify the effectiveness of stormwater control measures, including identifying pollutants that are not being sufficiently controlled.

Part 4.1 identifies procedures for collecting samples and identifies where, when, and what to sample. These requirements are unchanged from those in the 2015 MSGP, with the addition of an explicit clarification that composite sampling is allowed for indicator monitoring and benchmark monitoring. These requirements are in addition to the standard permit conditions described in Appendix B, Subsection B.10.

Part 4.1.1 Monitored Discharge Points

The monitoring requirements in the permit apply to each stormwater discharge point associated with industrial activity, unless the operator qualifies for the substantially identical discharge point (SIDP) exemption as described in this section (except for numeric effluent limitation monitoring; see below). This SIDP provision provides facilities that have multiple stormwater discharge points with a means to reduce the number of discharge points that must be sampled and analyzed while still providing monitoring data that are indicative of discharges from each discharge point. This may result in a substantial reduction of resources required for a facility to comply with analytical monitoring requirements. To be considered a SIDP, the discharge point must have generally similar industrial activities, stormwater control measures, exposed materials that may significantly contribute pollutants to stormwater, and runoff coefficients of their drainage areas. When operators believe their facility has two or more discharge points that qualify as SIDPs, they may monitor only one of these discharge points and report that the quantitative data also apply to the other SIDPs. Operators must also document the location of each of the SIDPs and explain why the SIDPs are expected to discharge substantially identical stormwater, addressing each of the factors to be considered in this determination (industrial activities, control measures, exposed materials and runoff coefficients). Operators do not need advance EPA approval for this determination; however, EPA may subsequently determine that discharge points are not substantially identical and require sampling of additional discharge points. EPA clarifies in Part 4.1.1 that the allowance for monitoring only one of the SIDPs is not applicable to any discharge point with numeric effluent limitations. Operators must monitor each discharge point covered by a numeric effluent limitation as identified in Part 4.2.3.

Part 4.1.2 Commingled Discharges

This Part requires that if stormwater discharges associated with industrial activity commingle with discharges not authorized by the MSGP (e.g., unregulated stormwater or other permitted wastewater), then the operator must sample the stormwater discharge before it mixes with the other discharges when practicable. This provision is intended to ensure that monitoring results are representative of discharges covered under the permit and not indicative of other discharges from the facility. EPA acknowledges that in certain instances, such as when authorized stormwater discharges are commingled with other waste streams prior to on-site treatment, sampling only authorized stormwater may be impracticable.

Part 4.1.3 Measurable Storm Events

This Part specifies the characteristics of a measurable storm event as an event that results in a stormwater discharge from the permitted facility. By defining a storm event as one that results in a discharge, it affords the operator flexibility to sample during any storm event that produces a discharge, rather than having to ensure that a minimum magnitude is reached. The permit requires that operators collect samples from the discharge resulting from a storm event that occurs at least 72 hours (3 days) after a previous measurable storm event. The 72-hour (3-day) period is included in an attempt to eliminate monitoring discharges soon after a previous storm event may have washed away residual pollutants; operators may waive this requirement where they document that less than a 72-hour (3-day) interval is representative for local storm events during the season when sampling is being conducted. The permit allows for sampling of snowmelt in addition to stormwater. The 72-hour (3-day) requirement does not apply to snowmelt if the actual discharge is not clearly tied to a specific snow event (i.e., may be the accumulation from multiple events). The permit also specifies the type of documentation required to show consistency with this requirement.

Part 4.1.4 Sample Type

This Part specifies that operators must take a minimum of one grab sample, or alternatively a composite sample, from the measurable storm event being monitored. This will allow operators to make accurate comparisons of monitoring results to the corresponding benchmark threshold levels or effluent limitations.

For grab samples, operators must take the grab sample during the first 30 minutes of the discharge, except for snowmelt monitoring which has no 30-minute requirement since (1) discharge typically does not occur during a snow event (2) collecting a snowmelt sample within 30 minutes of commencement of discharge would very likely be impractical (because the snow will not have melted yet), and (3) the "first flush" effects of snowmelt are not as well defined (i.e., the time when the highest pollutant concentrations occur). If operators collect more than one grab sample, only those samples the operator collects during the first 30 minutes of discharge are to be used for performing any necessary analyses. If it is not possible to collect a grab sample during the first 30 minutes, facilities can take a grab sample as soon as possible, but the operator must document and keep with the SWPPP an explanation of why a grab sample during the first 30 minutes could not be collected.

EPA does not require composite sampling. EPA allows operators use composite sampling for indicator monitoring and benchmark monitoring if they choose to do so. Composite samples can provide a more comprehensive characterization of the facility's discharge than individual grab samples but can be costlier in some ways. EPA had allowed facilities to use composite sampling in previous versions of the MSGP, but in this 2021 MSGP EPA is explicitly allowing composite sampling except for those parameters that require a short holding time before processing, such as pH and those parameters that can degrade or transform quickly. All indicator monitoring and benchmark monitoring, whether collected via grab samples or composite samples, must be analyzed consistent with 40 CFR Part 136 analytical methods and, for benchmark monitoring, using test procedures with quantitation limits at or below benchmark thresholds for all benchmark parameters for which you are required to sample.

Composite sampling may be manual or automated and must be initiated during the first 30 minutes of the same storm event. For manual sampling, a facility would collect multiple samples during a storm event and combine portions of each sample – or aliquots – to form a single composite sample that is then analyzed. For automated sampling, a facility would install an automatic sampler at the end of a flume, weir, or other similar device to direct the

stormwater to a collection point. The sampler could be set up to collect samples on some interval, and, depending on the equipment, may be able to combine individual samples automatically into a composite sample. Automated samplers can also collect either flow-weighted or time-weighted composites. Using automated samplers can eliminate the need for a person to physically collect samples, which can be helpful if a storm happens outside of normal business hours. These samplers can lower labor costs and mitigate safety concerns but require setup and maintenance which would not otherwise be required if done manually.

Operators may also find that portable electronic meters, sensors, and data loggers used in the field can be a cost-effective way to monitor many types of parameters like turbidity, conductivity, temperature, dissolved oxygen, and pH in-situ. Where such in-situ measurements are taken, the composite sampling methodology shall be modified by simply calculating an average of all individual measurements, weighted by flow volume if applicable.

Part 4.1.5 Adverse Weather Conditions

When adverse weather conditions make sampling dangerous, storm event monitoring may be postponed until the next discharge event. This provision applies to serious weather conditions such as lightning, flash flooding, and high winds. This provision should not be used as an excuse for not conducting sampling under conditions associated with more typical storm events. Adverse weather conditions do not exempt operators from having to file a benchmark monitoring report in accordance with the corresponding reporting period. In many cases, sampling during a subsequent non-hazardous storm event may still be possible during the reporting period. Where this is not possible, operators are still required to report the inability to monitor as "no data" during the usual reporting period. This provision applies to all monitoring requirements of the permit.

Part 4.1.6 Facilities in Climates with Irregular Stormwater Discharges

This Part provides for the implementation of alternative monitoring schedules for facilities located in arid and semi-arid climates, or in areas subject to snow accumulation or prolonged freezing. Alternate monitoring schedules allow operators the flexibility to allocate their resources effectively to capture the required number of stormwater discharge events during the permit term. This flexibility will yield a more accurate characterization of pollutant concentrations in facility stormwater discharges during times of the year when precipitation is actually occurring, and during snowmelt discharges in areas subject to extended winter seasons and prolonged freezing. This special exception will provide EPA with more data that can be used to evaluate facility pollutant levels. Incumbent with this flexibility is operators' responsibility to identify those periods during which discharges are most likely to occur and establish a schedule distributing the required monitoring events during those periods.

Part 4.1.7 Monitoring Periods

This Part specifies that the monitoring requirements commence during the first full calendar quarter following either May 30, 2021 or following the date of authorization to discharge, whichever date comes later. For quarterly benchmark monitoring, this Part defines the calendar quarters during which monitoring must occur and also describes when the first monitoring quarter is to commence. Operators in climates with irregular stormwater discharges may define alternate monitoring periods, as described above, provided that the operator keep documentation of the revised schedule with the SWPPP. Note that EPA's electronic discharge monitoring report (DMR) system, Net-DMR, will automatically generate

pre-populated DMR forms based on the facility's sector and other information provided in the NOI form.

Part 4.1.8 Monitoring for Authorized Non-Stormwater Discharges

This Part states that operators are only required to monitor authorized non-stormwater discharges in Part 1.2.2 when they are commingled with stormwater discharges associated with industrial activity.

Part 4.1.9 Monitoring Reports

This Part specifies that monitoring data must be reported using EPA's electronic DMR tool, Net-DMR, as described in Part 7.3 (unless a waiver from electronic reporting has been granted from the applicable EPA Regional Office, in which case a paper DMR form may be submitted).

Part 4.2 Required Monitoring

The 2021 MSGP contains six types of monitoring requirements:

- Indicator monitoring (Part 4.2.1)
- Benchmark monitoring (Part 4.2.2);
- Effluent limitations monitoring (Part 4.2.3);
- State- or tribal-specific monitoring (Part 4.2.4);
- Impaired waters monitoring (Part 4.2.5); and
- Other monitoring required by EPA (Part 4.2.6).

Unless otherwise specified, samples must be analyzed consistent with 40 CFR Part 136 analytical methods that are sufficiently sensitive for the monitored parameter.

The frequency of monitoring depends on which of these six types of monitoring applies to each permitted facility. If any of these monitoring requirements overlap, operators may use a single sample to comply with those overlapping requirements. The permit also specifies that when an effluent limitation is lower than the benchmark threshold for the same pollutant,[6] the Additional Implementation Measure (AIM) trigger is based on an exceedance of the effluent limitation, which would subject the facility to the AIM requirements of Part 5.2. EPA reminds operators however that benchmark thresholds are not effluent limitations. See Part 4.2.2.

Per Part 1.3.7, in the event that the permit is administratively continued, monitoring requirements remain in force and effect at their original frequency during any continuance for operators that were covered prior to permit expiration. In the event that monitoring results are unable to be electronically reported in NetDMR, operators must maintain monitoring results and records with their SWPPP.

Part 4.2.1 Indicator Monitoring

Part 4.2.1.1.a Indicator Monitoring for pH, TSS, and COD

The 2021 MSGP requires "report-only" indicator monitoring for pH, Total Suspended Solids (TSS), and Chemical Oxygen Demand (COD) for operators in subsectors without

[6] Note that benchmarks thresholds are not effluent limitations, see Part 4.2.2 of the Permit.

benchmark monitoring requirements: B2, C5, D2, E3, F5, I1, J3, L2, N2, O1, P1, R1, T1, U3, V1, W1, X1, Y2, Z1, AB1, AC1, and AD1. Indicator monitoring for these three parameters will provide a baseline and comparable understanding of industrial stormwater discharge quality, potential water quality problems, and stormwater control measure effectiveness for these operators.

These three parameters are appropriate as broad, low-cost indicators of stormwater pollution, as recommended in the 2019 National Research Council (NRC) study:

- "pH detects excess acidic or alkaline substances in the water, and pH excursions indicate corrosive (acidic or basic) and/or toxic concerns. Stormwater discharges that are excessively polluted may not exhibit problems with respect to pH. However, pH excursions that are highly acidic or highly alkaline and do not fall into the benchmark range (6.0–9.0) can be indicative of a major polluting event or process failure and can be impactful to receiving waters. Unexpected pH values also can indicate that a stormwater treatment system is not operating properly" (NRC, 27-28).
- "Total Suspended Solids (TSS) is a measure of suspended particulate matter in a water sample. Particulate matter can result from erosion of industrial soils, deposited particulate matter on the drainage area, erosion/corrosion of materials present on the site, and general overall site cleanliness. TSS also provides information about possible high concentrations of numerous other pollutants that will partition onto particulate matter, including phosphorus, many heavy metals, and many hydrophobic organic chemicals" (NRC, 28).
- "Chemical Oxygen Demand (COD) is a surrogate measure of organic pollutants in water (through measurement of oxygen demand). It is a conventional water quality parameter with established industrial stormwater benchmarks. In addition to the measure of oxygen demand, high COD can also be indicative of oils and hydrocarbon pollution and, as with TSS, can be an indicator of overall site cleanliness. Increases in COD could also indicate problems with the treatment SCM effectiveness, including the need for maintenance" (NRC, 27).

The NRC study states that pH, TSS, and COD are direct measures of water quality and can be indicators of broader water quality problems and the presence of other pollutants. In addition, the study says these parameters can indicate absence, neglect, or failure of a stormwater control measure, which can lead to high concentrations of potential pollutants (NRC, 28).

Although the NRC study recommended that EPA implement some type of "industry-wide" or "universal" benchmark monitoring for these parameters for all sectors, for the 2021 MSGP, EPA is requiring indicator monitoring for pH, TSS, and COD as "report-only" for operators in the 22 subsectors without sector-specific benchmarks. Indicator monitoring for these subsectors is appropriate, given that the 2015 MSGP only required sector-specific benchmark monitoring for around 55 percent of MSGP subsectors; the other 45 percent of subsectors did not have any chemical-specific analytical benchmark monitoring, meaning these operators were only conducting visual monitoring and collecting little, if any, numeric data on performance of their stormwater control measures to further ensure compliance with water quality standards. The 2021 MSGP suspended benchmark monitoring for iron, resulting in the elimination of benchmark monitoring requirements for subsectors L2 and O1. With these changes, 22 subsectors under the 2021 MSGP without sector-specific benchmark monitoring, around 40 percent of total facilities, are now required to conduct indicator monitoring for pH, TSS, and COD.

Indicator monitoring for applicable operators is required on a quarterly basis for the entirety of permit coverage as "report-only." Unlike sector-specific benchmark monitoring, indicator monitoring cannot be discontinued at any time during permit coverage. Indicator monitoring also does not have a threshold or baseline value for comparison, therefore no follow-up action is triggered or required based on the sampling results in this part. The requirement in Part 2.2.1 to meet applicable water quality standards still applies. Operators may find it useful to evaluate and compare indicator monitoring data over time to identify any fluctuating values and why they may be occurring, and further inform any revisions to your SWPPP/SCMs if necessary. Examples of possible appropriate reviews and revisions to the SWPPP/SCMs based on high indicator monitoring values include: reviewing sources of pollution or any changes to performed industrial activities and processes; reviewing spill and leak procedures, and/or non-stormwater discharges; conducting a single comprehensive clean-up, implementing a new stormwater control measure, and/or increasing inspections. EPA encourages operators to proactively use their sampling results to understand where the SCMs are working if values are low and improve their stormwater management program if values are high, relative to other samples. Based on indicator monitoring data collected and analyzed under the 2021 MSGP, which will be publicly available as with all other monitoring data under the MSGP, EPA may evaluate whether sector/subsector-specific benchmarks are warranted in a future proposed permit. For the next proposed MSGP, EPA will also evaluate the indicator monitoring data to inform any future proposed changes in this requirement, including applicability and frequency.

EPA emphasizes that indicator monitoring parameters are neither benchmark monitoring nor numeric effluent limitations. However, failure to conduct and report indicator monitoring is a permit violation. This part does not replace or modify any requirement for operators that must monitor for pH, TSS, and/or COD under any other type of required monitoring, including as a sector-specific benchmark, annual monitoring for impaired waters, and annual effluent limitations guidelines monitoring.

Part 4.2.1.1.b Indicator Monitoring for PAHs

Background

The 2021 MSGP requires indicator monitoring for PAHs for the following operators, given the types of activities they may conduct: operators in all sectors with stormwater discharges from paved surfaces that will be initially sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit; operators in sectors A (facilities that manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation), C (SIC Code 2911), D, F, H, I, M, O, P (SIC Codes 4011, 4013, and 5171), Q (SIC Code ~~4491~~4493), R, and S. Facilities in the specified sectors must monitor for PAHs bi-annually (i.e., sample twice per year) in their first and fourth years of permit coverage. EPA plans to use the monitoring data collected to conduct an initial quantitative assessment of the levels of PAHs in industrial stormwater, further identify industrial activities with the potential to discharge PAHs in stormwater, and inform future consideration of PAH benchmark monitoring for sectors with the potential to discharge PAHs in stormwater.

Polycyclic Aromatic Hydrocarbons

PAHs are a group of chemicals that are persistent in the environment. PAHs have both natural and man-made sources. Natural sources include wildfires, volcanic eruptions, and degradation of materials within sediments and fossil fuels. Man-made sources include the incomplete burning of organic materials like coal, oil, gas, wood, and garbage, vehicle

exhaust, asphalt, coal-tar sealcoat, and creosote (ATSDR, 2011; EPA, 2009; CDC, 2009). According to the U.S. Department of Health and Human Services, coal tars and coal-tar pitches are known to be human carcinogens based on studies in humans and 15 PAHs are listed as "reasonably anticipated to be human carcinogens" (2014).

PAHs are listed on EPA's Toxic Pollutants list at 40 CFR 401.15. The Toxic Pollutant List was developed in 1976 and subsequently added to the CWA by Congress in 1977. The list was intended to be used by EPA and states as a starting point to ensure that Effluent Guidelines regulations, water quality criteria and standards, and NPDES permit requirements addressed the problems of toxics in waterways (EPA, 2020).

The Toxic Pollutants list consisted of broad categories of pollutants rather than specific, individual pollutants. Therefore, EPA developed the Priority Pollutant List in 1977 to make implementation of the Toxic Pollutant List more practical for water testing and regulatory purposes. The list of 126 Priority Pollutants can be found in 40 CFR Part 423 (Appendix A). Of the hundreds of known PAHs, EPA has designated 16 as Priority Pollutants: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene.

Many PAHs can have impacts on human health and the environment. Several PAHs have been shown to be extremely toxic to and bioaccumulate in fish and aquatic invertebrates, and are known or probable human carcinogens (EPA Integrated Risk Information System (IRIS) 2014; NRC, 2019; Scoggins, 2007; U.S. Department of Health and Human Services, 2014).

One study in coastal South Carolina performed ecological and human health screening assessments of sediment data from two other studies (Weinstein, 2010). The authors calculated ratios using the mean individual PAH levels in the pond sediments to the published preliminary remediation goals (PRG) for that individual PAH (PRG-HQ). Values less than 1 were considered health protective of human exposures. The authors found that four commercial ponds, one low density residential pond, and one golf course pond had PRG-HQ values greater than one for several carcinogenic PAHs and suggested that further study was warranted.

Although EPA does not have national recommended aquatic life criteria for individual or total PAHs, some states have developed criteria for certain individual PAHs (e.g., Illinois, Kansas, Colorado, and Arizona). In addition, EPA has not required any PAH benchmark monitoring requirements for any sector covered under the MSGP. The NRC study recommended that EPA collect data or require monitoring related to PAHs in the MSGP to determine an adequate surrogate or if additional PAH monitoring is warranted (NRC, 2019).

Indicator Monitoring for PAHs Related to the Use of Coal-Tar Sealcoat

Some industrial facilities covered under the MSGP use coal-tar sealcoat to initially seal or to re-seal their paved surfaces where industrial activities are located. These surfaces could potentially release PAHs into the environment when exposed to precipitation resulting in stormwater discharges of PAHs. Operators who, during coverage under the permit, use coal-tar sealcoat to initially seal or to re-seal their paved surfaces where industrial activities

are located and thereby may discharge PAHs via stormwater, must conduct indicator monitoring for PAHs.

PAHs and Coal-tar Sealcoat

Coal-tar sealcoat is a type of sealant used to maintain and protect driveway and parking lot asphalt pavement. Coal-tar sealcoat typically contains 20 to 35% coal tar pitch which is made up of 50% or more PAHs by weight (Mahler et al., 2005).

Coal-tar sealcoat, like other pavement, is exposed to the elements and undergoes weathering and abrasion that can cause dust and particles containing PAHs to break off. Dust and particles containing PAHs can then be picked up by stormwater and transported to stormwater control measures or directly discharged to receiving waters where it can accumulate in sediments and soils. Manufacturers recommend reapplying the sealants every two to three years due to wear/abrasion (Link).

Studies have observed sub-lethal effects of coal-tar sealcoats particles in sediments for both amphibians (Bommarito et al., 2010; Bryer and Willingham, 2006) and benthic macroinvertebrates (Scoggins et al., 2007). Studying cell lines from specific organisms can help to identify effects of treatments such as cell-level genetic abnormalities and damage under controlled conditions. A study examined non-transformed rainbow trout Waterloo1(RTS-W1) fish liver cell line that was exposed to runoff collected up to 36 days after coal-tar sealcoat application. This study found the runoff to be genotoxic, meaning that damage to cell-leveled genetic material was caused by exposure and significant genotoxicity occurred with a 1:100 dilution of runoff (Kienzler et al., 2015).

As referenced in Van Metre et al. (2009), anecdotal reports indicate that use of coal-tar sealcoat is higher east of the Continental Divide than west of the Continental Divide, where use of asphalt-based sealcoat is higher. A geographical trend in the use of coal-tar sealcoat would be consistent with the fact that integrated steel and coke processing industries (of which coal tar pitch is a by-product) were historically located east of the Continental Divide for resource and economic reasons during the 19th and 20th centuries. More prevalent use of coal-tar sealant in the east and limited use in the west may also explain why watershed studies from the east and west coasts show disparate PAH loading concentrations from coal-tar sealant.

On the east coast, the New York Academy of Sciences completed a report in 2007 on pollution prevention and management strategies for PAHs in the New York/New Jersey Harbor (Valle et al., 2007). Surfaces sealed with refined coal tar-based sealants are listed as 1 of 11 major sources that each contribute more than 2 percent of the total PAHs released to air, water, or land. Using yields calculated in Mahler et al. (2005) and estimates of the amount of sealed surface area in the watershed, the authors estimated that between 900 and 5800 kg of particulate-bound PAHs were released per year from surfaces sealed with coal-tar sealants in New York/New Jersey Harbor. The study also acknowledges that these estimates are likely on the low end given that "certain weather conditions, not captured in the estimated yields, will induce degradation of the sealant, and that volatilization of PAHs is not captured by this approach."

West of the continental divide, the Washington State Department of Ecology conducted a watershed-wide analysis in the Puget Sound to estimate toxic pollutant loadings through major pathways such as surface water runoff and to provide data on pollutant concentrations in surface runoff from different land cover types, including commercial/industrial. This analysis found that combustion emissions and releases from creosote-treated wood account for most of the PAH release in the Puget Sound basin.

Coal-tar sealant accounted for less than 1 percent of PAH releases as compared to other sources, ranging from 0.9 to 1.7 tons per year, or approximately 816 to 1,542 kg/year (Ecology and King County, 2011).

Studies on Stormwater, PAHs, and Coal-tar Sealcoat

Primary Data Collection

Researchers often collect stormwater and other water and soil samples in the field and perform bench scale studies in the laboratory to assess the type and contribution of pollutants to the environment. These primary data studies have evaluated the contribution of PAHs from coal-tar sealcoat. Several studies have found that PAHs can be significantly elevated in stormwater discharged from coal-tar sealed parking lots and other areas compared to stormwater from areas that do not use coal-tar sealants. Specifically, an EPA simulation study of stormwater included both bench-scale panels and full-scale test plots, which included three test plots with different or no surface treatments: coal tar emulsion sealant, asphalt emulsion sealant, and unsealed. The results of this study indicated that coal-tar sealcoat releases 100 to 1,000 times more PAHs than other types of surfaces (Rowe and O'Conner, 2011). A separate study collected simulated runoff in Austin, Texas, from 13 urban parking lots. Six parking lots were sealed with coal-tar sealcoat, three parking lots were sealed with asphalt-based sealcoat, two parking lots were unsealed asphalt pavement, and two parking lots were unsealed concrete pavement. This study found that the amount of PAHs in stormwater from coal-tar sealed parking lots was 65 times higher compared to stormwater from unsealed parking lots. The study also found that concentrations for total dissolved PAHs were about an order of magnitude greater in samples from the three coal-tar-sealed test plots than concentrations in samples from the two asphalt-sealed test plot, which in turn were about an order of magnitude greater than those from the unsealed test plot (Mahler et al., 2005).

Several studies have evaluated the concentration of PAHs in either stormwater runoff or receiving stream sediments in relation to when the coal-tar sealcoats were applied. One of these studies indicated that the concentrations of PAHs in stormwater runoff are highest following the application of coal-tar sealcoat and decrease as continued weathering of the sealcoat occurs (Rowe and O'Connor 2011). Two other studies analyzed PAHs in sediment samples collected before Austin, Texas, banned the use of coal-tar sealants and after the ban took effect. The first, studying the impacts two years after the ban took effect, found no significant difference before and after the ban (DeMott et al., 2010), but the second, studying the impacts six to eight years after the ban, observed decreases of PAHs in the sediment (Van Metre and Mahler, 2014).

Modeling Studies

Scientists have also used various analyses related to source apportionment to determine the relative contributions of various sources of PAHs. Many source apportionment studies have confirmed the results of primary data studies that where coal-tar sealcoat is used, PAHs are present at elevated levels. A study looked at PAHs in 40 urban lakes across the U.S. using a contaminant mass-balance receptor model based on discussed assumptions in the study and found that on average, coal-tar sealcoat is the largest source of PAHs (Van Metre and Mahler, 2010). Norris and Henry (2019) also analyzed previously collected sediment data from both the Lady Bird Lake and the 40 lakes studies (Van Metre and Mahler, 2010; Van Metre and Mahler, 2014). They used these data to apportion sources of PAHs using the Unmix Optimum (Unmix O) receptor model. The results of both the Unmix O and chi-square approach found that coal-tar sealant contributes to lake sediments and

over 80% of PAHs contained in lake samples from the eastern and central region of the United States were from coal-tar sealants (Norris and Henry, 2019). This study is consistent with results in Van Metre and Mahler (2010) and Van Metre and Mahler (2014) that coal-tar sealcoat contributes PAHs into the environment and that coal-tar sealcoat's contribution to sediments decreased after Austin banned the use of coal-tar sealcoat in 2006. The Norris and Henry (2019) study alone was not integral to EPA's proposed inclusion of the eligibility requirement on the use of coal-tar sealcoat. In addition, PAH discharges from coal-tar sealcoat may accumulate in the sediment of stormwater ponds. Dredging of accumulated sediments in stormwater ponds is a key maintenance activity and disposal of dredged PAH-contaminated sediment may be expensive (Mahler et al., 2012).

Although certain modeling studies have shown that PAHs from coal-tar sealant are present in stormwater at elevated levels, there has been some acknowledgement that the variability of PAH concentrations in different sources is a challenge for all source apportionment models because these models assume PAH source compositions are relatively constant, even though source composition can change between the source and where the concentration measurement is taken (the receptor) (Norris and Henry, 2019). A recent letter to the editor has raised questions on the validity of the source profiles used in some source apportionment studies (O'Reilly and Edwards, 2019), while another noted the challenges with PAH source apportionment to coal-tar sealcoat given the variety of PAH sources in the environment (Zou et al., 2015). A review of existing literature on the potential effects of runoff coal-tar sealcoat on aquatic organisms concluded that although "an abundance of literature has shown that PAHs cause mutagenicity, genotoxicity, and development toxicity," other research studying the particular effects of coal-tar sealcoat in runoff in controlled laboratory tests may overestimate potential adverse effects in the field (Driscoll et al., 2019).

Potential Product Alternatives

EPA has identified potential alternatives (i.e., similar product use and cost) to coal-tar sealcoat including asphalt emulsion sealants and acrylic sealants. These alternatives can achieve similar performance but contain fewer PAHs, and their use is expected to result in a lesser amount of PAHs discharged in industrial stormwater. For example, asphalt sealant has negligible PAH levels and is considered significantly less harmful to water quality and the environment than coal-tar based sealant (USGS, 2019). Given the comparable costs among products, EPA assumes that most facilities who intend to use coal-tar sealcoat will be able to find a product alternative at negligible cost difference yet with similar performance (see Section B.1 of the Cost Analysis for this proposed permit in the docket). Other product substitute examples like pervious concrete, permeable asphalt and paver systems do not require sealants and allow stormwater to infiltrate, resulting in decreased discharge, but may not be appropriate for use with all industrial activities.

Indicator Monitoring for PAHs for Specific Sectors

Some industrial facilities covered under the MSGP use, handle, or generate chemicals and products that could potentially release PAHs into the environment when exposed to precipitation that results in a stormwater discharge. EPA reviewed the industrial stormwater program's fact sheet series, performed a literature review of industrial activities that have the potential to contribute PAHs in stormwater, and conducted an industry analysis of industrial process wastewater discharges. These reviews related to industrial activities informed the 2021 MSGP requirements for specific sectors to perform indicator monitoring for PAHs. A summary of these analyses is provided below, followed by EPA's determination of the sectors requiring indicator monitoring based on these analyses.

Review of Industrial Stormwater Fact Sheet Series

EPA's industrial stormwater fact sheet series identifies common activities, pollutant sources, and associated pollutants for each of the 29 sectors permitted under the MSGP. EPA reviewed the fact sheets for activities that list the following as associated pollutants that may contain petroleum hydrocarbons:

- Ash
- Benzene
- Coal
- Diesel
- Engine oil
- Fuel
- Fuel additives
- Gasoline
- Grease
- Hydraulic fluid
- Hydrocarbons
- Jet fuel
- Liquid polymer
- Lubricants
- Naphthalene
- Oil and Grease
- Oil
- PAHs
- Petroleum hydrocarbons
- Phenanthrene
- Lubricants
- Tire rubber
- Toluene
- Waxes
- Xylenes

Based on information in the industrial stormwater fact sheet series, the most common industrial activities with the potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater include the following: materials loading and unloading, storage, handling, and waste management and disposal (18 sectors); equipment/vehicle maintenance, repair, and storage (24 sectors); vehicle fueling (17 sectors); and storage of materials in above-ground tanks (7 sectors). EPA identified other industrial activities with potential for petroleum hydrocarbon exposure, but because of these activities' relative infrequency and association with a limited number of sectors, EPA did not include them in this requirement.

Literature Review

Based on the most common industrial activities identified above that have the potential for petroleum hydrocarbon exposure, EPA performed a literature review for each industrial activity to determine the potential to discharge PAHs in stormwater. EPA also reviewed literature for certain sectors with the highest identified number of industrial activities with petroleum hydrocarbon exposure to precipitation or that were suspected of having the potential for exposure based on the materials used, manufactured, or stored on-site. In addition, EPA reviewed references provided in public comments that were submitted on the proposed 2020 MSGP. The literature review is included in the docket for this permit (ID# EPA-HQ-OW-2019-0372).

Industry Analysis

EPA also conducted an industry analysis that looked at sectors/subsectors included in the 2015 MSGP that may have petroleum hydrocarbons at their facilities that could be exposed to stormwater. The analysis looked at industrial process wastewater discharges as a proxy to identify industries that may use, handle, or generate PAHs. EPA evaluated 18 PAHs identified as priority pollutants subject to the required water quality criteria in the National Toxics Rule (NTR) at 40 CFR 131.36. Note that the data evaluated were for industrial process wastewater discharges, not stormwater. However, these data are useful to identify and further evaluate industries that may use, handle, or generate PAHs on site. The full analysis is included in the docket for this permit (ID# EPA-HQ-OW-2019-0372). EPA identified the following subsectors and related activities that have total PAH loadings for industrial process wastewater discharges of greater than 1 kg/year:

Table 4-1 PAH Loadings for Industrial Process Wastewater Discharges

Applicable MSGP Sub-Sector	Activity Represented	Contributing SIC Codes[1]	Estimated PAH Pollutant Load in Industrial Processed Wastewater (kg/year)
C5	Industrial Organic Chemicals; Petroleum Refining	2865, 2869, 2911	131,073[2]
Q1	Water Transportation Facilities	4491, 4493	6,351[3]
C4	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass	2821, 2822	3,270[4]
F1	Steel Works, Blast Furnaces, and Rolling and Finishing Mills	3312, 3313, 3317	628[5]
C2	Industrial Inorganic Chemicals	2812,2813, 2819	491[6]
C3	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations	2843	287
Y2	Miscellaneous Plastic Products; Musical Instruments; Dolls, Toys, Games, and Sporting and Athletic Goods; Pens, Pencils, and Other Artists' Materials; Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal; Miscellaneous Manufacturing Industries	3081	282
P1	Railroad Transportation; Local and Highway Passenger Transportation; Moto Freight Transportation and Warehousing; United States Postal Service; Petroleum Bulk Stations and Terminals	4011, 4013, 4213, 4226, 4231, 5171	253[7]
A2	Wood Preserving	2491	251
A1	General Sawmills and Planing Mills	2421	206
AC1	Computer and Office Equipment; Measuring, Analyzing, and Controlling Instruments; Photographic and Optical Goods, Watches, and Clocks; Electronic and Electrical Equipment and Components, Except Computer Equipment	3624	164
D2	Miscellaneous Products of Petroleum and Coal	2992, 2999	90
C1	Agricultural Chemicals	2873	46
I1	Crude Petroleum and Natural Gas; Natural Gas Liquids; Oil and Gas Field Services	133, 1321, 1389	11[8]
M1	Automobile Salvage Yards	5012	6.9
S1	Air Transportation Facilities	4581	4.9
F5	Primary Smelting and Refining of Nonferrous Metals; Secondary Smelting and Refining of Nonferrous Metals; Miscellaneous Primary Metal Products	3334, 3399	3.7[9]
AB1	Industrial and Commercial Machinery, Except Computer and Office Equipment; Transportation Equipment Except Ship and Boat Building and Repairing	3523, 3537, 3713, 3714, 3721, 3724, 3743	1.4[10]

1. Applicable SIC Codes with reported total PAH loadings used in calculating the estimated total annual pollutant load.
2. Petroleum refining (SIC Code 2911); and industrial organic chemicals, not elsewhere classified (SIC Code 2869) accounts for most of the loading identified in this sector (130,571 kg/year and 496 kg/year, respectively).
3. Marinas (SIC Code 4493~~1~~) account for most of the estimated loading identified in this sector (6,379 kg/year).
4. Plastics materials, synthetic resins, and nonvulcanizable elastomers (SIC Code 2821) accounts for most of the estimated loading identified in this sector (3,265 kg/year).
5. Steel works, blast furnaces (including coke ovens), and rolling mills (SIC Code 3312); and electrometallurgical products, except steel (SIC Code 3313) account for most of the estimated loading identified in this sector (589 kg/year and 39 kg/year, respectively).
6. Industrial inorganic chemicals, not elsewhere classified (SIC Code 2819); and alkalies and chlorine (SIC Code 2812) account for most of the estimated loading identified in this sector (440 kg/year and 51 kg/year, respectively).
7. Petroleum bulk stations and terminals (SIC Code 5171); railroads, line-haul operating (SIC Code 4011); and special warehousing and storage, not elsewhere classified (SIC Code 4226) account for most of the estimated loading identified in this sector (146 kg/year, 85 kg/year, and 22 kg/year, respectively).
8. Oil and gas field services, not elsewhere classified (SIC Code 1389); and crude petroleum and natural gas (SIC Code 1311) account for most of the estimated loading identified in this sector (9 kg/year and 2 kg/year, respectively).
9. Primary production of aluminum (SIC Code 3334) accounts for most of the estimated loading identified in this sector (3 kg/year).
10. Aircraft engines and engine parts (SIC Code 3724) account for most of the estimated loading identified in this sector (0.9 kg/year).

Sectors with Potential for PAH Exposure to Precipitation Resulting in Stormwater Discharges

Based on the industrial stormwater fact sheet series review, literature review, and industry analysis, EPA determined that the following sectors have the potential to contribute PAHs in stormwater discharges. At this point, however, EPA has determined that additional information is necessary to quantify the levels of PAHs in industrial stormwater, further identify industrial activities with the potential to discharge PAHs in stormwater, and inform future consideration of PAH benchmark monitoring for sectors with the potential to discharge PAHs in stormwater.

Sector A: Timber Products

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector A:

- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.
- Wood preservation activities and chemicals and preserved wood storage.
- Wood assembly/fabrication activities and final fabricated wood product storage.

Coal-tar creosote is a commonly used wood preservative derived from coal-tar and is known to contain high levels of PAHs (ATSDR, 2002). Several studies have shown that facilities that use or previously used creosote to treat wood and the storage of creosote-treated wood have the potential to contribute to PAH contamination of soils and stormwater discharges (Van Zuydam, 2009; Ragan, 2011; Pietari, 2016; Konkler, 2020; Valle, 2007; Hussain, 2018; Brooks, 2004; Meador, 1995; Marcotte, 2014; Niera, 2016). Due to the potential for PAH contamination of stormwater from creosote, the 2021 MSGP requires indicator monitoring for PAHs for Sector A facilities but is limited to those facilities that

manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation.

Sector C: Chemicals and Allied Products

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector C:

- Materials loading and unloading, storage, handling, and waste management and disposal.
- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.

Petroleum refineries process raw crude oil into fuel products (e.g., gasoline, fuel oils, jet fuels, coke and kerosene), nonfuel products (e.g., asphalt and road oil, lubricants), and petrochemicals and petrochemical feedstocks. Spills or leaks of crude oil and petroleum products have been documented as sources of PAH contamination in surface waters (Mahler, 2001; Zychowski, 2017; Troisi, 2016; Meador, 1995; Collier, 2013; Albers, 2003; Hussain, 2018). One study showed elevated levels of PAHs in agricultural soils near an oil refinery (Bayat, 2015), while others observed elevated PAHs in waters downstream of refineries (Nascimento, 2017; Stein, 2006).

Additionally, EPA's industry analysis indicated that Subsector C5 has a total estimated PAH pollutant load in industrial wastewater of 131,073 kg/year, the highest estimated PAH pollutant loading of the MSGP subsectors evaluated. Petroleum refining (SIC Code 2911) accounts for most of the estimated industrial wastewater loading identified in this sector (130,571 kg/year).

Based on the potential for spills and leaks of crude oil and petroleum products and the observed elevated levels of PAHs in surface waters downstream of refineries, the 2021 MSGP requires indicator monitoring for PAHs for Sector C facilities with SIC Code 2911 (petroleum refineries).

Sector D: Asphalt Paving and Roofing Materials and Lubricants

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector D:

- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.
- Outdoor stockpiling of materials.
- Storage of materials in above-ground storage tanks.
- Transport of materials by a conveyor or front-end loader.

Petroleum-based products that have high concentrations of PAHs, including asphalt and coal-tar pitch, are used as raw materials to produce paving and roofing materials (ATSDR, 2002). Coal-tar sealcoat, which may be produced at some Sector D facilities, typically contains 20 to 35% coal-tar pitch which is made up of 50% or more PAHs by weight (Mahler et al., 2005). Based on the potential for spills and leaks of petroleum products used for the manufacturing of asphalt paving materials, roofing materials, and lubricants, and the potential for petroleum hydrocarbon exposure to precipitation from the outdoor stockpiling

of raw materials and/or finished products, the 2021 MSGP requires indicator monitoring for PAHs for Sector D facilities.

Sector F: Primary Metals

The industrial stormwater fact sheet identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector F:

- Materials loading and unloading, storage, handling, and waste management and disposal.
- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.
- Casting and finishing products.
- Furnace operations and pollution control equipment.

Coal-tar, coal-tar pitch, and coal-tar pitch volatiles are used or produced in several industries, including aluminum smelting and coking (ATSDR, 2002). Aluminum smelters have been identified as potential sources of PAHs in stormwater (Pietari, 2016). Other sources have linked PAH pollution in surface waters and soils to aluminum smelters (Martineau, 2012; Borgulat, 2018; Rengarajan, 2015). Coke production at iron and steel facilities has also been identified as a source of PAHs (Eisler 1987, Aries 2007). Stormwater discharges exposed to these operations/sites could, therefore, contain PAHs.

Additionally, EPA's industry analysis indicated that Subsector F1 (Steel Works, Blast Furnaces, and Rolling and Finishing Mills) has an estimated total PAH pollutant load in industrial wastewater of 628 kg/year, and Subsector F5 (Primary Smelting and Refining of Nonferrous Metals; Secondary Smelting and Refining of Nonferrous Metals; and Miscellaneous Primary Metal Products) has an estimated total PAH pollutant load in industrial wastewater of 3.7 kg/year. Subsector F1 (Steel Works, Blast Furnaces, and Rolling and Finishing Mills) had the third highest total estimated PAH pollutant loading in industrial wastewater of the MSGP subsectors evaluated.

Based on the potential for spills and leaks of petroleum products used at primary metals facilities, and sources identifying aluminum smelters and iron and steel facilities as potential sources of PAHs in surface waters, the 2021 MSGP requires indicator monitoring for PAHs for Sector F facilities.

Sector H: Coal Mines and Coal Mining-Related Facilities

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector H:

- Equipment/vehicle maintenance, repair, and storage.
- Road and rail construction and maintenance.

Coal is a source of petrogenic PAHs. Coal pile discharge has been shown to result in PAH accumulation in receiving water sediments (Curran, 2000), and tailings from underground coal mining have been identified as a source of PAH contamination in urban soils (Hindersmann, 2018).

Sector H facilities commonly construct and maintain haul and access roads that could be sealed with coal-tar sealcoat. Coal-tar sealcoat, like other pavement, is exposed to the

elements and undergoes weathering and abrasion that can cause dust and particles containing PAHs to break off. Dust and particles containing PAHs can then be picked up by stormwater discharges and transported to stormwater control measures or directly to receiving waters where it can accumulate in sediments and soils (DeMott, 2010; Rowe, 2011; State of Washington Department of Ecology, 2011; Van Metre, 2009; Van Metre, 2010; Van Metre, 2014). Several studies have linked aquatic life impacts to PAHs in stormwater from surfaces treated with coal-tar and asphalt sealants (Bommarito, 2010; Bryer, 2006; Driscoll, 2019; Kienzler, 2015; Mahler, 2012; USGS, 2019). Thus, roads constructed at Sector H facilities may result in stormwater discharges containing PAHs.

Coal-tar creosote is a commonly used wood preservative derived from coal-tar and is known to contain high levels of PAHs (ATSDR, 2002). Several studies have shown that creosote-treated railroad ties and storage of creosote-treated wood have the potential to contribute to PAHs to soils and stormwater discharges (Van Zuydam, 2009; Ragan, 2011; Pietari, 2016; Konkler, 2020; Valle, 2007; Hussain, 2018; Brooks, 2004; Meador, 1995; Marcotte, 2014; Niera, 2016). Coal mines and related facilities commonly use railways to transport coal and other resources. Creosote-treated railroad ties used at Sector H facilities and exposed to precipitation may result in stormwater discharges containing PAHs.

Based on the potential for petroleum hydrocarbon exposure to precipitation and potential stormwater discharges of PAHs associated with coal piles and tailings at coal mines, as well as road and rail construction and maintenance, the 2021 MSGP requires indicator monitoring for PAHs for Sector H facilities.

Sector I: Oil and Gas Extraction

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector I:

- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.
- Construction of access roads, drill pads, mud/reserve pits, storage tanks, pipelines, etc.
- Well drilling.
- Well completion or stimulation.
- Production.
- Site closures.

Sector I facilities include oil and gas exploration, production, processing or treatment operations, or transmission facilities. Spills or leaks of crude oil and petroleum products are documented sources of PAH contamination in surface waters (Mahler, 2001; Zychowski, 2016; Troisi, 2016; Meador, 1995; Collier 2013, Albers 2003, Hussain 2018). Petroleum exploration, extraction, transport, and refining have been associated with PAH contamination of surface waters (Collier, 2013; Reynolds, n.d.; Troisi, 2016). Sector I facilities may contribute PAHs in stormwater discharges from drilling mud and fluid, oil spills, leaks, and hydrostatic testing of natural gas pipelines (Sarma, 2016; Eisler, 1987).

Sector I facilities commonly construct access roads that could be sealed with coal-tar sealcoat. Coal-tar sealcoat, like other pavement, is exposed to the elements and undergoes weathering and abrasion that can cause dust and particles containing PAHs to break off. Dust and particles containing PAHs can then be picked up by stormwater discharges and transported to stormwater control measures or directly to receiving waters

where it can accumulate in sediments and soils (DeMott, 2010; Rowe, 2011; State of Washington Department of Ecology, 2011; Van Metre, 2009; Van Metre, 2010; Van Metre, 2014). Several studies have linked aquatic life impacts to PAHs in stormwater from surfaces treated with coal-tar and asphalt sealants (Bommarito, 2010; Bryer, 2006; Driscoll, 2019; Kienzler, 2015; Mahler, 2012; USGS, 2019). Thus, PAHs from construction of access roads at Sector I facilities may result in stormwater contamination.

The NRC Study noted for Sector I that "[s]pills and leaks can also lead to petroleum hydrocarbon contaminants in stormwater, including PAHs, which have been shown to be highly toxic to aquatic life. Chemical-specific monitoring is appropriate for this sector to ensure that stormwater is appropriately managed."

Based on the potential for spills and leaks of petroleum products and documented sources of PAHs in surface waters at oil and gas extraction facilities, the 2021 MSGP requires indicator monitoring for PAHs for Sector I facilities.

Sector M: Automobile Salvage Yards

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector M:

- Equipment/vehicle maintenance, repair, and storage.
- Storage of materials in above ground tanks.
- Outdoor vehicle and equipment storage.
- Unused parts storage.
- Vehicle dismantling.

End of life vehicles have been identified as a source of pollutants, including PAHs, and improper handling of end of life vehicle fluids, such as engine oil and transmission fluid, and components during the dismantling process has the potential to result in stormwater discharges containing PAHs from Sector M facilities (Arbitman, 2003). Stormwater discharges containing PAHs may occur as a result of vehicle and equipment dismantling and storage, as well as spills, leaks, or improper discarding of gasoline and oil (Prabhukamar, 2010; Valle, 2007; Srogi, 2007; Humboldt Baykeeper, n.d.). Based on the potential for petroleum hydrocarbon exposure to precipitation and potential stormwater discharges of PAHs at automobile salvage yards, the 2021 MSGP requires indicator monitoring for PAHs for Sector M facilities.

Sector O: Steam Electric Generating Facilities

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector O:

- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.
- Storage of materials in above ground tanks.
- Scrap yards and refuse sites.

Sector O facilities store coal onsite. Coal is a source of petrogenic PAHs, and stormwater discharges from coal piles have been shown to result in PAH accumulation in receiving water sediments (Curran, 2000). EPA's industrial stormwater fact sheet series for Sector O notes that the primary and largest potential source of stormwater pollutants from fossil-

fueled steam electric generating facilities is ash refuse piles. PAHs can form from the coal-combustion process and can be present in flue gas and ash generated from coal combustion (both fly ash and bottom ash) (Tarafdar, 2019). Electric power generation has been identified as a significant anthropogenic source of PAHs (Albers, 2003; Eisler, 1987; Rengarajan, 2015). Based on the potential for petroleum hydrocarbon exposure to precipitation and potential stormwater discharges of PAHs from coal piles and ash refuse sites, the 2021 MSGP requires indicator monitoring for PAHs for Sector O facilities.

Sector P: Land Transportation and Warehousing

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector P:

- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.
- Storage of materials in above ground tanks.
- Petroleum loading/unloading.

Sector P includes railroad transportation facilities (SIC Codes 4011 and 4013). Coal-tar creosote is a commonly used wood preservative derived from coal-tar and is known to contain high levels of PAHs (ATSDR, 2002). Several studies have shown that creosote-treated railroad ties and storage of creosote-treated wood has the potential to contribute to PAHs in soils and stormwater discharges (Van Zuydam, 2009; Ragan, 2011; Pietari, 2016; Konkler, 2020; Valle, 2007; Hussain, 2018; Brooks, 2004; Meador, 1995; Marcotte, 2014; Niera, 2016). Precipitation running over creosote-treated railroad ties used at railroad transportation facilities may result in stormwater discharges containing PAHs.

Sector P also includes petroleum bulk stations and terminals (SIC Code 5171). Spills or leaks of petroleum products have been documented as sources of PAH contamination in surface waters. Petroleum exploration, extraction, transport, and refining have been associated with PAH contamination of surface waters (Collier, 2013; Reynolds, n.d.; Troisi, 2016). Petroleum bulk stations and terminals may contribute to stormwater discharges containing PAHs from oil spills and leaks, which may occur during transportation (Sarma, 2016; Eisler, 1987).

The NRC study noted for Sector P that "petroleum hydrocarbon leaks and spills could lead to harmful stormwater discharges of PAHs. The activities in Sector P and risk of stormwater pollution suggest that chemical-specific monitoring within the MSGP would be appropriate."

Based on the potential for petroleum hydrocarbon exposure to precipitation and potential stormwater discharges of PAHs from creosote-treated railroad ties used at railroad transportation facilities and the potential for leaks and spills at petroleum bulk stations and terminals, the 2021 MSGP requires indicator monitoring for PAHs for Sector P facilities with SIC Codes 4011, 4013, and 5171.

Sector Q: Water Transportation

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector Q:

- Materials loading and unloading, storage, handling, and waste management and disposal.
- Equipment/vehicle maintenance, repair, and storage.
- Storage of materials in above ground tanks.

Sector Q includes marinas (SIC Code ~~4491~~4493). Studies have linked PAH contamination in surface waters to marinas from activities associated with boating (e.g., boat cleaning, fueling operations), boat motor exhaust, and occasional spills (Neira, 2016; Heng, 2013). EPA's industry analysis indicated that Sector Q has an estimated total PAH pollutant load in industrial wastewater of 6,351 kg/year, which represents the second highest estimated PAH pollutant loading in industrial wastewater of the MSGP subsectors evaluated. Marinas (SIC Code ~~4491~~4493) account for most of the estimated loading identified in this subsector (6,379 kg/year). Based on the potential for petroleum hydrocarbon exposure to precipitation and potential stormwater discharges of PAHs at marinas, the 2021 MSGP requires indicator monitoring for PAHs for Sector Q facilities with SIC Code ~~4491~~4493.

Sector R: Ship and Boat Building and Repairing Yards

The industrial stormwater fact sheet series identifies the following industrial activity with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector R:

- Equipment/vehicle maintenance, repair, and storage.

Facilities in Sector R perform activities like fluid changes, mechanical repairs, engine maintenance and repair, parts cleaning, refinishing, paint removal, painting, fueling, metal working, welding, cutting, and grinding. These sorts of activities can include using solvents, oils, fuel, antifreeze, acid and alkaline wastes, abrasives, and paints and can create dust. Studies indicate that ship and boat building and repairing yards have the potential to contribute to PAH contamination of soil, groundwater, and marine sediments from maintenance activities, including scraping/sanding of hulls, use of anti-fouling paints, accidental fuel and oil spills, refueling operations, and repair of boat engines and boat maintenance (State of Washington Department of Ecology, n.d.; Eklund, 2014; Niera, 2016). Based on the potential for petroleum hydrocarbon exposure to precipitation and potential stormwater discharges of PAHs at ship and boat building and repairing yards, the 2021 MSGP requires indicator monitoring for PAHs for Sector R facilities.

Sector S: Air Transportation Facilities

The industrial stormwater fact sheet series identifies the following industrial activities with potential for petroleum hydrocarbon exposure to precipitation that could result in the discharge of PAHs in stormwater for Sector S:

- Materials loading and unloading, storage, handling, and waste management and disposal.
- Equipment/vehicle maintenance, repair, and storage.
- Vehicle fueling.
- Runway maintenance.

Studies indicate that Sector S facilities have the potential to contribute to PAHs to stormwater from combustion of liquid fuels, deicing/anti-icing agents, spills (during refueling, fuel transportation, airplane repairs, and fuel storage), airplane tire wear, runways paved

with bitumen or coal-tar sealcoat, and vehicle cleaning and maintenance (Sulej, 2011; Sulej, 2012; Sulej-Suchomska, 2016).

Sector S facilities commonly maintain runways that could be sealed with coal-tar sealcoat. Coal-tar sealcoat, like other pavement, is exposed to the elements and undergoes weathering and abrasion that can cause dust and particles containing PAHs to break off. Dust and particles containing PAHs can then be picked up by stormwater discharges and transported to stormwater control measures or directly to receiving waters where it can accumulate in sediments and soils (DeMott, 2010; Rowe, 2011; State of Washington Department of Ecology, 2011; Van Metre, 2009; Van Metre, 2010; Van Metre, 2014). Several studies have linked aquatic life impacts to PAHs in stormwater from surfaces treated with coal-tar and asphalt sealants (Bommarito, 2010; Bryer, 2006; Driscoll, 2019; Kienzler, 2015; Mahler, 2012; USGS, 2019). Thus, PAHs from runways sealed with coal-tar sealcoat at Sector S facilities may result in discharges of PAHs in stormwater.

Based on the potential for petroleum hydrocarbon exposure to precipitation and potential stormwater discharges of PAHs at air transportation facilities, the 2021 MSGP requires indicator monitoring for PAHs for Sector S facilities.

Indicator Monitoring Schedule

Indicator monitoring for PAHs for applicable operators is required bi-annually (i.e., sample twice per year) in the first and fourth years of the permit term as "report-only." For the 2021 MSGP, EPA is limiting PAH indicator monitoring to bi-annually in these two years of permit coverage, rather than quarterly, given laboratory analysis cost considerations. Indicator monitoring does not have a threshold or baseline value for comparison, therefore no follow-up action is triggered or required based on the sampling results in this part. The requirement in Part 2.2.1 to meet applicable water quality standards still applies. Operators may find it useful to evaluate and compare indicator monitoring data over time to identify any fluctuating values and why they may be occurring, and further inform any revisions to the SWPPP/SCMs if necessary. EPA encourages operators to proactively use their sampling results to understand where the SCMs are working if values are low and improve their stormwater management program if values are high, relative to previous samples collected at the same discharge point. Based on indicator monitoring data collected and analyzed under the 2021 MSGP, EPA may evaluate whether sector/subsector-specific benchmarks are warranted in a future proposed permit.

Samples for PAH indicator monitoring must be analyzed using EPA Method 625.1, or EPA Method 610/Standard Method 6440B if preferred by the operator, consistent with 40 CFR Part 136 analytical methods. These methods are specified for this part so that samples are analyzed consistently across operators. Of the PAH methods, high-performance liquid chromatography (HPLC) with UV/fluorescence detectors in series and gas chromatography/mass spectrometry (GC/MS) are documented to be the best techniques (Adeniji et al., 2018). EPA Method 625.1 is a CG/MS method and "is the most frequently used because of the advantages of identification using both retention time and mass spectrum, providing added information on the chemical structures of the analyte compounds" (Adeniji et al., 2018). In addition, all of the laboratories surveyed during EPA's cost research reported using EPA Method 625.1 for analysis of the 16 individual priority pollutant PAHs, indicating that this method is currently widely used. EPA Method 610/Standard Method 6440B is an HPLC method and is known to be more sensitive, specific, and reproducible than some GC-based methods (Adeniji et al., 2018). For this reason, EPA supports operators who prefer to use the more sensitive HPLC method.

EPA emphasizes that indicator monitoring for PAHs is report-only and is neither benchmark monitoring nor numeric effluent limitations. However, failure to conduct and report indicator monitoring is a permit violation. This part does not replace or modify any requirement for operators that must monitor for PAHs under any other type of required monitoring, including annual monitoring for impaired waters.

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Part 4.2.1.2 Exception for Facilities in Climates with Irregular Stormwater Discharges

This Part allows for an exception from indicator monitoring for facilities in climates with irregular stormwater discharges as described in Part 4.1.6 (e.g., areas where limited rainfall occurs during parts of the year (e.g., arid or semi-arid climates) or in areas where freezing conditions exist that prevent discharges from occurring for extended periods). This exception provides flexibility to those operators in these climates. Such operators may modify the applicable indicator monitoring schedule provided the operator reports the revised schedule directly to EPA by the due date of the first applicable sample (see EPA Regional contacts in Part 7.8), and the operator keeps this revised schedule with the facility's SWPPP as specified in Part

6.5. As noted in Part 4.1.7, the operator must indicate in Net-DMR any 3-month interval that it did not take a sample.

Part 4.2.1.3 Exception for Inactive and Unstaffed Facilities

This Part allows for an exception from indicator monitoring for facilities that are both inactive and unstaffed, when such facilities no longer have industrial activities or materials exposed to stormwater. EPA is allowing this exception because these facilities will not be contributing pollutants in stormwater discharges. These facilities could alternatively submit an NEC, terminating permit coverage. However, EPA realizes that some facilities plan to recommence industrial activity in the future and therefore may wish to keep active permit coverage. To qualify for this exception, a facility must maintain a signed certification with their SWPPP documentation (Part 6.5 of the permit) that indicates that the site is inactive and unstaffed, and that there are no industrial activities or materials exposed to stormwater. Operators are not required to obtain advance approval for this exception. The 2021 MSGP includes an allowance for inactive and unstaffed sites in the mining industry (i.e., Sectors G, H, and J) to qualify for this exception where some industrial activities or materials are still exposed to stormwater. This provision is included for mining sites because of the large number of extremely remote sites in these sectors, and the impracticability/infeasibility of reaching these sites during qualifying storm events.

The permit clarifies that if circumstances change and industrial materials or activities become exposed to stormwater or facilities become active and/or staffed, this exception no longer applies and operators must immediately begin complying with the applicable indicator monitoring requirements under Part 4.2.1 as if they were in the first year of permit coverage, and notify EPA of the change in the NOI by submitting a "Change NOI" form. In the same way, if an operator does not qualify for this exception at the time it is authorized to discharge, but during the permit term the facility becomes inactive and unstaffed, and there are no industrial materials or activities that are exposed to stormwater, then the operator must notify EPA of this change in the "Change NOI" form. The operator may discontinue indicator monitoring once they have done so and have prepared and signed the statement described above concerning their qualification for this special exception.

Part 4.2.2 Benchmark Monitoring

This permit requires benchmark monitoring as a gauge of the performance of facilities' SCMs and to further ensure compliance with water quality standards. Since the MSGP's first issuance in 1995, benchmark monitoring has been employed as a means by which to measure the concentration of a pollutant in a facility's industrial stormwater discharges. See 60 FR 50804 (Sept. 29, 1995). Analytical results from benchmark monitoring are quantitative and therefore can be used to compare results from discharge to discharge and to quantify any improvement in stormwater quality attributable to the stormwater control measures, or to identify a pollutant that is not being adequately controlled. The benchmark thresholds are the pollutant concentrations above which represent a level of concern. The level of concern is a concentration at which a stormwater discharge could potentially impair or contribute to impairing water quality or affect human health from ingestion of water or fish. The benchmarks are also set at a level, that if below, a facility's discharges pose less potential for a water quality concern. As such, the benchmarks provide an appropriate level to determine whether a facility's SCMs are successfully implemented. See 60 FR 50804 for a discussion on the origin of the MSGP's benchmarks.

The 2019 NRC Study on industrial stormwater noted that some stakeholders have described benchmark monitoring as overly burdensome to industries and producing data that go

unutilized (p. 18). On the other hand, other stakeholders have expressed concern that if stormwater problems are observed through benchmark monitoring, the mechanisms to ensure issues are effectively addressed are lacking. Public comments received on the proposed permit also express both of these views. Some stakeholders have also suggested that EPA completely discontinue benchmark monitoring and that operators and EPA should rely on annual reporting and quarterly visual assessments as the main mechanisms to assess stormwater control effectiveness at industrial facilities. Benchmark monitoring, Annual Reports, and visual assessments are all complementary, but ultimately serve different purposes for the operator, and for EPA.

Annual reporting only occurs once per year during the permit term, and thus limits the number of opportunities and delays the time the operator must assess and react to potential problems at their facility. Additionally, while Annual Reports contain valuable information on facility inspections, visual assessments, corrective actions, and Additional Implementation Measures, the data are largely qualitative. Visual assessments are also an important component of a facility's stormwater program, which requires the operator to observe water quality characteristics, such as color, clarity, solids, and oil sheen and can indicate issues from pollutants that are not required to be monitored for. Although quarterly visual assessments and quarterly benchmark monitoring occur at the same frequency, visual assessments result in narrative descriptions of stormwater pollution and may not provide the precision necessary for the operator to address a specific pollutant problem.

Compiling and evaluating information from either Annual Reports or visual assessments in a systemic, meaningful way is more challenging than analyzing quantitative benchmark data. Annual Reports tell an overall story of what happened with stormwater discharges at the facility for a given year, and visual assessments give a general, observed indication of discharge quality for a given quarter. Benchmark monitoring data, however, provide numerical indicators of stormwater control measure effectiveness, what pollutants are being discharged, and at what magnitude, which can be addressed in real-time and compared over time.

EPA has always tried to balance the burden to the regulated community with its obligation under the CWA to ensure industrial stormwater discharges meet all provisions of CWA § 301, including applicable water quality standards (CWA § 402(p)(3)(A)). To date, the Agency has not received adequate information or data suggesting a viable alternative approach to benchmark monitoring for characterizing industrial sites' stormwater discharges, quantifying pollutant concentrations, and assessing stormwater control measure effectiveness.

Part 4.2.2.1 Applicability of Benchmark Monitoring

Benchmark monitoring requirements described in Part 4.2.2 require operators to collect quarterly stormwater samples for laboratory chemical analyses. Samples must be analyzed consistent with 40 CFR Part 136 analytical methods and using test procedures with quantitation limits at or below benchmark thresholds for all benchmark parameters for which you are required to sample, i.e. sufficiently sensitive methods. For averaging purposes, you may use a value of zero for any individual sample parameter which is determined to be less than the method detection limit. For sample values that fall between the method detection level and the quantitation limit (i.e., a confirmed detection but below the level that can be reliably quantified), use a value halfway between zero and the quantitation limit.

For clarity, EPA continues to emphasize that the benchmark thresholds in the EPA 2021 MSGP are not, and have never been, effluent limits themselves. Therefore, an exceedance

of the benchmark threshold is not a violation of the permit. At the same time, the permit contains a narrative effluent limitation to protect water quality.

Part 4.2.2.2 Summary of the 2021 MSGP Benchmark Thresholds

The following table presents the 2021 MSGP's freshwater and saltwater benchmark thresholds, and the source of those values. EPA updated the benchmark thresholds to match the units that appear in the source documents as indicated.

2015 and 2021 MSGP Benchmark Values and Sources

Pollutant		2015 MSGP Benchmark	2015 MSGP Source (see footnotes)	2021 MSGP Benchmark	2021 MSGP Source (see footnotes)
Total Recoverable Aluminum (T)		0.75 mg/L	1	1,100 µg/L	18
Total Recoverable Beryllium		0.13 mg/L	2	130 µg/L [a]	2
Total Recoverable Iron		1.0 mg/L	3	Removed	16
Biochemical Oxygen Demand (5-day)		30 mg/L	4	30 mg/L	4
pH		6.0 – 9.0 s.u.	4	6.0 – 9.0 s.u.	4
Chemical Oxygen Demand		120 mg/L	5	120 mg/L	5
Total Phosphorus		2.0 mg/L	6	2.0 mg/L	6
Total Suspended Solids (TSS)		100 mg/L	7	100 mg/L	7
Nitrate and Nitrite Nitrogen		0.68 mg/L	7	0.68 mg/L	7
Total Recoverable Magnesium		0.064 mg/L	8	Removed	16
Turbidity		50 NTU	9	50 NTU	9
Total Recoverable Antimony		0.64 mg/L	12	640 µg/L[a]	1
Ammonia		2.14 mg/L	13	2.14 mg/L	1
Total Recoverable Cadmium	Freshwater[b]	0.0021 mg/L	1	1.8 µg/L [a]	15
	Saltwater	0.04 mg/L	14	33 µg/L [a]	15
Total Recoverable Copper	Freshwater	0.014 mg/L	1	5.19µg/L	18
	Saltwater	0.0048 mg/L	14	4.8 µg/L	14
Total Recoverable Cyanide	Freshwater	0.022 mg/L	1	22 µg/L[a]	1
	Saltwater	0.001 mg/L	14	1 µg/L[a]	14
Total Recoverable Mercury	Freshwater	0.0014 mg/L	1	1.4 µg/L[a]	1
	Saltwater	0.0018 mg/L	14	1.8 µg/L[a]	14
Total Recoverable Nickel	Freshwater[b]	0.47 mg/L	1	470 µg/L[a]	1
	Saltwater	0.074 mg/L	14	74 µg/L[a]	14
Total Recoverable Selenium	Freshwater	0.005 mg/L	3	1.5 µg/L for still/standing (lentic) waters 3.1 µg/L for flowing (lotic) waters	17
	Saltwater	0.29 mg/L	14	290 µg/L[a]	14

Pollutant		2015 MSGP Benchmark	2015 MSGP Source (see footnotes)	2021 MSGP Benchmark	2021 MSGP Source (see footnotes)
Total Recoverable Silver	Freshwater[b]	0.0032 mg/L	1	3.2 µg/L[a]	1
	Saltwater	0.0019 mg/L	14	1.9 µg/L[a]	14
Total Recoverable Zinc	Freshwater[b]	0.12 mg/L	1	120 µg/L[a]	1
	Saltwater	0.09 mg/L	14	90 µg/L[a]	14
Total Recoverable Arsenic	Freshwater[b]	0.15 mg/L	3	150 µg/L[a]	3
	Saltwater	0.069 mg/L	14	69 µg/L[a]	14
Total Recoverable Lead	Freshwater[b]	0.082 mg/L	3	82 µg/L[a]	3
	Saltwater	0.21 mg/L	14	210 µg/L[a]	1

[a] Values have been updated to match original units found in source documents.

[b] These pollutants are dependent on water hardness where discharged into freshwaters. The freshwater benchmark value listed is based on a hardness of 100 mg/L. When a facility analyzes receiving water samples for hardness, the operator must use the hardness ranges provided in Table 1 in Appendix J of the 2015 MSGP and in the appropriate tables in Part 8 of the 2015 MSGP to determine applicable benchmark values for that facility. Benchmark values for discharges of these pollutants into saline waters are not dependent on receiving water hardness and do not need to be adjusted.

Sources:

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5. Factor of 4 times BOD5 (5-day biochemical oxygen demand) concentration - North Carolina Benchmark
6. North Carolina stormwater Benchmark derived from NC Water Quality Standards
7. National Urban Runoff Program (NURP) median concentration
8. Minimum Level (ML) based upon highest Method Detection Limit (MDL) times a factor of 3.18
9. Combination of simplified variations on Stormwater Effects Handbook, Burton and Pitt, 2001 and water quality standards in Idaho, in conjunction with review of DMR data
10. "National Ambient Water Quality Criteria." Acute Aquatic Life Freshwater. This is an earlier version of the criteria document that has subsequently been updated. (See source #1)
11. "National Ambient Water Quality Criteria." Chronic Aquatic Life Freshwater. This is an earlier version of the criteria document that has subsequently been updated. (See source #3)
12. "National Ambient Water Quality Criteria. "Human Health for the Consumption of Organism Only (EPA-822-F-01-0102006)

13. "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses." USEPA Office of Water (PB85-227049 January 1985)
14. "National Recommended Water Quality Criteria." Acute Aquatic Life Saltwater (CMC) available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm#altable
15. "Aquatic Life Ambient Water Quality Criteria: Cadmium, 2016" (EPA 820-R-16-002)
16. Improving the EPA Multi-Sector General Permit for Industrial Stormwater Discharges, 2019. Available at: https://www.nap.edu/catalog/25355/improving-the-epa-multi-sector-general-permit-for-industrial-stormwater-discharges
17. "National Recommended Water Quality Criteria Table." Available at: https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table
18. See "Industrial stormwater Technical Memo for aluminum and copper criteria percentiles" in Docket ID# EPA-HQ-OW-2019-0372.

Derivation of the Benchmark Levels

The 2021 MSGP retains many of the same benchmark monitoring thresholds as the 2015 MSGP, with some modifications. EPA revised the aluminum, copper (for discharges to freshwater), selenium (for discharges to freshwater), and cadmium benchmark thresholds based on updated EPA national recommended aquatic life water quality criteria and suspends magnesium and iron based on the NRC study recommendations and lack of documented acute toxicity. The 2021 MSGP also incorporates additional flexibility in Part 5 (Additional Implementation Measures) for those operators who exceed the benchmark threshold for aluminum or copper through the optional derivation and application of a facility-specific threshold.

The process that EPA followed in selecting the benchmark thresholds for the permit is the same as in previous permits. The steps are as follows: Step 1: Use EPA's current CWA section 304(a) national recommended aquatic life ambient water quality acute criterion value, where appropriate; Step 2: If no EPA acute criterion exists, use the national recommended aquatic life ambient water quality chronic criterion; Step 3: If neither acute nor chronic criteria exist, use data from discharge studies or technology-based standards to establish a benchmark. EPA hereinafter refers to the CWA section 304(a) national recommended aquatic life ambient water quality criteria as "criteria" or "criterion" and differentiates acute and chronic criteria where applicable. EPA also evaluated reported 2015 MSGP benchmark monitoring data for aluminum and copper (for discharges to freshwater) to determine if it would be appropriate to allow voluntary calculation and use of a facility-specific threshold using the national recommended criteria equations in place of the standard MSGP benchmark thresholds for aluminum and copper.

In general, the freshwater acute criteria are less restrictive than chronic water quality criteria. Because of the intermittent nature of wet weather (i.e., stormwater) discharges and the increased and variable ambient flows that generally result from precipitation events, EPA views acute criteria as generally more appropriate than chronic criteria in this context. Since benchmarks are usually set equal to recommended ambient water quality criteria for the receiving waters, with no allowance for dilution during storm events, they generally represent conservative values. Exceedance of a benchmark threshold does not necessarily indicate that a discharge is not meeting an applicable water quality standard, but does require the operator to evaluate the effectiveness of its stormwater control measures, with follow-up Additional implementation Measures (AIM) responses where required per Part 5.2. For a full discussion of EPA's approach for the derivation of the benchmarks, see the Fact Sheet for the 1995 MSGP (60 Fed. Reg. 50825), 2000 MSGP (65 Fed. Reg. 64746), and the 2008 MSGP (73 Fed. Reg. 56572).

The MSGP defines saline or saltwaters for the purposes of benchmark monitoring as those waters with salinity equal to or in exceedance of 10 parts per thousand 95 percent or more of the time, unless otherwise defined as a coastal or marine water by the applicable state or tribal surface water quality standards. This definition is consistent with 40 CFR 131.36. These benchmarks represent the available acute ambient water quality criteria for priority toxic and non-priority pollutants in saltwater.

The use of national recommended aquatic life ambient water quality criteria, particularly acute criteria, are appropriate for use as benchmark thresholds in the MSGP for stormwater discharges. Criteria are derived to be protective under ambient conditions however those water conditions occur. The criteria reflect maximum concentrations of a pollutant in ambient water that can occur for specific durations that will still protect the designated aquatic life use, if not exceeded more than once in 3 years on average.

The duration for acute criteria, which are most often selected as sources for the MSGP benchmark thresholds, are typically one hour. In a laboratory setting, acute criteria reflect toxic effects observed in test organisms following acute laboratory exposure tests of 4 days. There are scientific studies indicating shorter-term exposures (e.g., one hour or less, as with stormwater) can cause latent acute effects, thus the one-hour acute exposure duration is intended to reflect this knowledge (Brent and Herricks, 1998; Mebane et al., 2019).

The use of acute water quality criteria for stormwater comports with recommendations in the NRC study, which states: "*Given the episodic nature of stormwater flow and the likelihood of instream dilution and attenuation, aquatic life criteria based on short-term (acute) or intermittent exposures are typically more appropriate for stormwater benchmark threshold levels than criteria based on long-term (chronic) exposures. Where EPA identifies substantial chronic risks to aquatic ecosystems from intermittent exposures during criteria development, such as for contaminants that bioaccumulate, an equation should be provided to translate chronic criteria.*"

The duration for chronic criteria is typically 4 days, but occasionally set for longer durations. In a laboratory setting, chronic criteria reflect reproductive, growth, or survival impacts occurring in 20- to 60-day toxicity tests, depending on the test and species. There is evidence that for some chemicals and species chronic effects can occur after shorter durations (Brent and Herricks, 1998; Mebane et al., 2019).

The potential for shorter-term exposures (e.g., one hour or less) to result in delayed effects has long been recognized. In the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses," which established the basis for deriving aquatic life criteria, Stephan et al. (1985) state for acute criteria "one hour is probably an appropriate averaging time because high concentrations of some materials can cause death in one to three hours. Even when organisms do not die within the first hour or so, it is not known how many might have died due to delayed effects (Stephan et al., 1985). Recent scientific investigations support that shorter-term exposures, can cause delayed acute effects (Brent and Herricks, 1998; Mebane et al., 2019). The one-hour acute exposure duration is intended to reflect this knowledge.

Multiple chemical exposures (e.g., PAHs) may occur after wet weather events that cause stormwater discharges; the current science indicates that effects of multiple individual chemicals in the same class are often found to be additive (ECETOC, 2001; Jakobs et al., 2020; EPA, 2008; NAS, 2013). The one-by-one chemical consideration for benchmarks in the MSGP does not address potential additive effects, and while EPA establishes the benchmark thresholds at a level below which a facility's discharges pose less potential for a

water quality concern, possible additive effects of multiple chemicals suggests the benchmark thresholds are unlikely to be overprotective in general.

Although numerous laboratory studies document the potential impacts to aquatic life of pulsed exposure to contaminants, impacts from wet weather events can be challenging to document in the field, due in part to the intermittent nature of the events and sampling logistics. However, the recurrent die off of salmon returning to urban streams in the Puget Sound provides an example of impacts that can be directly linked with stormwater pollutants (McIntyre et al., 2015; Scholz et al., 2011).

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New Benchmark Thresholds for Aluminum and Copper

Aluminum

The 2021 MSGP benchmark threshold for aluminum changed to 1,100 µg/L from the 2015 MSGP threshold of 750 µg/L. Just like the 2015 MSGP, the 2021 MSGP requires operators in subsectors C2, E1, F1, F2, H1, M1, N1, Q1, and AA1 to conduct benchmark monitoring for aluminum. The 2015 MSGP benchmark value for aluminum was set to 750 µg/L (0.75 mg/L) based on the 1988 national recommended acute freshwater aquatic life criteria. In 2018, EPA updated the recommended aluminum criteria to reflect the latest scientific understanding of how water chemistry parameters alter the bioavailability of aluminum and affect toxicity to aquatic species. The updated criteria use a criteria calculator that incorporates a multiple linear regression method to derive values resulting from the

interaction of total hardness, pH, and dissolved organic carbon (DOC). Therefore, rather than setting a single fixed value, the new recommended criteria values vary depending on the water chemistry conditions in the waterbody.

Considering whether to update the MSGP benchmark thresholds to reflect the latest recommended water quality criteria is generally undertaken each time EPA revises this permit. The NRC study also recommended that the 2021 MSGP benchmark threshold for aluminum should reflect the updated criteria. Given the site-specific nature of the new criteria, EPA explored the best way to update the MSGP's benchmark using the revised recommended aluminum criteria, as discussed in additional detail below. The 2021 MSGP incorporates the revised recommended criteria in two ways, 1) using a single nationally-representative value based on the criteria calculator as the MSGP benchmark threshold, and 2) providing operators who may exceed this benchmark the opportunity to conduct a site-specific analysis using the criteria model and representative ambient water chemistry data for pH, DOC, and hardness for the site to demonstrate to EPA that their discharges would not exceed their refined site-specific value. The details of the benchmark and the optional site-specific derivation are discussed in the next sections.

Copper

The 2021 MSGP freshwater benchmark threshold for copper changed to 5.19 µg/L from a hardness-based range in the 2015 MSGP. Like the previous permit, the 2021 MSGP requires operators in subsectors A2, F2, F3, F4, G2, and N1 to conduct benchmark monitoring for copper. The 2015 MSGP copper benchmark value for freshwater was hardness-dependent based on the 1984 national recommended acute freshwater aquatic life criteria, ranging from 3.8 µg/L to 33.2 µg/L. In 2007, EPA revised the recommended copper criteria using new data on copper toxicity and its effects on aquatic life that became available. The new criteria are based on the Biotic Ligand Model (BLM) – a metal bioavailability model that uses receiving water body characteristics to develop site-specific water quality criteria. The BLM requires ten input parameters to calculate the freshwater copper criterion: temperature, pH, dissolved organic carbon (DOC), calcium, magnesium, sodium, potassium, sulfate, chloride, and alkalinity. Although the recommended criteria were updated in 2007, EPA decided to not update the copper benchmark in the 2015 MSGP due to the extra sampling burden that would be placed on operators to acquire the site-specific water quality data needed by the BLM.

For the 2021 MSGP, EPA re-evaluated the possibility of using the current recommended copper criteria to inform the MSGP benchmark, discussed below. As with aluminum, the 2021 MSGP incorporates the revised recommended copper criteria in the same two ways, 1) using a single nationally-representative value informed by the BLM as the benchmark threshold, and 2) providing operators who may exceed this benchmark the opportunity to conduct a site-specific individual analysis using the copper BLM and representative ambient water chemistry data for temperature, pH, dissolved organic carbon (DOC), calcium, magnesium, sodium, potassium, sulfate, chloride, and alkalinity for the site to demonstrate to EPA that their discharges would not exceed their refined site-specific value.

Derivation of New Benchmarks for Aluminum and Copper

The new benchmark thresholds of 1,100 µg/L for aluminum and 5.19 µg/L for copper align with the updated acute aquatic life criteria and account for the required water quality parameter inputs to reflect the latest methods and toxicity data available. To generate these thresholds, EPA calculated nationally representative acute water quality criteria values for aluminum and copper using water quality data reported in the USGS National

Water Information System (NWIS) database and collected from surface waters across the conterminous U.S. between 1984 and 2018. For copper, these data were evaluated for the input water chemistry parameters of calcium (Ca), magnesium (Mg), sodium (Na), sulfate (SO4), chloride (Cl), potassium (K), alkalinity, temperature, hardness, pH, and dissolved organic carbon (DOC). For aluminum, these data were evaluated for the input water chemistry parameters of pH, DOC, and hardness. EPA also included the following supporting information in the data analysis: sampling station ID number, sample date, sample season, state, EPA region, stream order, location name, latitude, longitude, and ecoregion. After initial compilation, data were evaluated for usability based on several other quality assurance factors (for complete details on the QA process (see "Industrial stormwater Technical Memo for aluminum and copper criteria percentiles" in Docket ID# EPA-HQ-OW-2019-0372). The final database included a total of 686 NWIS sample stations and 38,603 records. EPA then analyzed the data using the Aluminum Criteria Calculator R Code V2.0 and the Copper Biotic Ligand Model (BLM) V2.2.1 for criteria derivation. Based on this analysis, EPA derived values used for the benchmark monitoring thresholds for aluminum and copper that represent a level of protection (LOP) that is estimated to be protective 90% of the time, at a national level, for 95% of the genera.

This analysis generated an aluminum criteria value of 1,100 µg/L used for the 2021 MSGP's benchmark threshold, reflecting the same intended level of protection but based the best available science with improved accuracy of the intended LOP from the previous permit's benchmark. The updated freshwater acute criterion, on which the new benchmark threshold is based, considers the variable effects of water chemistry on aluminum toxicity and includes additional species data. The data in the 1988 recommended water quality criteria were not normalized to any water chemistry conditions making it difficult to compare the magnitude of the two criteria. The revised recommended criterion represents the concentration of aluminum at which approximately 95% of genera in a freshwater aquatic ecosystem should be protected if one-hour average (duration) concentration of total aluminum is not exceeded more than once in three years (frequency) (see Final Aquatic Life Ambient Water Quality Criteria for Aluminum – 2018 (EPA-822-R-18-001)).

The analysis also generated a value 5.19 µg/L for the copper criteria for the 2021 MSGP's benchmark. Using the BLM-based water quality criteria reflects the same intended LOP but based the best available science with improved accuracy of the intended LOP from the hardness-based benchmark value in the 2015 MSGP, which ranged from 3.8 µg/L to 33.2 µg/L. The revised benchmark threshold will in some cases be higher and in other cases be lower than the hardness-based benchmark threshold in the 2015 MSGP. Although there is not a single water quality criteria value to use for comparison purposes, the BLM-based water quality criteria for copper provides an improved framework for evaluating an LOP that is consistent with the LOP that was intended by the 1985 Guidelines (i.e., a 1-in-3 year exceedance frequency that will be protective of 95% of the genera) (see Aquatic Life Ambient Freshwater Quality Criteria - Copper 2007 Revision (EPA-822-R-07-001)).

As EPA moves toward developing more bioavailability-based recommended water quality criteria, the NPDES program will continue to seek the input of EPA's criteria experts in considering future revised criteria as benchmarks in the MSGP. For detailed information on the 2018 recommended aluminum criteria and the 2007 recommended copper criteria, please refer to publications "Final Aquatic Life Ambient Water Quality Criteria for Aluminum – 2018 (EPA-822-R-18-001)" and "Aquatic Life Ambient Freshwater Quality Criteria - Copper 2007 Revision (EPA-822-R-07-001)," respectively. For a detailed description of the criteria analysis used for the 2021 MSGP, see "Industrial stormwater Technical Memo for aluminum and copper criteria percentiles" in Docket ID# EPA-HQ-OW-2019-0372.

Optional operator-derived aluminum and copper values after benchmark exceedance

The NRC study recommended that EPA allow facilities that repeatedly exceed certain benchmark thresholds to be able to use the latest aquatic life criteria to evaluate water quality risk on a site-specific basis and discontinue comparisons to national benchmarks. Although the current 2018 recommended criteria for aluminum and the 2007 recommended criteria for copper in freshwater provide the flexibility to develop site-specific criteria based on local water chemistry, the extra data collection associated with implementing these new aquatic life criteria makes them challenging to finalize as benchmark thresholds in the MSGP at the individual facility level, given there are an estimated 355 facilities that monitor for aluminum and 94 facilities that monitor for copper. Collection and reporting of several in-stream water chemistry parameters would be required of each operator ahead of or concurrent with NOI submission to allow EPA to derive a facility-specific benchmark threshold by the time the first quarter of benchmark monitoring is due. At this time, EPA finds this approach to be unduly burdensome to both the operator and to EPA as the permitting authority for this general permit. One of the main benefits of a general permit is that it streamlines permit coverage for a large number of operators with similar discharges that are subject to the same or similar monitoring requirements. A general permit can allow the permitting authority to allocate resources efficiently and provide timelier permit coverage rather than issuing an individual permit and individually-tailored monitoring requirements to each facility.

However, the current recommended water quality criteria represent the latest scientific understanding of toxicity and bioavailability for aluminum and copper for protecting aquatic ecosystems from adverse impacts from short-term or intermittent exposure, such as that from stormwater. EPA recognizes the benefit of a facility-specific criteria in identifying when stormwater discharges of these constituents at certain facilities may pose less of a concern than the nationally-representative benchmarks would otherwise indicate. Therefore, for the 2021 MSGP, EPA is allowing an exception from Additional Implementation Measures (AIM) and continued benchmark monitoring requirements for operators that exceed the MSGP benchmark thresholds for either aluminum or copper (for discharges to freshwater) and can demonstrate to EPA that their discharge(s) would not result in an exceedance of a derived facility-specific value. See Part 5.2.6.4 for details and conditions of the exception.

New Benchmark Threshold for Selenium (for Discharges to Freshwater)

As in the 2015 MSGP, the 2021 MSGP requires operators in subsectors G2 and K1 to conduct benchmark monitoring for selenium. The 2015 MSGP benchmark threshold for freshwater was set to 5 µg/L, based on the 1999 national recommended chronic freshwater aquatic life criteria. EPA used the chronic criterion for the benchmark threshold since at the time issuance of the 2015 MSGP, no acute freshwater criterion had been published. In 2016, EPA updated the national recommended aquatic life chronic criteria for selenium in freshwater that reflects the latest science and consists of four elements, all of which are protective against chronic selenium effects (see Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2016, EPA 822-R-16-006). Two elements are based on the concentration of selenium in fish tissue and two elements are based on the concentration of selenium in the water column, which are the elements of the criteria most relevant in determining a revised benchmark threshold.

The recommended water-related elements of the update selenium criteria are: (1) a monthly average exposure water column element and (2) an intermittent exposure water column element to account for potential chronic effects from short-term exposures. Both

water column elements include two values: one for lentic waters (e.g., lakes and impoundments) and one for lotic waters (e.g., rivers and streams). The recommended selenium criteria for the monthly average exposure water column element are 1.5 µg/L for still/standing (lentic) waters and 3.1 µg/L for flowing (lotic) waters, which EPA recommended states use when implementing the criteria under the NPDES program. Based on this recommendation, the 2021 MSGP includes the benchmark threshold of 1.5 µg/L for stormwater discharges to still/standing (lentic) waters and 3.1 µg/L for stormwater discharges to flowing (lotic) waters. Operators required to conduct benchmark monitoring for selenium are required to identify on the NOI whether the receiving waterbody is still/standing or flowing for each discharge point. Operators should refer to the state's waterbody classifications/definitions where available.

EPA has not developed specific concentration-based acute criteria in the 2016 national recommended aquatic life criteria for selenium; however, the chronic criterion is expected to be protective of acute effects on aquatic communities. To account for acute effects, EPA derived an intermittent exposure equation to address short-term exposures (such as stormwater) that contribute to the bioaccumulation of selenium and reproductive effects on fish species. The equation includes a translation of the chronic criteria, which must be calculated based on the background base-flow concentration of selenium in the receiving water and the length of exposure. See Table 1 on page XV of the final recommended criterion document for selenium https://www.epa.gov/sites/production/files/2016-07/documents/aquatic_life_awqc_for_selenium_-_freshwater_2016.pdf.

The NRC study recommended that EPA allow operators that repeatedly exceed the benchmark threshold for selenium to use the EPA-developed intermittent exposure equation in the revised recommended water quality criteria to evaluate water quality risk on a site-specific basis and discontinue comparisons to the MSGP benchmark threshold. Allowing operators who have repeatedly exceeded benchmarks to perform facility-specific analyses could provide additional information on any potential adverse effects that could occur based on specific facility conditions. However, optional use of the selenium intermittent exposure equation for such operators requires gathering additional data, including average background base-flow concentration of selenium in the receiving water and the length of exposure based on the fraction of any 30-day period during which elevated selenium concentrations occur. Given that reported benchmark data under the 2015 MSGP do not indicate a high incidence of exceedance of the 2015 MSGP selenium benchmark and the extra data collection associated with implementing the intermittent exposure water column criteria the 2021 MSGP does not include the option to use the intermittent exposure water column aquatic life criterion. EPA may consider a site-specific benchmark application of the selenium water quality criteria in a future proposed permit.

Maintaining the Previous MSGP Benchmark Threshold for Arsenic

As in the 2015 MSGP, the 2021 MSGP requires operators in subsectors A2, G2, and K1 to conduct benchmark monitoring for arsenic. The benchmark value in the 2015 MSGP was set to 150 µg/L (0.15 mg/L) for freshwater and 69 µg/L (0.069 mg/L) for saltwater. These values are based on the 1995 national recommended chronic water quality criteria for freshwater and acute criteria for saltwater, respectively. The more conservative chronic freshwater criterion of 150 µg/L was selected for the MSGP benchmark, rather than the acute freshwater criterion which is set to 340 µg/L, based on concerns about near-coastal freshwater discharges flowing quickly into sensitive saline waters, which have a saltwater acute aquatic criteria value of 69 µg/L, five times lower than the acute freshwater criterion. The NRC study recommended that EPA base the freshwater benchmark threshold on the recommended acute aquatic life criterion of 340 ug/L unless EPA can justify why arsenic in

stormwater from freshwater in near-coastal setting is of concern or until the Agency develops a criterion based on intermittent exposure. For the 2021 MSGP, and as stated in previous MSGPs, EPA will continue using the recommended chronic freshwater criteria of 150 µg/L for setting the freshwater arsenic benchmark given that the Agency prefers not to weaken a discharge requirement unless good scientific evidence exists that a pollutant is less toxic than previously believed. This is not the case with arsenic. Furthermore, arsenic toxicity increases substantially in saline waters. Since many permitted facilities under EPA's MSGP are located in coastal states, and their discharge may reach saline waters quickly, EPA will continue to use the chronic criteria for arsenic as a benchmark to protect these estuarine environments.

New Benchmark Threshold for Cadmium

As with the 2015 MSGP, the 2021 MSGP requires operators in subsectors G2 and K1 to conduct benchmark monitoring for cadmium. EPA based the 2015 MSGP benchmark threshold on the 2001 national recommended acute aquatic life criterion that was hardness-dependent for freshwater (2.1 ug/L based on a hardness of 100 mg/L) and 40 ug/L for saltwater. In 2016, EPA updated the freshwater criterion to continue to be hardness-dependent (1.8 ug/L based on a hardness of 100 mg/L) and the saltwater criterion to 33 ug/L (see 81 FR 19176). The revised criteria represent the best science available by accounting for new laboratory aquatic toxicity tests, including the effects of total hardness on cadmium toxicity and included 75 new species and 40 new genera in the testing process. Based on the revised criteria, the 2021 MSGP includes a new freshwater benchmark for cadmium that continues to be hardness-dependent (at a hardness of 100 mg/L the benchmark is 1.8 µg/L) and a new saltwater benchmark of 33 µg/L.

Suspending the Benchmark Threshold for Magnesium

The 2015 MSGP required operators in subsector K1 to monitor for magnesium and included a benchmark value of 0.064 mg/L. The NRC study recommended that EPA remove the magnesium benchmark from the 2021 MSGP since it is a "natural component of surface and groundwater and does not appear to be toxic to a majority of aquatic organisms at concentrations likely to be encountered in most waters" (NRC, 41). Significant evidence does not exist to indicate adverse impacts of aquatic organism, and EPA does not provide an aquatic life criterion for magnesium. Magnesium concentrations present in stormwater are not anticipated to be toxic to most aquatic organisms.[7] EPA agrees with the NRC's analysis and does not have a historical record to support continuing to require this benchmark parameter and therefore removed magnesium as a benchmark in the 2021 MSGP. If EPA develops an aquatic life criterion for magnesium in the future, the Agency may consider including it in a future proposed permit.

Suspending the Benchmark Threshold for Iron

In the 2015 MSGP, EPA required operators in subsectors C1, C2, E2, F2, G2, H1, L2, M1, N1, O1, Q1, and AA1 to conduct benchmark monitoring for iron. The 2015 MSGP benchmark was set to the 1986 criteria of 1,000 µg/L. EPA has not developed national recommended acute aquatic life criteria for iron since the MSGP was originally issued. The NRC study found few studies on the acute effects of iron on aquatic organisms, and the studies that were referenced suggest lethal effects occur well above the 2015 MSGP benchmark over longer time periods. Another study cited by the NRC also suggested that iron has relatively low

[7] van Dam, R. A., A. C. Hogan, C. D. McCullough, M. A. Houston, C. L. Humphrey, and A. J. Harford. 2010. Aquatic toxicity of magnesium sulfate, and the influence of calcium, in very low ionic concentration water. Environmental Toxicology and Chemistry 29(2):410 – 421.

toxicity and bioaccumulation of iron does not pose a substantial hazard to higher trophic levels, therefore it is unlikely that a criterion based on intermittent exposure would be necessary. The NRC recommended that EPA no longer require an iron benchmark. EPA has removed iron as a benchmark in the 2021 MSGP. If EPA revises the recommended aquatic life criterion for iron in the future, the Agency may consider including it in a future proposed permit.

Part 4.2.2.3 Benchmark Monitoring Schedule

In the 2021 MSGP, operators required to conduct sector-specific benchmark monitoring must at a minimum do so quarterly in the first year of permit coverage and again in the fourth year of permit coverage, unless a modified benchmark monitoring schedule is included in the SWPPP for "Facilities in Climates with Irregular Stormwater Discharges" (see Part 4.2.2.4). The new benchmark monitoring schedule is updated from the 2015 MSGP and extends the minimum benchmark monitoring from four quarters to at least eight quarters under the 2021 MSGP. The 2015 MSGP required only four quarters of benchmark monitoring in the first year of permit coverage, after which benchmark monitoring could be discontinued for the remainder of the permit if the average of four quarters of monitoring was below the benchmark threshold. Requiring monitoring twice during the permit term at the beginning and again towards the end of the permit allows operators to better characterize their industrial stormwater discharges and describe industrial SCM performance with additional sampling data throughout their permit coverage. If the MSGP is administratively continued at the end of its five-year permit term, benchmark monitoring that was applicable at the time of expiration would continue to be required for operators authorized under the permit prior to its expiration. If monitoring data are unable to be reported electronically after the expiration of the permit, operators would be required to maintain data on site with the SWPPP and be made available to EPA upon request.

The 2021 MSGP requires that applicable operators conduct quarterly benchmark monitoring in their first year of permit coverage, beginning in the first *full* quarter of permit coverage, no earlier than May 30, 2021, just as the 2015 MSGP required. An operator that does not exceed the four-quarter annual average for a given parameter can discontinue benchmark monitoring for that parameter for the next two years (i.e., the next eight quarters). Quarterly benchmark monitoring then resumes in the fourth year of permit coverage for another four quarters for all parameters, unless the first quarter of the operator's fourth year of permit coverage occurs on or after the date this permit expires.

However, if during the first year of benchmark monitoring, the annual average for a parameter exceeds the benchmark threshold, the operator must comply with Part 5 (Additional Implementation Measures responses and deadlines), and continue quarterly benchmark monitoring for that parameter for four quarters until results indicate that the annual average for the parameter is no longer exceeded. At this point, the operator can discontinue monitoring for that parameter until monitoring resumes in the fourth year of permit coverage for all parameters. The same AIM requirements apply for any exceedance that occurs during benchmark monitoring in the fourth year. If the annual average for a parameter exceeds the benchmark threshold, the operator must comply with Part 5 and continue quarterly benchmark monitoring for that parameter until results indicate that the annual average is no longer exceeded, after which the operator can discontinue benchmark monitoring for that parameter for the remainder of permit coverage.

Under the new schedule, regardless of when the operator discontinued monitoring for any benchmark parameter, monitoring resumes for all parameters for four quarters in the fourth year of permit coverage (unless the permit has already expired). It is possible that an

operator with continued benchmark exceedances in years two and three of permit coverage will be required to continue monitoring through their second and third years of permit coverage. In the scenario where the operator receives results in their third year of permit coverage that the benchmark threshold is no longer exceeded, the operator is still required to monitor again the following year, in their fourth year of permit coverage. The principle underpinning this schedule is that the relief period from benchmark monitoring between the first and fourth year decreases if benchmark exceedances continue and additional monitoring is required. During this year, operators may also be conducting continued benchmark monitoring in compliance with AIM for certain parameters that have ongoing exceedances.

Exceptions for data exceeding benchmarks and compliance with AIM, including from natural background pollutant sources and run-on, were moved to Part 5.2.6 AIM Exceptions. If results from continued quarterly monitoring, as required under AIM, show that no exceedance of the annual average has occurred (i.e., no AIM triggering event has occurred), the operator can discontinue benchmark monitoring for the next eight quarters. After eight "off-quarters," the benchmark monitoring cycle then resumes for another four quarters, as described above.

Under the 2021 MSGP, an annual average exceedance for a parameter can occur under two mathematically related conditions:

(a) The four-quarterly annual average for a parameter exceeds the benchmark threshold; or

(b) Fewer than four quarterly samples are collected, but a single sample or the sum of any sample results within the sampling year exceeds the benchmark threshold by more than four times for a parameter. This result indicates an exceedance is mathematically certain (i.e., the sum of quarterly sample results to date is already more than four times the benchmark threshold). EPA notes that because pH is on a logarithmic scale, an annual average exceedance for pH can only occur if the four-quarter annual average exceeds the benchmark threshold.

The two exceedance triggering conditions detailed in this Part are the same as in the 2015 MSGP but are specifically separated out in the 2021 MSGP for clarity. This delineation ensures that operators are aware that a benchmark exceedance can also occur from one high quarterly sample, or the average of two or three quarterly samples, if high enough, and that AIM responses and deadlines in Part 5 must be followed as soon as the operator knows an annual average exceedance is certain.

40 C.F.R. 122.48(b) requires that EPA specify any monitoring in the MSGP at an interval and frequency "sufficient to yield data which are representative of the monitored activity." The 2021 MSGP extended benchmark monitoring schedule will ensure that operators have current data to characterize their stormwater discharges throughout their permit coverage. The 2019 NRC study observed that quarterly stormwater event samples collected over one year as in the 2015 MSGP were inadequate to characterize industrial stormwater discharge or describe long-term industrial SCM performance. The study states that "extended sampling over the course of the permit would provide greater assurance of continued effective stormwater management and help identify adverse effects from modifications in facility operation and personnel over time" (NRC, 65). Although the NRC recommended a minimum of continued annual benchmark monitoring through the permit term, for the 2021 MSGP EPA is requiring "two rounds" of quarterly benchmark monitoring occurring in the first and fourth years of permit coverage. This schedule is more appropriate than continued annual monitoring for the MSGP because operators are already accustomed to the four-

quarter sampling schedule, and the follow-up action protocol (AIM in Part 5.2) is also based on four-quarter averages.

Because some operators choose to sample more than the required number of times, EPA has included specific language in the permit that the extra samples may be used to calculate their benchmark monitoring average. Any additional sampling does not reduce the requirement that the monitoring be completed over a minimum of four calendar quarters. Therefore, additional samples collected in one quarter for this purpose cannot replace sampling required in other quarters. (Note: the requirement for four calendar quarters of monitoring is not applicable to airports given that the monitoring requirements for that sector are related to winter application of deicing chemicals.)

The monitoring periods, detailed in Part 4.1.7, are as follows:

- January 1 – March 31
- April 1 – June 30
- July 1 – September 30
- October 1 – December 31

Part 4.2.2.4 Exception for Facilities in Climates with Irregular Stormwater Discharges

This Part allows for an exception from benchmark monitoring for facilities in climates with irregular stormwater discharges as described in Part 4.1.6 (e.g., areas where limited rainfall occurs during parts of the year (e.g., arid or semi-arid climates) or in areas where freezing conditions exist that prevent discharges from occurring for extended periods). EPA is retaining this exception from the 2015 MSGP to provide flexibility to those operators in these climates. Such operators may modify the quarterly schedule provided the operator reports the revised schedule directly to EPA by the due date of the first benchmark sample (see EPA Regional contacts in Part 7.8), and the operator keeps this revised schedule with the facility's SWPPP as specified in Part 6.5. When conditions prevent the operator from obtaining four samples in four consecutive quarters, they must continue monitoring until they have the four samples required for calculating the benchmark monitoring average. As noted in Part 4.1.7, the operator must use the DMR form to indicate any 3-month interval that it did not take a sample.

Part 4.2.2.5 Exception for Inactive and Unstaffed Facilities

This Part allows for an exception from benchmark monitoring for facilities that are both inactive and unstaffed, when such facilities no longer have industrial activities or materials exposed to stormwater. EPA is retaining this exception because these facilities will not be contributing pollutants in stormwater discharges. These facilities could alternatively submit a No Exposure Certification terminating permit coverage. However, EPA realizes that some facilities plan to recommence industrial activity in the future and therefore may wish to keep active permit coverage. To qualify for this exception, a facility must maintain a signed certification with their SWPPP documentation (Part 6.5 of the permit) that indicates that the site is inactive and unstaffed, and that there are no industrial activities or materials exposed to stormwater. Operators are not required to obtain advance approval for this exception. The 2021 MSGP retains the allowance for inactive and unstaffed sites in the mining industry (i.e., Sectors G, H, and J) to qualify for this exception where some industrial activities or materials are still exposed to stormwater. This provision is included for mining sites because of the large number of extremely remote sites in these sectors, and the impracticability/infeasibility of reaching these sites during qualifying storm events. However,

these sites must still be identified in a SWPPP, and must still adopt SCMs to minimize pollutant discharges and meet water quality standards.

The permit clarifies that if circumstances change and industrial materials or activities become exposed to stormwater or facilities become active and/or staffed, this exception no longer applies and operators must immediately begin complying with the applicable benchmark monitoring requirements under Part 4.2.2 as if they were in the first year of permit coverage, and notify EPA of the change in the NOI by submitting a "Change NOI" form. In the same way, if an operator does not qualify for this exception at the time it is authorized to discharge, but during the permit term the facility becomes inactive and unstaffed, and there are no industrial materials or activities that are exposed to stormwater, then the operator must notify EPA of this change in the "Change NOI" form. The operator may discontinue benchmark monitoring once they have done so and have prepared and signed the statement described above concerning their qualification for this special exception.

Part 4.2.3 Effluent Limitations Monitoring

Numeric effluent limitations have been included in previous versions of the MSGP, based on national effluent limitation guidelines for certain industry-specific discharges (see Part 4.2.3). Consistent with minimum monitoring requirements for NPDES permit limits established at 40 CFR 122.44(i), operators must monitor for these parameters at least once each year for the duration of permit coverage. Numeric effluent limitations are specified in the sector-specific requirements in Part 8. Monitoring for all parameters must be conducted according to the procedures in Part 4.1 unless otherwise noted.

The 2021 MSGP retains the requirement for corrective action whenever there is an exceedance of a numeric effluent limitation.

Part 4.2.3.2 clarifies that facilities subject to effluent limitation guidelines are required to monitor each discharge point discharging stormwater, and that the flexibility afforded for benchmark and impaired waters monitoring for substantially identical discharge points (SIDPs) does not apply to effluent limitation guidelines monitoring.

EPA also clarifies that, in contrast to benchmarks, an exceedance of an effluent limitation constitutes a violation of the permit. Failure to conduct required corrective action and follow-up monitoring as required in Part 4.2.3.3 is an additional violation.

Additionally, facilities that use coal simply for steam generation are not subject to numeric effluent limitations. Applicable control measures for these facilities must be selected, designed, installed, and implemented consistent with the stormwater control requirements established in Part 2 of the permit.

Part 4.2.3.3 specifies follow-up monitoring requirements for pollutants that exceed any effluent limitation contained in the permit. EPA is maintaining the requirement to conduct follow-up monitoring as a way to ensure that facilities come back into compliance with applicable effluent limitations as soon as possible. While the NPDES regulations require a minimum of annual monitoring to demonstrate compliance with applicable effluent limitations, the vast majority of NPDES permits for industrial wastewater discharges require more frequent monitoring (up to daily for certain pollutants/sources in some instances). Monitoring at the regulatory minimum of once per year is appropriate for stormwater discharges, provided facilities remain in compliance with the numeric effluent limitations. However, it is appropriate to require more frequent monitoring once the effluent limitation is exceeded. Otherwise, there would be an additional year to wait to confirm that facilities

have come back into compliance with the limitation. This is an unacceptably long period for facilities to be potentially out of compliance with the limitation. EPA notes that failure to complete follow-up monitoring and reporting within the stipulated timeframes constitutes additional violations of the permit, in addition to the initial effluent limitation violation.

Consistent with other types of effluent monitoring, the permit requires that operators report follow-up monitoring results to EPA through EPA's DMR system (see Part 7). Procedures and timeframes for reporting exceedances of numeric effluent limitations are described in Part 7.5 of this Fact Sheet.

Part 4.2.4 State or Tribal Required Monitoring

Where a state or tribe has imposed a numeric effluent limitation, has established a wasteload allocation, or has stipulated specific monitoring requirement(s) as a condition for certification under CWA Section 401, a minimum monitoring frequency of once-per-year has been included in the permit. This annual monitoring frequency applies only if a state or tribe does not specify an alternative monitoring frequency. Exceedances of state or tribal numeric effluent limitations are permit violations in the same way as exceedances of effluent limitation guidelines-based limitations are violations. Both types of violations require the same corrective action and follow-up monitoring.

Part 4.2.5 Impaired Waters Monitoring

This Part contains provisions for monitoring stormwater discharges to water quality impaired receiving waters. The following is a step-by-step discussion on how an operator should determine appropriate monitoring requirements.

Operators must indicate in their NOI whether they discharge stormwater to an impaired water, and, if so, the pollutants causing the impairment, or any pollutants for which there is a TMDL. To assist operators in determining their receiving waters' information, NeT will automatically provide receiving waters' information and their impairment status based on the latitude and longitude of stormwater discharge points the operator provides on the NOI form. This information is also readily accessible from the state or tribal integrated report/CWA section 303(d) lists of waters.

If the discharge is to an impaired water, the monitoring requirements under Part 4.2.5 are triggered; otherwise, a facility has no obligations under Part 4.2.5. EPA specifies that facilities will be considered to discharge to an impaired water if the first water of the United States to which they discharge is identified by a state, tribe, or EPA pursuant to section 303(d) of the CWA as not meeting an applicable water quality standard, or has been removed from the 303(d) list because the impairments are addressed in an EPA-approved or established TMDL, or is covered by pollution control requirements that meet the requirements of 40 CFR 130.7(b)(1). For discharges that enter a separate storm sewer system prior to discharge, the first water of the United States discharged to is the waterbody that receives the stormwater discharge from the storm sewer system.

When developing TMDLs, EPA and the states evaluate contributions from upstream segments and contributing waterbodies. As such, in some instances, upstream sources may be identified as a contributor to an impairment. Where EPA has reason to believe that stormwater discharges at permitted facilities will not be controlled as necessary to meet applicable water quality standards, notwithstanding any indication in a facility's NOIs that it does not discharge to an impaired water, EPA may require the operator to perform additional monitoring and/or adopt additional control measures to address the potential contribution to the impairment, i.e., to ensure that the discharge is controlled as necessary

to meet water quality standards. In these instances, EPA will notify the operator, in writing, of any additional obligations, including monitoring requirements, to meet such water quality-based effluent limit.

The permit requires facilities to monitor for all pollutants for which the receiving waterbody is impaired, with a few noteworthy exceptions as discussed below. For waters impaired by pollutants without an approved TMDL, monitoring is required where a standard analytical test method in 40 CFR Part 136 exists for the pollutant or surrogate parameter. If the pollutant for which the waterbody is impaired is suspended solids, turbidity or sediment/sedimentation, the parameter to be monitored is total suspended solids (TSS). If the pollutant of concern is an indicator or surrogate pollutant, then the pollutant indicator (e.g., dissolved oxygen) must be monitored. No monitoring is required when a waterbody's biological communities are impaired but no pollutant is specified as causing the impairment, or when a waterbody's impairment is related to hydrologic modification, impaired hydrology, or other non-pollutant (e.g., exotic species, habitat alterations, objectionable deposits). If a TMDL has been approved or established that applies to the discharge, EPA will notify the facility of any monitoring requirements based on any assumptions and requirements of the TMDL and any wasteload allocation for the discharge.

Part 4.2.5.1 Facilities Required to Monitor Discharges to Impaired Waters

The appropriate impaired waters monitoring frequency is determined based on whether there is an approved or established TMDL for the pollutant in the impaired water.

Discharges to impaired waters without an EPA-approved or established TMDL

For those operators discharging stormwater to impaired waters without an approved or established TMDL, monitoring is required for each discharge point discharging to an impaired water. Operators must monitor once per year in the first and fourth years of permit coverage, unless the operator detects a pollutant in the stormwater discharge for which a receiving water is impaired, in which case annual monitoring must continue. In general, the monitoring schedule is as follows: one year of monitoring for all pollutants for which the receiving water is impaired (in year one of permit coverage) followed by two years without monitoring; one year of monitoring resumes for a sub-set of parameters (in year four of permit coverage).Impaired waters monitoring begins in the first year of permit coverage (beginning in the first full quarter of permit coverage following either May 30, 2021 or the date of discharge authorization, whichever date comes later. Just as in the 2015 MSGP, the 2021 MSGP requires monitoring for one year at each discharge point for all pollutants for which the waterbody is impaired, or their surrogates, and using a standard analytical method, provided one exists (see 40 CFR Part 136). However, unlike the 2015 MSGP, which allowed operators to discontinue impaired waters monitoring for the remainder of their permit coverage after one year if the pollutant was not detected or expected in the discharge, the 2021 MSGP allows operators to discontinue monitoring for just the next two years for any pollutant that is not detected. Annual monitoring must continue for any pollutant that is detected in the discharge for which the receiving water is impaired.

After two years (i.e., in year four of permit coverage), the 2021 MSGP requires that all operators resume monitoring for a sub-set of pollutants initially monitored for in the first year: pollutants (or their indicators or surrogates) that are both causing impairments and associated with the operator's industrial activity and/or are listed as a required benchmark parameter for the operator's subsector in Part 8 and, if applicable, Part 9. To determine this list of pollutants for which the operator must conduct benchmark monitoring for in the fourth year of permit coverage, operators should start with the list of pollutants for which the

waterbody is impaired and for which a standard analytical method exists (see 40 CFR Part 136), then compare that list to the industrial pollutants identified in Part 6.2.3.2 and any sector-specific benchmark monitoring pollutants in Part 8, and if applicable, Part 9. The operator must monitor for pollutants that appear on both the impairments list and either the industrial pollutants and/or benchmark list, including "indicator" or "surrogate" pollutants, to understand the extent to which pollutants associated with their industrial activity are contributing to impairments. Operators may discontinue monitoring for the remainder of their permit coverage for any pollutants that are not detected in year four. The extended impaired waters monitoring schedule under the 2021 MSGP will ensure that operators affirmatively determine in their first year of permit coverage that a parameter causing an impairment is not present in the facility's stormwater discharge before narrowing the list of monitored parameters in the fourth year. Requiring monitoring in years one and four allows for a periodic check on the operator's potential contribution to impairments during their permit coverage. The basis for discontinuing impaired waters monitoring under this Part must be documented and retained with the SWPPP, including if the operator has determined that the presence of a pollutant in their discharge is caused solely by natural background sources. Operators are advised to follow the same guidance provided in Part 5.2.6 of this Fact Sheet in determining if the natural background exception is applicable. Operators should consult the applicable EPA Regional Office for help, if needed. The same exception may also be available to dischargers of pollutants attributed solely to run-on sources. This exception is only available after discussing the situation and receiving guidance and approval from the applicable EPA Regional Office.

Operators should consult the applicable EPA Regional Office for any available guidance regarding required monitoring parameters under this Part. EPA notes that, as with all six types of monitoring in the 2021 MSGP, operators can combine monitoring activities where requirements are duplicative (e.g., if effluent limitation guidelines-based limits or benchmark monitoring requirements and impaired water monitoring both require testing for the same parameter at the same discharge point).

Discharges to impaired waters with an EPA-approved or established TMDL

If a facility discharges stormwater to an impaired water with an approved or established TMDL, operators are not required to monitor for the pollutant(s) for which the TMDL was written unless EPA informs the operator that they are subject to such a requirement consistent with the assumptions and requirements of the TMDL and its wasteload allocation. Where applicable, EPA's notice will include specification on which pollutant(s) to monitor and the required monitoring frequency.

The monitoring requirements in Part 4.2.5 are intended to provide the states and EPA with further information on the impacts stormwater from permitted industrial facilities have on impaired waters, and to help ensure that the facilities are not causing or contributing to the impairment. For discharges to impaired waters that do not yet have an approved TMDL for pollutants of concern, these monitoring data are important for developing the TMDL to identify potential sources of the pollutants causing the impairment(s) as well as to identify sources that are not likely to contribute to the impairment(s) and thus may not be included in the TMDL or its wasteload allocation. They are also important for assessing whether additional water quality-based effluent limits, either numeric or qualitative, are necessary on a site-specific basis to ensure that facilities meet water quality standards. For discharges of pollutants to waters with an approved or established TMDL, monitoring data provides a means of ensuring that discharges are controlled consistent with the TMDL, as well as a useful tool to assess the operator's progress toward achieving necessary pollutant reductions consistent with any wasteload allocation.

Part 4.2.5.2 Exception for Inactive and Unstaffed Facilities

This Part of the permit includes an exception from impaired waters monitoring for facilities that are both inactive and unstaffed, when such facilities no longer have industrial activities or materials exposed to stormwater. This exception has different requirements for Sectors G, H, and J.

Part 4.2.6 Additional Monitoring Required by EPA

EPA may determine that additional stormwater discharge monitoring is necessary to meet the permit's effluent limits, specifically the permit's water quality-based effluent limit. In this case, EPA will provide the appropriate facility with a brief description of why additional monitoring is needed, locations and parameters to be monitored, frequency and period of monitoring, sample types, and reporting requirements.

Part 5 Corrective Actions and Additional Implementation Measures (AIM)

The 2021 MSGP retains the corrective action conditions in Part 5.1.1 to ensure effluent limits are met and Part 5.1.2 when construction or a change in design, operation, or maintenance occurs, and corresponding corrective action deadlines in Part 5.1.3, which remain unchanged from the 2015 MSGP. Those corrective action conditions in Part 5.1.1 include an unauthorized release, an exceedance of numeric effluent limits, failed or improperly installed SCMs, and visual assessments indicating water quality standards may be violated. The corrective action condition in Part 5.1.2 applies when construction or a change in design, operation, or maintenance at the facility occurs that significantly changes the nature of pollutants discharged via stormwater from the facility, or significantly increases the quantity of pollutants discharged. If any conditions in Part 5.1.1 or 5.1.2 occurred, Part 5.1.3 requires that the operator implement timely fixes so that the condition triggering the issue is resolved.

Previous MSGPs also required corrective action in the event of an exceedance of a benchmark monitoring threshold. The 2015 MSGP required the operator to review the SWPPP and adjust SCMs, depending on the facility's assessment, to bring any exceedances below the benchmark threshold, and continue quarterly monitoring until no further exceedance occurred.

The 2021 MSGP contains revisions to those corrective actions required for benchmark exceedances, now called Additional Implementation Measures (AIM). The 2021 MSGP AIM requirements keep follow-up actions for benchmark exceedances clear, timely, and proportional to exceedance frequency and duration. The new AIM requirements provide a sequential, stepwise follow-up process if advancement through the AIM levels is warranted. This process provides more regulatory certainty as to what is required of an operator and in what timeframe once a benchmark triggering event occurs. The new requirements also facilitate the identification of any issues and implementation of any follow-up responses in a timely manner and addresses previous stakeholder concerns that the prior MSGP's corrective actions were not sufficient to ensure that discharges under the permit are sufficiently controlled to protect water quality. The 2015 MSGP's corrective actions for benchmark exceedances may have allowed facilities to only make minimal changes, or no changes, in their SWPPP or to their SCMs, which may have led to limited stormwater control measure effectiveness. Under the 2015 MSGP's requirements, facilities' benchmark exceedances as well as their attempts to reduce pollutant levels below the benchmark thresholds could potentially continue in an endless loop, without clear expectations in the permit for how to improve the necessary response, if warranted, nor for how to comply with certainty.

The new AIM process leads the operator through a linear, three-level response triggered by a four-quarter annual average exceedance of a benchmark, or by fewer than four quarterly samples, but where a single sample or the sum of any sample results within the sampling year exceeds the benchmark threshold by more than four times for a parameter, indicating an exceedance is mathematically certain (i.e., the sum of quarterly sample results to date is already more than four times the benchmark threshold). Stepwise advancement through AIM indicates repeated benchmark exceedances and prescribes increasingly robust controls with each subsequent level. In the 2021 MSGP, AIM levels are sequential, and levels cannot be skipped. In other words, an operator would need to progress from baseline status to Level 1 before progressing to Level 2, and Level 2 before progressing to Level 3. The operator is in the best position to evaluate the initial cause of their benchmark exceedance, and should have the opportunity to self-correct in AIM Level 1 before advancing to Level 2 or subsequently to Level 3, in which additional SCMs are no longer optional but required. EPA renamed the three-stages of AIM to be "levels" rather than "tiers," as it was called during the proposal of the permit, based on public comment to reduce any confusion related to identical terminology related to the tiers of waterbodies for antidegradation purposes (e.g., tier 3 waters) that may also be applicable for some facilities.

However, EPA has always and continues to hold that benchmark thresholds by themselves are not numeric water quality-based effluent limits (or any effluent limit); and therefore, facilities whose responses to benchmark exceedances comply with the permit's requirements, but do not achieve sub-benchmark pollutant levels, would not be in violation of the permit solely on the basis of the benchmark exceedances because a benchmark exceedance is not definitive proof that a water quality standard has been exceeded. The 2021 MSGP provides a clearer and more robust process to improve the previous permit's requirements for responding to benchmark exceedances, facilitating the examination and implementation of additional actions that an operator must reasonably take to lower pollutant levels in stormwater discharges and provide effective stormwater control.

The 2021 MSGP's AIM requirements improve upon the 2015 MSGP's provisions for responding to benchmark exceedances through a three-stage protocol that gets progressively more prescriptive with the required responses, and thus more protective, when the average of quarterly monitoring results exceed or repeatedly exceed benchmark thresholds. There are three stages of response, known in the final 2021 MSGP as "Additional Implementation Measures," so-named to bolster EPA's long-held position that benchmark exceedances alone are not permit violations. The AIM protocol is triggered if an operator has a four-quarterly annual sampling average exceedance, including averages from fewer than four quarters of sampling that demonstrate the annual average will inevitably be exceeded. The AIM triggering events are: (a) The four-quarterly annual average for a parameter exceeds the benchmark threshold; and (b), Fewer than four quarterly samples have been collected, but a single sample or the sum of any sample results within the sampling year exceeds the benchmark threshold by more than four times for a parameter, indicating an exceedance of the annual average is mathematically certain (i.e., the sum of quarterly sample results to date is already more than four times the benchmark threshold). The AIM requirements apply on a parameter-specific, per discharge point basis and supplement, as opposed to supplant, the technology-based, water quality-based, and remaining provisions of the permit. Regarding annual averages, their calculation (i.e., the clock) is reset upon triggering and complying with each AIM level individually and demonstrating that the relevant discharge is below the benchmark threshold for the exceeded parameter. An operator with sampling results that show a triggering event has occurred must continue benchmark monitoring for the same parameter that caused the triggering event until four additional quarters of monitoring do not prompt a triggering event. In

addition to the triggering events noted above, the new AIM requirements also detail the required responses, deadlines for implementing those responses, and allowable exceptions.

For the next proposed MSGP, EPA will evaluate the benchmark monitoring data submitted under this permit along with data on the AIM levels triggered by any benchmark exceedances to analyze the effectiveness of the AIM response requirements (i.e., implementing more robust SCMs) on reducing benchmark exceedances.

Part 5.1 Corrective Action

Part 5.1.1 Conditions Requiring SWPPP Review and Revision to Ensure Effluent Limits are Met

As discussed above, the corrective actions conditions in this Part and corresponding corrective action deadlines in Part 5.1.3 remain unchanged from the 2015 MSGP. If operators find that any of the conditions in this Part of the 2021 MSGP have occurred, they are required to review and revise their SWPPP to eliminate the condition so that the permit's effluent limits are met and pollutant discharges are minimized. Operators may become aware of these conditions through an inspection, monitoring, or other means, or if EPA informs the operator of the condition(s).

The SWPPP review should focus on sources of pollution, spill and leak procedures, non-stormwater discharges, selection, design, installation and implementation of stormwater control measures. This Part of the 2021 MSGP specifies the following conditions requiring review and revision to ensure effluent limits are met, which are identical to the correction action triggering conditions in the 2015 MSGP:

- An unauthorized release or discharge (e.g., spill, leak, or discharge of non-stormwater not authorized by the MSGP or another NPDES permit) occurring at the facility.
- A discharge that violates a numeric effluent limitation listed in Table 2-1 and/or in the Part 8 sector-specific requirements.
- Control measures that are not stringent enough for the discharge to be controlled as necessary to meet applicable water quality standards or the non-numeric effluent limits in the permit.
- Where a required stormwater control measure was never installed, was installed incorrectly, or not in accordance with Parts 2 and/or 8, or is not being properly operated or maintained.
- Whenever a visual assessment shows evidence of stormwater pollution (e.g., color, odor, floating solids, settled solids, suspended solids, foam).

Part 5.1.2 Conditions Requiring SWPPP Review to Determine if Modifications Are Necessary.

This Part retains the requirement from the 2015 MSGP that if construction or a change in design, operation, or maintenance at the facility occurs that significantly changes the nature of pollutants discharged via stormwater from the facility, or significantly increases the quantity of pollutants discharged, the operator must review the SWPPP (e.g., sources of pollution, spill and leak procedures, non-stormwater discharges, selection, design, installation and implementation of control measures) to determine if modifications are necessary to meet the effluent limits in the permit. EPA had contemplated under the proposed 2020 MSGP moving this condition to the AIM section in Part 5.2, but based on public comments, this condition remains with the corrective action section for the 2021 MSGP.

Part 5.1.3 Deadlines for Corrective Actions

The 2021 MSGP includes specific deadlines for taking corrective actions to remedy deficiencies. These deadlines remain largely unchanged from the 2015 MSGP. The time limits in Part 5 are those that EPA considers reasonable for making the necessary repairs or modifications and are included specifically so that inadequacies are not allowed to persist indefinitely.

When conditions exist that trigger corrective action, a facility must immediately take (i.e., on the same day the condition was found) all reasonable steps to minimize or prevent pollutant discharges via stormwater until the operator can implement a permanent solution

The permit's immediate actions are substantially similar to requirements in the 2015 MSGP. Minor changes are clarifying that "all reasonable steps" means responding to the conditions triggering the corrective action (the 2015 MSGP describes "all reasonable steps" to be undertaking initial actions to assess and address the condition causing the corrective action). Additionally, EPA clarifies in the permit that when corrective actions are identified too late in the work day, the corrective action must be performed by the following work day morning (the 2015 MSGP specified that corrective action be initiated the following work day). These changes provide greater assurance that corrective actions are implemented expeditiously to minimize pollutant discharges.

The 2021 MSGP requires that the operator take subsequent action to implement a permanent solution no later than 14 calendar days from discovering the corrective action-triggering condition (e.g., by installing a new or modifying an existing control or by completing any needed stormwater control measure repairs). This requirement has not changed from the 2015 MSGP.

EPA does recognize that there may be circumstances in which immediate action to initiate corrective action may not be possible within the same day a corrective action condition is found. "All reasonable steps" does not necessitate taking action when it is unsafe to do so (e.g., due to inclement weather). EPA also recognizes that there may be circumstances where it is not feasible to complete needed corrective actions within 14 days, and therefore provides that operators may modify the schedule for completing the corrective action so that corrective action is taken as soon as practicable after the 14-day timeframe, and is completed no later than 45 days after discovery of the triggering condition. If it will take longer than 45-days to complete the corrective action, the permit also allows operators to take the minimum additional time necessary to complete the corrective action, provided that the operator notifies the applicable EPA Regional Office. Operators must provide a rationale for an extension of the timeframe, and a corrective action completion date to the applicable EPA Regional Office, and also include this in their corrective action documentation.

EPA recognizes that identifying both the need to take corrective action and the appropriate modifications to the stormwater control measures will, in some cases, be an iterative process. Several storm events may be needed to determine how to fully resolve the triggering issue(s). For example, if a visual assessment indicates that the facility is discharging suspended solids in stormwater, an appropriate corrective action may be to immediately clean up any signs of visible sources of the pollutants on the site (e.g., through immediate sweeping or vacuuming of exposed surfaces), and then to review the SWPPP to identify additional potential deficiencies or pollutant sources. If poor housekeeping is suspected to be the cause, operators may decide to implement a new schedule of increased sweeping or vacuuming within 14 calendar days. However, if a subsequent visual

assessment indicates that suspended solids remain a stormwater pollution issue that would be a separate corrective action-triggering event. In such a case, operators would undertake the corrective action review process again in order to assess and correct other deficiencies that are suspected to be the cause, meaning that the corrective action deadlines in Part 5.1.3 would be reset.

EPA emphasizes that these timeframes are not grace periods within which an operator is relieved of any liability for a permit violation that may have triggered the corrective action. If the original inadequacy triggering a corrective action constitutes a permit violation, then that violation is not deferred or erased by the timeframe EPA has allotted for corrective action. In all cases, failing to take corrective action as required in Part 5 constitutes a permit violation separate and apart from any violation that the triggering event may have constituted.

Part 5.1.4 Effect of Corrective Action

The permit states that if the condition triggering the corrective action review is a permit violation (e.g., exceedance of a numeric effluent limitation), correcting it does not remove the original violation. Additionally, failure to take corrective action in accordance with Part 5 is a separate permit violation (in addition to any permit violation that may have triggered corrective action). EPA will consider the appropriateness and promptness of corrective action in determining enforcement responses to permit violations. This provision is unchanged from the 2015 MSGP.

Part 5.1.5 Substantially Identical Discharge Points

If the event triggering corrective action is associated with a discharge point that has been identified as a "substantially identical discharge point" (SIDP) (see Parts 3.2.4.5 and 4.1.1), operators must assess the need for corrective action for all related SIDPs. Any necessary changes to control measures that affect these other discharge points must also be made before the next storm event if possible, or as soon as practicable following that storm event. Any corrective actions must be conducted within the timeframes set forth in Part 5.1.3.

Part 5.2 Additional Implementation Measures (AIM)

Part 5.2.1 Baseline Status

The 2021 MSGP includes a baseline status for all applicable facilities subject to benchmark monitoring once they receive authorization to discharge under Part 1.3, which is typically 30 calendar days after EPA notifies the operator that it has received a complete NOI. If benchmark monitoring results indicate an AIM triggering event has occurred and proceeding sequentially to AIM Level 1, 2, or 3, the operator may return directly to baseline status once the corresponding required response and conditions are met.

Part 5.2.2 AIM Triggering Events

The 2021 MSGP includes two AIM triggering events for all AIM levels and the triggering events do not change from level to level. The triggering events are based on quarterly samples that result in an exceedance of the annual average, including a one-sample exceedance, or two-, or three-sample average exceedance that result in a mathematically certain exceedance of the annual average. The two AIM triggering events are: (a) The four-quarterly annual average for a parameter exceeds the benchmark threshold, and (b) Fewer than four quarterly samples have been collected, but a single sample or the sum of any sample results within the sampling year exceeds the benchmark

threshold by more than four times for a parameter. This result indicates an exceedance is mathematically certain (i.e., the sum of quarterly sample results to date is already more than four times the benchmark threshold). EPA notes that because pH is on a logarithmic scale, an annual average exceedance for pH can only occur if the four-quarter annual average exceeds the benchmark threshold. EPA is also developing a simple spreadsheet to assist operators with determining if their samples trigger AIM.

Requiring AIM for a one-sample exceedance, or two-, or three-sample average exceedance that indicates an annual average exceedance, is consistent with the equivalent triggering conditions in the 2015 MSGP and appropriate to ensure that facilities respond in a timely manner as soon as any potential issues are identified. Any quarterly sample collected that results in a benchmark exceedance based on mathematical certainty will trigger a timely response in accordance with the responses and deadlines specified in the permit.

The required responses for each AIM level are also consistent with the familiar recommended protocol contained within EPA's existing industrial stormwater sector-specific fact sheets, which suggest that the operator should first focus on reviews of existing control measures, stormwater pollution prevention plans, and other on-site activities to see if any actions or SWPPP revisions are necessary (as in AIM Level 1), then look at additional pollution prevention/good housekeeping measures that could be implemented (as in AIM Level 2), and finally structural source controls and/or treatment controls that could be installed (as in AIM Level 3).

The following is a discussion of each AIM level.

Part 5.2.3 AIM Level 1

An operator's baseline status will change to Level 1 status if quarterly benchmark monitoring results indicate that an AIM triggering event described above and in Part 5.2.2 has occurred, unless the operator qualifies for an exception under Part 5.2.6.

AIM Level 1 Example A:
Benchmark Monitoring Results that would NOT trigger AIM

Below are example benchmark monitoring results that would NOT trigger any AIM requirements. In these results, AIM is not triggered **because the annual averages are below the benchmark threshold.**

Parameter	Benchmark	AIM 1 triggers:
Total Suspended Solids (TSS) (mg/L)	100 mg/L	• A 4-quarter benchmark average = over 101 mg/L • Fewer than four quarterly samples collected, but a single sample or the sum of any sample results exceeds the benchmark threshold by more than four times = over 401 mg/L

Samples	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Sum to date	Sample Average
Ex. 1	50	150	25	25	250	63
Ex. 2	100	105	100	95	400	100
Ex. 3	0	400	0	0	400	100

AIM Level 1 Example B:
Annual Average Over the Benchmark Threshold

Below are example benchmark monitoring results that WOULD trigger AIM Level 1. In these results, AIM Level 1 is triggered **because the annual average exceeds the benchmark threshold** (or an exceedance of the four-quarter average is mathematically certain i.e., if the sum of quarterly sample results to date is more than four times the benchmark threshold).

Parameter	Benchmark	AIM triggers:
Total Suspended Solids (TSS) (mg/L)	100 mg/L	• A 4-quarter benchmark average = over 101 mg/L • Fewer than four quarterly samples collected, but a single sample or the sum of any sample results exceeds the benchmark threshold by more than four times = over 401 mg/L

Samples	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Sum to date	Sample Average
Ex. 1	105	120	100	95 (Level 1 triggered)	420	105
Ex. 2	300	110 (Level 1 triggered)	*	*	410	Over 101

In Example 1, AIM Level 1 is triggered in the 4th quarter because after 4 samples, the annual average (105 + 120 + 100 + 95 = 420/4 = 105 mg/L) exceeds the benchmark threshold (100 mg/L). AIM Level 1 responses must be completed within 14 days of receipt of laboratory results and quarterly benchmark monitoring must continue for at least the next four quarters.

In Example 2, AIM Level 1 is triggered in the 2nd quarter because the 1st and 2nd quarter results (300 mg/L and 110 mg/L) mean an exceedance of the four-quarter average of the benchmark threshold (100 mg/L) is mathematically certain, even if the 3rd and 4th quarter sampling results denoted by a * were 0 (300 + 110 + 0 + 0 = 410/4 = 102.5 mg/L). AIM Level 1 responses must be completed within 14 days of receipt of laboratory results in the 2nd quarter and quarterly benchmark monitoring must continue for at least the next four quarters.

Part 5.2.3.1 AIM Level 1 Responses

AIM Level 1 requires two responses plus continued quarterly monitoring. These responses are identical to required responses for a benchmark exceedance in the 2015 MSGP. First, the operator would need to immediately review existing control measures, SWPPP, and other on-site activities to see if any actions or SWPPP revisions are necessary. Examples of portions of the facility's control measures, SWPPP, and other on-site activities it should review include sources of pollution, spill and leak procedures, non-stormwater discharges, and selection, design, installation, and implementation of control measures. Second, after reviewing the control measures and SWPPP, the operator would implement those additional implementation measures, such as a single comprehensive clean-up, a change in subcontractor, a modification or replacement of an existing SCM, and/or increased inspections, to bring the exceedances below the parameter's benchmark threshold. However, an operator could determine that, after reviewing the stormwater control measures and SWPPP, nothing further needs to be done to achieve lower pollutant discharge levels. In this case, the operator would be required to document per Part 5.3 and include in the Annual Report why it expected its existing SWPPP and SCMs to bring exceedances below the parameter's benchmark threshold for the next 12-month period.

With the variability of stormwater and the small sample set of monitoring results, it may be reasonable for the operator to conclude that the current stormwater control measures are performing appropriately and further monitoring will support that the facility's existing controls will achieve the necessary pollutant reductions. This response mirrors the 2015 MSGP's corrective action response requirements.

Part 5.2.3.2 AIM Level 1 Deadlines

If any modifications to or additional control measures are necessary in response to AIM Level 1, the operator is required to implement those actions or modifications within 14 days of receipt of laboratory results. If doing so within 14 days is infeasible, the operator is required to document per Part 5.3 why it is infeasible to implement such actions or modifications within 45 days of receipt of laboratory results. The 2021 MSGP requires a 14-day deadline for AIM Level 1 responses because EPA expects Level 1 responses to be able to be implemented relatively quickly to address exceedances and any potential impacts on water quality. This deadline is consistent with the previous deadline for corrective actions for benchmark exceedances in the 2015 MSGP.

Part 5.2.3.3 Continued Quarterly Monitoring

After compliance with AIM Level 1 responses and deadlines, the operator is required to continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the AIM triggering event at all affected discharge points, beginning no later than the next full quarter after compliance. Even if AIM was triggered in the first quarter of the first year of monitoring, EPA requires that the operator comply with AIM Level 1 requirements at that time and continue quarterly monitoring until the next four-quarter average no longer exceeds the benchmark value.

Part 5.2.3.4 AIM Level 1 Status Updates

EPA specifies in this Part the conditions for returning to baseline status and the conditions under which an operator would proceed to the next AIM level. EPA included these conditions in the permit to clarify how an operator can reset the AIM process as well as how advancement to the next level would be determined. While in AIM Level 1 status, the operator may either return to baseline status, or if benchmark exceedances continue, progress to AIM Level 2. The operator's AIM Level 1 status will return to baseline status if the AIM Level 1 responses have been met and the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has not occurred after four quarters of monitoring (i.e., the benchmark threshold is no longer exceeded for the parameter(s)). The operator may discontinue benchmark monitoring for that parameter until monitoring resumes in year 4 of permit coverage per Part 4.2.2.3 or if the operator has fulfilled all benchmark monitoring requirements per Part 4.2.2.3 (i.e., quarterly monitoring is complete for both year 1 and 4 of permit coverage) then it may discontinue monitoring for that parameter for the remainder of permit coverage. The operator's AIM Level 1 status advances to AIM Level 2 status if the operator has completed AIM Level 1 responses and the benchmark threshold continues to be exceeded for the same parameter(s). These status update conditions are the same for each AIM level and do not change from level to level.

Part 5.2.4 AIM Level 2

An operator's AIM Level 1 status changes to AIM Level 2 if the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has

occurred (i.e., the benchmark threshold continues to be exceeded for the parameter(s)), unless the operator qualifies for an exception per Part 5.2.6.

Just like in the 2015 MSGP and just as for AIM Level 1, if fewer than four quarterly samples indicate it is mathematically certain that a benchmark would be exceeded prior to collecting all quarterly samples, then the operator must respond accordingly.

AIM Level 2 Examples:
In AIM Level 1 and Next Annual Average Is Over the Benchmark Threshold

Below are example benchmark monitoring results that would trigger AIM Level 2. In these results, AIM Level 2 is triggered **because the operator is in AIM Level 1 and the next annual average exceeds the benchmark threshold** (or an exceedance of the four-quarter average is mathematically certain, i.e., if the sum of quarterly sample results to date is more than four times the benchmark threshold).

Parameter	Benchmark	AIM triggers:
Total Suspended Solids (TSS) (mg/L)	100 mg/L	• A 4-quarter benchmark average = over 101 mg/L • Fewer than four quarterly samples collected, but a single sample or the sum of any sample results exceeds the benchmark threshold by more than four times = over 401 mg/L

Example 1

First four quarters of monitoring						
Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
Ex. 1	105	120	100	95 (Level 1 triggered)	420	105
Continued quarterly monitoring while in AIM Level 1						
Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
Ex. 1	115	100	90	135 (Level 2 triggered)	440	110

Example 2

First four quarters of monitoring						
Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
Ex. 2	300	110 (Level 1 triggered)	*	*	410	Over 101
Continued quarterly monitoring while in AIM Level 1						
Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
Ex. 2	150	270 (Level 2 triggered)	**	**	420	Over 101

In Example 1, AIM Level 1 is triggered in the 4th quarter of the first four quarters of monitoring because after 4 samples, the annual average (105 + 120 + 100 + 95 = 420/4 = 105 mg/L) is above the benchmark

threshold (100 mg/L). Once AIM Level 1 responses and deadlines are met, quarterly benchmark monitoring must continue for the next four quarters. While in AIM Level 1, a triggering event occurs again in the 4th quarter because after another 4 quarterly samples, the annual average (115 + 100 + 90 + 135 = 440/4 = 110 mg/L) is again above the benchmark threshold (100 mg/L). AIM Level 2 responses must be completed within 14 days of receipt of laboratory results and quarterly benchmark monitoring must continue for the next four quarters.

In Example 2, AIM Level 1 is triggered in the 2nd quarter of the first four quarters of monitoring because the 1st and 2nd quarter results (300 mg/L and 110 mg/L) mean an exceedance of the four-quarter average of the benchmark threshold (100 mg/L) is mathematically certain, even if the 3rd and 4th quarter sampling results denoted by a * were 0 (300 + 110 + 0 + 0 = 410/4 = 102.5 mg/L). Once AIM Level 1 responses and deadlines are met, quarterly benchmark monitoring must continue for the next four quarters. While in AIM Level 1, a triggering event occurs in the 2nd quarter because, again, the 1st and 2nd quarter results (150 mg/L and 270 mg/L) mean an exceedance of the four-quarter average is mathematically certain, even if the 3rd and 4th quarter sampling results denoted by a ** were 0 (150 + 270 + 0 + 0 = 420/4 = 105 mg/L). AIM Level 2 responses must be completed within 14 days of receipt of laboratory results in the 2nd quarter and quarterly benchmark monitoring would continue for at least the next four quarters.

Part 5.2.4.1 AIM Level 2 Responses

Exceedances of AIM Level 2 magnitude warrant additional action. Therefore, after Level 2 is triggered, the Level 2 response requires the operator to implement additional pollution prevention/good housekeeping SCMs. EPA encourages facilities to consult the existing MSGP industrial stormwater sector-specific fact sheets for guidance on recommended SCMs appropriate to comply with AIM Level 2. Compliance with AIM Level 2 does not require the operator to implement *all* feasible SCMs from an appropriate sector-specific fact sheet, as contemplated in the proposal (previously, all fact sheets were compiled and named Appendix Q in the proposed permit). EPA received many comments on Appendix Q related to the relevancy of certain practices identified in the revised fact sheets. For example, one commenter indicated that the control measure "determine whether excessive application of deicing chemicals occurs and adjust as necessary" may potentially conflict with Federal Aviation Administration requirements and that other identified practices for Sector S (Air Transportation Facilities) were outdated and ineffective at airports. Some commenters also suggested that Appendix Q be converted to recommendations as guidance rather than contained in the permit itself. In light of the volume of comments, EPA retained the existing 2015 sector-specific fact sheet guidance for the 2021 MSGP to provide recommended controls and, over the course of the 2021 MSGP permit term, will work with external stakeholders to thoroughly review and revise, as needed, the checklists for future use.

To lower pollutant levels below benchmarks and better protect water quality, EPA requires operators to select those pollution prevention/good housekeeping SCMs best suited for their site-specific conditions, sources, and pollutants (if not already implemented) and to note those SCMs implemented per Part 5.3. This helps ensure that SCM selections are made with rigor and completeness, resulting in an effective SWPPP.

Part 5.2.4.2 AIM Level 2 Deadlines

The operator is required to select and implement additional pollution prevention/good housekeeping SCMs to comply with Level 2 within 14 days of receipt of laboratory results that indicate an AIM triggering event has occurred and document per Part 5.3 how the measures will achieve benchmark thresholds. If it is infeasible for the operator to implement a measure within 14 days, the operator may take up to 45 days to implement such measures, but must document per Part 5.3 why it was infeasible to do so within 14 days. EPA

may also grant an extension beyond 45 days based on an appropriate demonstration by the operator. While persistent high levels of pollutants should be mitigated as soon as possible, EPA acknowledges that operators may need more time for actions such as planning and designing their SCMs. After full implementation of selected SCMs, an operator must commence another cycle of quarterly benchmark monitoring for the next four quarters for all affected discharge points.

Part 5.2.4.3 Continued Quarterly Benchmark Monitoring

After compliance with AIM Level 2 responses and deadlines, the operator is required to continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the AIM triggering event at all affected discharge points, beginning no later than the next full quarter after compliance, as in Level 1.

Part 5.2.4.4 AIM Level 2 Status Updates

Just as in AIM Level 1, EPA specifies in this Part the conditions for returning to baseline status from Level 2 status, and the conditions under which an operator would proceed to AIM Level 3 status, if appropriate.

Part 5.2.5 AIM Level 3

An operator's AIM Level 2 status changes to AIM Level 3 if the continued quarterly benchmark monitoring results indicate that an AIM triggering event per Part 5.2.2 has occurred (i.e., the benchmark threshold continues to be exceeded for the parameter(s)), unless the operator qualifies for an exception per Part 5.2.6.

AIM Level 3 Example:
In AIM Level 2 and Next Annual Average Is Over the Benchmark Threshold

Below are example benchmark monitoring results that would trigger AIM Level 3. In these results, AIM Level 3 is triggered **because the operator is in AIM Level 2 and the next annual average exceeds the benchmark threshold** (or an exceedance of the four-quarter average is mathematically certain, i.e., if the sum of quarterly sample results to date is more than four times the benchmark threshold).

Parameter	Benchmark	AIM triggers:
Total Suspended Solids (TSS) (mg/L)	100 mg/L	• A 4-quarter benchmark average = over 101 mg/L • Fewer than four quarterly samples collected, but a single sample or the sum of any sample results exceeds the benchmark threshold by more than four times = over 401 mg/L

Example 1

First four quarters of monitoring						
Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
Ex. 1	105	120	100	95 (Level 1 triggered)	420	105
Continued quarterly monitoring while in AIM Level 1						
Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
Ex. 1	115	100	90	135 (Level 2 triggered)	440	110
Continued quarterly monitoring while in AIM Level 2						

	Samples	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Sum to date	Sample Average
	Ex. 1	85	150	105	120 (Level 3 triggered)	460	115

Example 2							
	First four quarters of monitoring						
	Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
	Ex. 2	300	110 (Level 1 triggered)	*	*	410	Over 101
	Continued quarterly monitoring while in AIM Level 1						
	Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
	Ex. 2	150	270 (Level 2 triggered)	**	**	420	Over 101
	Continued quarterly monitoring while in AIM Level 2						
	Samples	**1st Qtr.**	**2nd Qtr.**	**3rd Qtr.**	**4th Qtr.**	**Sum to date**	**Sample Average**
	Ex. 2	200	240 (Level 3 triggered)	***	***	440	Over 101

In Example 1, AIM Level 1 is triggered in the 4th quarter of the first four quarters of monitoring because after 4 samples, the annual average (105 + 120 + 100 + 95 = 420/4 = 105 mg/L) is above the benchmark threshold (100 mg/L). Once AIM Level 1 responses and deadlines are met, quarterly benchmark monitoring must continue for the next four quarters. While in AIM Level 1, a triggering event occurs again in the 4th quarter because after another 4 quarterly samples, the annual average (115 + 100 + 90 + 135 = 440/4 = 110 mg/L) is again above the benchmark threshold (100 mg/L). AIM Level 2 responses must be completed within 14 days of receipt of laboratory results and quarterly benchmark monitoring must continue for at least the next four quarters. While in AIM Level 2, a triggering event occurs again in the 4th quarter because after another 4 samples, the annual average (85 + 150 + 105 + 120 = 460/4 = 115 mg/L) is again above the benchmark threshold (100 mg/L). AIM Level 3 responses must be completed within the required deadlines of receipt of laboratory results and quarterly benchmark monitoring must continue for at least the next four quarters.

In Example 2, AIM Level 1 is triggered in the 2nd quarter of the first four quarters of monitoring because the 1st and 2nd quarter results (300 mg/L and 110 mg/L) mean an exceedance of the four-quarter average of the benchmark threshold (100 mg/L) is mathematically certain, even if the 3rd and 4th quarter sampling results denoted by a * were 0 (300 + 110 + 0 + 0 = 410/4 = 102.5 mg/L). Once AIM Level 1 responses and deadlines are met, quarterly benchmark monitoring must continue for the next four quarters. While in AIM Level 1, a triggering event occurs in the 2nd quarter because, again, the 1st and 2nd quarter results (150 mg/L and 270 mg/L) mean an exceedance of the four-quarter average is mathematically certain, even if the 3rd and 4th quarter sampling results denoted by a ** were 0 (150 + 270 + 0 + 0 = 420/4 = 105 mg/L). AIM Level 2 responses must be completed within 14 days of receipt of laboratory results in the 2nd quarter and quarterly benchmark monitoring must continue for at least the next four quarters. While in AIM Level 2, a triggering event occurs in the 2nd quarter because, again, the 1st and 2nd quarter results (200 mg/L and 240 mg/L) mean an exceedance of the four-quarter average is mathematically certain even if the 3rd and 4th quarter sampling results denoted by a *** were 0 (200 + 240 + 0 + 0 = 440/4 = 110 mg/L). AIM Level 3 responses must be completed within the required deadlines of receipt of laboratory results and quarterly benchmark monitoring must continue for at least the next four quarters.

Part 5.2.5.1 AIM Level 3 Responses

The AIM Level 3 response requires an operator to implement one or more permanent, structural or treatment train technologies appropriate for the exceeded pollutants. Treatment removes pollutants from effluent rather than the more prevalent stormwater approach of pollution prevention. Structural controls could include building structures to prevent stormwater from being discharged. Treatment and structural controls are not required until AIM Level 3 due to the complexity and cost to the operator and are mandated only when earlier attempts to lower pollutants via pollution prevention/good housekeeping and other procedural changes fail to do so in AIM Levels 1 and 2. EPA expects that few operators will advance to AIM Level 3 after completing AIM Levels 1 and 2.

Part 5.2.5.2 AIM Level 3 Deadlines

In the 2021 MSGP, EPA is allowing additional time for operators to identify and install structural source and/or treatment control measures under AIM Level 3. AIM Level 3 requires that operators must identify the schedule for installing the appropriate structural source and/or treatment control measures within 14 days and install the identified measures within 60 days of the Level 3 triggering event. If is not feasible within 60 days, the operator may take up to 90 days to install such measures, documenting per Part 5.3 why it is infeasible to install the measure within 60 days. EPA may also grant an extension beyond 90 days based on an appropriate demonstration by the operator.

Part 5.2.5.3 Continued Quarterly Benchmark Monitoring

After compliance with AIM Level 3 responses and deadlines, the operator is required to continue quarterly benchmark monitoring for the next four quarters for the parameter(s) that caused the AIM triggering event at all affected discharge points, beginning no later than the next full quarter after compliance, as in AIM Levels 1 and 2.

Part 5.2.5.4 AIM Level 3 Status Updates

Just as in AIM Levels 1 and 2, EPA specifies in this Part the conditions for returning to baseline status from Level 3 status, and the conditions under which an operator would remain in AIM Level 3 status. If after AIM Level 3 compliance, the operator continues to exceed the benchmark threshold for the same parameter, EPA may require the operator to apply for an individual permit. At this stage, circumstances at the facility could indicate that the discharge is no longer appropriately controlled under the general permit (40 C.F.R. 122.28(b)(3)(E)). More site-specific requirements tailored to address the facility's stormwater discharges under an individual permit may be appropriate if benchmark exceedances continue to occur despite implementation of standard SCMs required to comply with this general permit.

Part 5.2.6 AIM Exceptions

This Part of the 2021 MSGP includes five exceptions that could allow an operator to be relieved of compliance with AIM requirements and continued benchmark monitoring at any AIM level. Two exceptions are carry-overs from the 2015 MSGP: one being that the exceedance was caused by natural background levels of pollutants causing the elevated levels and the other being that the exceedance was caused by run-on from a neighboring source which elevates the operator's pollutant levels, which requires EPA approval before the operator can qualify for this exception. Three additional exceptions are included in the 2021 MSGP as well: one being that the exceedance was an abnormal event; one for discharges of copper and aluminum using facility-specific criteria; and the other that the exceedance does not result in any exceedance of water quality standards. EPA notes that

these exceptions are not available for effluent limitation monitoring (Part 4.2.3). Details on each exception are discussed below.

The 2021 MSGP does not include an exception for feasibility, such as one found in the 2015 MSGP (i.e., no further pollutant reductions are technologically available and economically practicable and achievable in light of best industry practice). This exception to AIM is inappropriate in the 2021 MSGP for several reasons. Feasibility considerations are not relevant at AIM Level 1 because the operator can self-determine that no additional measures are warranted, as well as AIM Level 2 where the operate can select pollution prevention/house-keeping measures they deem appropriate. At AIM Level 3, repeated benchmark exceedances have occurred to a point at which implementation of permanent stormwater control measures is warranted. Industrial stormwater discharges are explicitly required to meet all provisions of CWA §301, including applicable water quality standards (CWA §402(p)(3)(A)).

Part 5.2.6.1 Details on AIM Exception due to Natural Background Pollutant Levels

EPA maintains from the 2015 MSGP the option for operators to justify benchmark exceedances based on local natural background concentrations. This Part allows for an exception from AIM requirements and continued benchmark monitoring when natural background levels are solely responsible for the exceedance of a benchmark threshold. This can be determined if (1) natural background pollutant concentrations are greater than the corresponding benchmark threshold, and (2) there is no net facility contribution of the pollutant (i.e., the four-quarter average concentration detected in the discharge from all monitored discharge points minus the average natural concentration of the parameter does not exceed zero). An operator is eligible for the exception provided that all the following conditions are met, and the operator submits an analysis and documentation to the applicable EPA Regional Office upon request:

- The four-quarter average concentration of benchmark monitoring results (or fewer than four-quarters of data that trigger an exceedance) is less than or equal to the concentration of that pollutant in the natural background; and
- The operator documents and maintains with the SWPPP, as required in Part 6.5, the supporting rationale for concluding that benchmark exceedances are in fact attributable solely to natural background pollutant levels. The operator must include in the supporting rationale any data previously collected by the operator or others (including literature studies) that describe the levels of natural background pollutants in the stormwater discharge. Natural background pollutants are those substances that are naturally occurring in soils or groundwater. Natural background pollutants do not include legacy pollutants from earlier activity on your site, or pollutants in run-on from neighboring sources which are not naturally occurring, such as other industrial facilities or roadways.

This natural background exception could apply to parameters such as metals derived from natural mineral deposits and nutrients attributable to background soil, vegetation, or wildlife sources. Natural background levels cannot be attributed to run-on from non-natural sources such as other industrial sites or roadways (however, per Part 5.2.6.2, a facility may be eligible to discontinue monitoring for pollutants that occur solely from run-on sources). If background concentrations are not responsible for the benchmark exceedance, the operator will need to comply with the applicable AIM requirements, per Part 5.2. Operators must use the same sample collection, preservation, and analysis methods for natural background monitoring as required for benchmark monitoring.

If operators experience average benchmark exceedances for one or more pollutants during coverage under the 2021 MSGP or suspect that they might have benchmark exceedances caused entirely by natural background, they can begin monitoring the natural background pollutant concentrations from a non-human impacted reference site concurrently with required benchmark monitoring and compliance with AIM requirements. After monitoring for four quarters and adequately determining that exceedances are the result of pollutants present in the natural background, operators may discontinue AIM responses and additional benchmark sampling if all conditions in Part 5.2.6.2 are met. The following is a list of information the operator must document and maintain with the SWPPP, as required by Part 5 to support a rationale for the natural background exception:

- Map showing the reference site location in relation to facility along with available land cover information;
- Reference site and facility site elevation;
- Available geology and soil information for reference and facility sites;
- Photographs showing reference site vegetation;
- Reference site reconnaissance survey data regarding presence of roads, discharge points, or other human-made structures; and
- Records from relevant state or federal agencies indicating no known mining, forestry, or other human activities upstream of the reference site.

The background concentration of a pollutant in discharges from a non-human impacted reference site in the same watershed should be determined by evaluating ambient monitoring data or by using information from a peer-reviewed publication or a local, state, or federal government publication specific to stormwater in the immediate region. Studies that are in other geographic areas, or are based on clearly different topographies or soils, are not appropriate. When no data are available, and there are no known sources of the pollutant, the background concentration should be assumed to be zero. In cases where historic monitoring data from a site are used for generating a natural background value, and the site is no longer accessible or able to meet reference site acceptability criteria, then there must be documentation (e.g., historic land use maps) that the site met reference site criteria (indicating absence of human activity) during the time data collection occurred.

The justification for this exception must be kept on-site with the facilities' SWPPP (see Part 6.5) and made available to EPA upon request. EPA may review the operator's determinations that a benchmark exceedance is based solely on natural background concentrations and disallow the exception if the Agency finds the documentation inadequate. Operators that have previously made a determination that benchmark exceedances are attributable solely to the presence of that pollutant in the natural background may be able to rely on a previous analysis and rationale for waiving compliance with AIM requirements and discontinuing benchmark monitoring under the 2021 MSGP. However, these operators must conduct four quarters of benchmark monitoring in the first year of permit coverage under the 2021 MSGP and the results must continue to show that the average concentration of pollutants in the facility's discharge are less than or equal to the concentration of that pollutant in the natural background. In such circumstances, there is no ongoing burden to comply with AIM requirements or to expend additional resources in justifying the rationale for meeting this exception, and benchmark monitoring can be discontinued for the duration of the permit.

EPA is maintaining the 2015 MSGP's method for determining natural background pollutant

concentrations in relation to this exception. Under the proposed MSGP, EPA had contemplated changing the threshold for the natural background exception for benchmark exceedances from the 2015 MSGP threshold. The approach used in the 2015 MSGP (as well as the preceding 2008 MSGP) required the average concentration of the benchmark monitoring results to be at or below natural background levels to qualify for the exception. By comparison, under the proposed method in the proposed 2020 MSGP, the operator would qualify for the exception if the four-quarter average concentration of the benchmark monitoring results minus the concentration of that pollutant in the natural background is less than or equal to the benchmark threshold. Essentially, but for the natural background contribution, the operator's discharge would meet the benchmark threshold. The difference between the two approaches is that in the proposed method, an operator could subtract from the benchmark results from the value attributable to natural background.

EPA contemplated this revised subtraction method based on previous stakeholder feedback that the 2015 MSGP standard for the exception was burdensome because it required the operator to demonstrate no net facility contributions, meaning the four-quarter average concentration detected in discharges from all monitored discharge points minus the average natural concentration of the parameter could not exceed zero. However, EPA did retain in the proposal that the exception is allowed only when "the benchmark exceedance is *solely attributable* to the presence of that pollutant in natural background sources," because the burden on the operator to meet the exception is outweighed by the potential effect on water quality from uncontrolled pollutant contributions.

After further consideration of the rationale behind the 2015 MSGP's (and 2008 MSGP's) approach and review of public comments, which both supported and opposed the newly proposed subtraction method, EPA is retaining the 2015 MSGP approach to applying the natural background exception for several reasons.

First, the 2015 MSGP approach is consistent with existing EPA policy concerning the establishment of site-specific water quality criteria based on natural background conditions. See EPA's Office of Science and Technology memorandum, Establishing Site Specific Aquatic Life Criteria Equal to Natural Background (November 5, 1997). The policy states that aquatic life criteria should be equal to natural background, defined as background concentration due only to non-anthropogenic sources, i.e., non-manmade sources. Upon reconsideration of the proposed 2020 MSGP approach, which would have enabled the facility to subtract out the amount of the pollutant attributable to natural background from the pollutant levels found in the benchmark sample, EPA found that it would be inconsistent with the "solely attributable" standard EPA intends to maintain in the MSGP and the longstanding EPA policy referenced above. Since many of EPA's benchmark thresholds are based on aquatic life criteria (see 60 Fed. Reg. 50,804, 50,825 (Sept. 29, 1995)), the principles discussed in this policy are appropriate to uphold when establishing a natural background exception for benchmark exceedances.

Additionally, as stated in EPA's response to comment document for the 2015 MSGP, "EPA's long-standing position, consistent with the CWA and EPA's permitting regulations, is that operators are responsible for the quality of their discharges, regardless of what may be added as a result of run-on from other sources or legacy/anthropomorphic sources of pollutants." Additionally, the 2015 MSGP response to comments stated that "the CWA does not allow EPA or states to set a site-specific criteria equal to the natural background plus an otherwise protective level … since doing so could raise the level of the pollutant in the

water body that might [be] above the natural background, which would not be protective of aquatic life, at a minimum." See *Natural Background Exception to Benchmark Monitoring* (p. 5-6) in Response to Public Comments – EPA NPDES 2015 Multi-Sector General Permit (MSGP), June 4, 2015. EPA maintains that this principle applies to benchmark monitoring and Additional Implementation Measures.

Public comments also raised a variety of concerns to EPA that the proposed subtraction method is counter to the "solely attributable" standard and is not appropriate for the MSGP. Commenters pointed out that the proposed subtraction method does not limit the exception to situations where benchmark exceedances are "solely attributable" to natural background sources, but rather it flipped the standard to excuse an exceedance if it was solely attributable to the operator's discharges, substantially weakening the effectiveness of the benchmark monitoring requirements. Commenters also noted that the subtraction method does not account for the proportion of flow due to natural background sources in the discharge and assumes that the natural background flows are equal to the stormwater discharge flows, meaning the proposed exception would allow operators to contribute pollutants in amounts greater than the benchmark and could cause or contribute to water quality impairments. The proposed subtraction method essentially would allow operators to contribute higher concentrations to receiving waters than previously allowed without triggering AIM. This is not EPA's intention with this exception.

Additionally, as EPA expects that more operators would have qualified for the exception under the proposed subtraction method and been excused of from controlling their pollutant contributions to their benchmark exceedances, the Agency must prioritize reducing the cumulative and compounding effect on water quality in its decision to not revise the exception and maintain the 2015 MSGP standard in the 2021 MSGP.

Part 5.2.6.2 Details on AIM Exception due to Run-On

This operator is not required to comply with AIM responses or continued benchmark monitoring for any parameters for which it can demonstrate and obtain EPA agreement that run-on from a neighboring source (i.e., a source external to the facility) is the cause of the exceedance, provided that all the following conditions are met and the operator submits its analysis and documentation to the applicable EPA Regional Office for concurrence:

- After reviewing and revising the SWPPP, as appropriate, the operator must notify the other facility or entity contributing run-on to the discharges and request that they abate their pollutant contribution.
- If the other facility or entity fails to take action to address their discharges or sources of pollutants, the operator must contact the applicable EPA Regional Office.

Part 5.2.6.3 Details on AIM Exception due to an Abnormal Event

The operator is not required to comply with AIM responses or continued benchmark monitoring for any parameters for which it immediately documents per Part 5.3 that the single event causing the exceedance was an abnormal event, a description explaining what caused the abnormal event, how any control measures taken within 14 days of such event will prevent a reoccurrence of the exceedance, and the operator takes a sample during the next qualifying precipitation event that is less than the benchmark threshold, in which case the operator does not trigger any AIM requirements based on the abnormal event. This new sample is the sample that should be reported in Net-DMR and used to calculate your annual average.

The operator may avail itself of the "abnormal" demonstration exception at any AIM Level, but only one time per parameter, per discharge point, which shall include substantially identical discharge points (SIDPs), for the duration of their permit coverage, provided the operator qualifies for the exception. EPA expects that the operator will ensure the abnormal event for the parameter does not occur repeatedly given that the nature of the event is atypical of the discharge quality. EPA also requires the operator to explain what caused the abnormal event as part of the documentation for this exception.

Part 5.2.6.4 For Aluminum and Copper benchmark parameters only: Details on AIM Exception due to demonstration that benchmark exceedance does not result in an exceedance of a facility-specific value using the national recommended water quality criteria in-lieu of the applicable MSGP benchmark threshold.

To be eligible for the exception, the operator must demonstrate to EPA that their discharge(s) that exceeded the applicable nationally representative MSGP benchmark threshold would not result in an exceedance of a derived facility-specific value. The demonstration to EPA, which will be made publicly available, must meet the minimum elements below in order to be considered for and approved by the applicable EPA Regional Office. Operators that exceed the MSGP benchmark for aluminum or copper must still comply with any AIM requirements and additional benchmark monitoring until the demonstration is made to and approved by the applicable EPA Regional Office. In this case, EPA suggests that samples collected for any continued benchmark monitoring also be analyzed for the required input parameters for each model for efficiency. For existing operators that anticipate an exceedance of the MSGP benchmark(s) based on previous monitoring data and expect to utilize this exception(s), EPA recommends those operators begin the required data collection in their first year of permit coverage.

Aluminum:

- Conditions of this exception include:
  - Use of EPA's 2018 National Recommended Aluminum Aquatic Life Criteria: https://www.epa.gov/wqc/aquatic-life-criteria-aluminum;
  - In-stream waterbody sampling for the three water quality input parameters for the recommended criteria model: pH, total hardness, and dissolved organic carbon (DOC);
  - Completion of sampling events sufficient to capture spatial and temporal variability. Sampling events must adequately represent each applicable season at the facility's location, which would likely be over the course of at least one year. An equal number of ambient waterbody samples must be collected at a single upstream and downstream location from the operator's discharge point(s) to the receiving water of the United States. Where there exists no ambient source water upstream of the operator's discharge point(s) to the receiving water of the United States, samples of the ambient downstream waterbody conditions are sufficient.
- The demonstration provided to EPA must include, at minimum:
  - A description of the sampling, analysis, and quality assurance procedures that were followed for data collection, following the guidance in Section 3 of EPA's Industrial Stormwater Monitoring and Sampling Guide. https://www.epa.gov/sites/production/files/2015-

11/documents/msgp_monitoring_guide.pdf;

- The input parameters and export of results from the Aluminum Criteria Calculator, available at: https://www.epa.gov/sites/production/files/2018-12/aluminum-criteria-calculator-v20.xlsm; and,
- A narrative summary of results.

Copper (only for discharges to freshwater):

- Conditions for this exception are:
  - Use of EPA's 2007 National Recommended Freshwater Copper Aquatic Life Criteria: https://www.epa.gov/wqc/aquatic-life-criteria-copper ;
  - In-stream waterbody sampling for the 10 water quality input parameters to the BLM for copper: pH; dissolved organic carbon (DOC); alkalinity; temperature; major cations (calcium, magnesium, sodium, and potassium); and major anions (sulfate, chloride);
  - The water quality input parameters, with the exception of temperature, must fall within the range of conditions recommended for use in the BLM, found in Table 1-1 of the Data Requirements document: https://www.epa.gov/sites/production/files/2015-11/documents/copper-data-requirements-training.pdf; and
  - Completion of sampling events sufficient to capture spatial and temporal variability. Because some of the BLM input parameters are known to vary seasonally, EPA suggests a possible starting point of at least one sampling event per season.[8] Sampling events must adequately represent each applicable season at the facility's location, which would likely be over the course of at least one year. An equal number of ambient waterbody samples must be collected at a single upstream and downstream location from the operator's discharge point(s) to the receiving water of the United States. Where there exists no ambient source water upstream of the operator's discharge point(s) to the receiving water of the United States, samples of the ambient downstream waterbody conditions are sufficient. This is the minimum number of samples to adequately characterize the spatial and temporal variability of the site.
- The demonstration provided to EPA must include, at minimum:
  - A description of the sampling, analysis, and quality assurance procedures that were followed for data collection, following the guidance in Section 3 of EPA's Industrial Stormwater Monitoring and Sampling Guide. https://www.epa.gov/sites/production/files/2015-11/documents/msgp_monitoring_guide.pdf;

[8] EPA training materials on Copper BLM for Data Requirements states that spatial variability in the BLM input parameters caused by physical factors such as watershed size or the presence or absence of a point source discharge(s) to a waterbody should also be considered when determining how many sampling events should be collected when using the BLM to develop site-specific copper criteria. Spatial variability in the BLM input parameters should also be considered when determining how many sampling locations should be selected for development of site-specific copper criteria using the BLM. Regardless of the number of sampling events involved, data collection should reflect site-specific characteristics and consider special circumstances that may affect copper toxicity throughout the expected range of receiving water conditions. See https://www.epa.gov/sites/production/files/2015-11/documents/copper-data-requirements-training.pdf.

- A discussion of how the data collected reflects the site-specific characteristics and how the operator considered special circumstances that may affect copper toxicity throughout the expected range of receiving water conditions;
- The input file and export of the results from the BLM software, which can be requested at: https://www.epa.gov/wqs-tech/copper-biotic-ligand-model; and,
- A narrative summary of results.

Part 5.2.6.5 Details on AIM Exception due to demonstration that benchmark exceedance does not result in any exceedance of water quality standards:

The operator is not required to comply with AIM requirements or continued benchmark monitoring for any parameters for which it has acquired sufficient data and generates an analysis that demonstrates that its discharges do not and will not result in any exceedance of a water quality standard. EPA notes that this exception is available to all AIM levels, but a robust analysis must be completed and submitted to EPA before qualifying for the exception.

The demonstration to EPA, which will be made publicly available, must be made within 30 days of the AIM triggering event. If it is not feasible to complete this demonstration within 30 days, the operator may take up to 90 days, documenting in the SWPPP why it is infeasible to complete the demonstration within 30 days. EPA may also grant an extension beyond 90 days, based on an appropriate demonstration by the operator. The demonstration must include the following minimum elements in order to be considered for approval by EPA and would likely rely upon computer models, such as Storm Water Management Model (SWMM), Distributed Routing Rainfall-Runoff Model (DR3M) and Hydrological Simulation Program-Fortran (HSPF), to make such a case:

1. the water quality standards applicable to the receiving water;
2. the average flow rate of the stormwater discharge;
3. the average instream flow rates of the receiving water immediately upstream (if applicable) and downstream of the discharge point;
4. the ambient concentration of the parameter(s) of concern in the receiving water immediately upstream (if applicable) and downstream of the discharge point demonstrated by full-storm composite sampling;
5. the concentration of the parameter(s) of concern in the stormwater discharge demonstrated by full-storm, flow-weighted composite sampling;
6. any relevant dilution factors applicable to the discharge; and
7. the hardness of the receiving water.

Timeframe of EPA Review of the Submitted Demonstration: EPA will review and either approve or disapprove of such demonstration within 90 days of receipt (EPA may take up to 180 days upon notice to the operator before the 90th day that EPA needs additional time).

- **EPA Approval of the Submitted Demonstration**. If EPA approves such

demonstration within this timeframe, the operator has met the requirements for this exception and does not have to comply with the corresponding AIM requirements and continued benchmark monitoring.

- **EPA Disapproval of the Submitted Demonstration.** If EPA disapproves such demonstration within this timeframe, the operator must comply with the corresponding AIM requirements and continued benchmark monitoring, as required. Compliance with the AIM requirements would begin from the date EPA notifies the operator of the disapproval unless you submit a Notice of Dispute to the applicable EPA Regional Office in Part 7 within 30 days of EPA's disapproval.
- **EPA Does Not Provide Response Related to the Submitted Demonstration**. If EPA does not provide a response on the demonstration within this timeframe, the operator may submit to the applicable EPA Regional Office in Part 7 a Notice of Dispute.
- **Operator Submittal of Notice of Dispute.** The operator may submit all relevant materials, including support for your demonstration and all notices and responses to the Water Division Director for the applicable EPA Region to review within 30 days of EPA's disapproval or after 90 days (or 180 days if EPA has provided notice that it needs more time) of not receiving a response from EPA.
- **EPA Review of Notice of Dispute.** EPA will send the operator a response within 30 days of receipt of the Notice of Dispute. Time for action by the operator upon disapproval shall be tolled during the period from filing of the Notice of Dispute until the decision on the Notice of Dispute is issued by the Water Division Director for the applicable EPA Region.

Part 5.3 Corrective Action and AIM Documentation

For any event described in Parts 5.1, 5.2.3, 5.2.4, or 5.2.5, the operator must document basic information describing the condition that requires corrective action and/or the AIM triggering event, and their response to that event. As described previously, the permit establishes conditions for both immediate and longer response periods. The operator must maintain a copy of this documentation with their SWPPP as well as summarize this information in the Annual Report. These documentation requirements are substantially similar to the 2015 MSGP.

Part 6 Stormwater Pollution Prevention Plan (SWPPP)

This Part requires operators to develop a SWPPP to document the specific control measures they will use to meet the limits contained in Part 2, Part 8 (if applicable), and Part 9 (if applicable), as well as to document compliance with other permit requirements (e.g., monitoring, recordkeeping, reporting). The SWPPP itself does not contain effluent limits; rather, it constitutes a tool to assist operators, inspectors, and other authorities in ensuring and documenting that effluent limits are met. Per Part 6.3, this documentation must be kept up-to-date (e.g., with inspection findings, after stormwater control measures are modified). Failure to develop and maintain a current SWPPP is a recordkeeping violation of the permit, and is separate and distinct from a violation of any of the other substantive requirements in the permit, such as effluent limits, corrective action, inspections, monitoring, reporting, and sector- or state-specific requirements. For the 2021 MSGP, EPA added a clarification in this Part that facilities should consider the SWPPP to be a living document and that keeping the SWPPP up-date-also entails making revisions and improvements to their stormwater

management program based on new information and experiences with major storm events.

To be covered under the MSGP, operators must complete a SWPPP prior to submitting an NOI for permit coverage (existing MSGP-permitted facilities must update their existing SWPPP). Doing so helps to ensure that operators have (1) taken steps to identify all sources of pollutant discharges via stormwater; and (2) implemented appropriate measures to control these discharges in advance of authorization to discharge under the new permit.

This Part contains most of the required elements to be documented in the SWPPP; however, sector-specific SWPPP documentation requirements are also included in Part 8 of the permit. Those permit elements that all facilities must document include: 1) the establishment of a stormwater pollution prevention team; 2) a description of the site; 3) a summary of potential pollutant sources; 4) a description of stormwater control measures; 5) monitoring and inspection procedures (including schedules); 6) documentation to support eligibility considerations under other federal laws; and 7) signature requirements.

Note that any discharges not expressly authorized in the MSGP cannot become authorized or shielded from liability under CWA section 402(k) by disclosure to EPA, state, or local authorities after issuance of this permit via any means, including the NOI to be covered by the permit, the SWPPP, during an inspection, etc.

Part 6.1 Person(s) Responsible for Preparing the SWPPP

This Part requires that the operator prepare the SWPPP in accordance with good engineering practices and to industry standards. Examinations of SWPPPs during inspections have found some SWPPPs to be generic and minimal rather than detailed and site-specific.

With respect to the SWPPP preparation standards requirement, the SWPPP may be developed by either the facility/operator itself or a contractor, but it in all cases the person or party that develops the SWPPP must be a "qualified person" as defined in Appendix A, and the SWPPP must be certified per the signature requirements in Part 6.2.7. A "qualified person" is defined in Appendix A as a person "knowledgeable in the principles and practices of industrial stormwater controls and pollution prevention, and who possesses the education and ability to assess conditions at the industrial facility that could impact stormwater quality, and the education and ability to assess the effectiveness of stormwater controls selected and installed to meet the requirements of the permit." Requiring that the SWPPP be developed by a qualified person and then certified provides accountability and increases the chance that SWPPPs will be available to and followed by facility personnel. Regardless of the SWPPP certification, EPA may still determine after reviewing a SWPPP that it is not in compliance with the requirements of Part 6.2. In this instance, EPA may require the SWPPP to be reviewed, amended as necessary, and certified by a Professional Engineer with the education and experience necessary to prepare an adequate SWPPP. For the mining sectors (G, H and J), the certifier may also be a Professional Geologist. This professional credentials requirement option is for severely and/or persistently deficient SWPPPs. This requirement engenders no additional burden when the permit is fully complied with originally.

Part 6.2 Required Contents of Your SWPPP

The SWPPP must address the specific requirements in this Part. Operators may choose to reference other documents in their SWPPP, as appropriate, rather than recreating the same text in the SWPPP. However, when referencing other documents, operators are responsible for ensuring that their SWPPP and the other documents referenced together contain all the

necessary elements to fully address the elements in Part 6.2. In addition, operators must ensure that a copy of the referenced document is in an accessible format that can be made immediately available to facility employees, EPA, a state or tribe, etc., per Part 6.4, such as Spill Prevention, Control and Countermeasure (SPCC) plans. Regardless of whether all required SWPPP components are combined into one document, operators should keep an index that identifies where individual SWPPP components are addressed.

Part 6.2.1 Stormwater Pollution Prevention Team

The operator must identify a qualified individual or team responsible for developing and revising the facility's SWPPP. These persons are responsible for implementing and maintaining the stormwater control measures to meet effluent limits, and taking corrective action and/or AIM responses where necessary. Personnel should be chosen for their expertise in the relevant departments at the facility to ensure that all aspects of facility operations are considered in developing the plan. The SWPPP must clearly describe the responsibilities of each team member to ensure that each aspect of the plan is covered. EPA expects most operators will have more than one individual on the team, except for small facilities with relatively simple plans and/or staff limitations. The permit requires that team members have ready access to any applicable portions of the SWPPP and the permit. Identification of the team in the plan provides notice to facility staff and management (i.e., those responsible for signing and certifying the SWPPP) of the responsibilities of certain key staff for following through on compliance with the permit's conditions and limits.

Part 6.2.2 Site Description

The SWPPP must describe the industrial activities, materials employed, and physical features of the facility that may contribute significant amounts of pollutants in stormwater discharges. The SWPPP must also contain both a general location map of the facility that shows where the facility is in relationship to receiving waters of the United States and other geographical features, plus a more detailed site map that contains information on facility/site characteristics that affect stormwater discharge quality and quantity. For areas of the facility that generate stormwater discharges associated with industrial activity that contain potentially significant quantities of pollutants (i.e., pollutant amounts that could cause a water quality standards exceedance), the map must indicate the probable direction of stormwater flow and the pollutants likely to be in the discharge. Flows with a significant potential to cause soil erosion must be identified. The site map must also include locations of such things as: boundaries and size (in acres) of the property; location and extent of significant structures and impervious surfaces; stormwater control measures; receiving waters; stormwater conveyances, inlets and discharge points; potential pollutant sources; locations of past significant spills or leaks; locations of stormwater monitoring points; municipal separate storm sewer systems and where the stormwater discharge enters to them (if applicable); areas of designated critical habitat for Endangered Species Act (ESA)-listed species (if applicable); and locations of the activities listed in Part 6.2.2.3(m), including locations and sources of run-on to operators' sites (see the permit for a complete list of required items). To improve readability of the map, some detailed information may be kept as an attachment to the site map and pictures may be included, as deemed appropriate. A detailed site description and site map assists operators in identifying issues and setting priorities for the selection, design and implementation of measures taken to meet effluent limits, and in identifying potential changes in materials, materials management practices, or site features. It is also vital for executing proper inspections.

Part 6.2.3 Summary of Potential Pollutant Sources

This Part requires operators to identify in the SWPPP the potential sources of pollutants from industrial activities that could result in contaminated stormwater discharges, unauthorized non-stormwater discharges, and potential sources of authorized non-stormwater discharges. "Stormwater discharges associated with industrial activities" is defined, pursuant to 40 CFR 122.26(b)(14), to include, but not be limited to: stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. The term "material handling activities" is defined in the permit to include storage, loading and unloading, transportation or conveyance of any raw material, intermediate product, final product, by-product or waste product. "Stormwater discharges associated with industrial activities" does not include areas located at a facility separate from the facility's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with stormwater drained from the above described areas. Part 6.2.3 is only applicable to those portions of a facility covered under the permit, but the areas of the facility not covered under the MSGP should be identified and an explanation provided as to why such areas need not be covered.

Note that potential pollution sources include a facility's roof(s) and other surfaces that could accumulate pollutants originating from an industrial process and deposited through the air. Roofs, walls, etc., exposed to emissions from industrial areas can build up such pollutants over dry periods, which can be mobilized during a rain event or in snowmelt, so the operator needs to identify these areas and include them in the SWPPP. Likewise, industrial structures containing materials that could become pollutants discharged in stormwater (e.g., copper cladding on buildings or zinc from galvanized fences) must also be identified as potential pollutant sources.

For each area that may be a pollutant source at the site, operators must describe the following:

Part 6.2.3.1 Activities in the Area

This description must include a list of the industrial activities exposed to stormwater (see the list above), including any co-located industrial activities that may be exposed to stormwater.

Part 6.2.3.2 Pollutants

For each of the industrial activities described above, operators must document the associated pollutants or pollutant constituents (e.g., biochemical oxygen demand, suspended solids). The pollutant list must include all significant materials that have been handled, treated, stored or disposed, and exposed to stormwater in the three years prior to the date the operator prepares or amends their SWPPP. The SWPPP must also include any additional significant materials that may become a pollutant source that the operator plans to use during the permit's term.

EPA defines "significant materials," per 40 CFR 122.26(b)(12) and in Appendix A of the MSGP 2021, as including but not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials

used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical the operator is required to report pursuant to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA); fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with stormwater discharges.

CERCLA section 101(14) defines "hazardous substance" to include: a) any substance designated pursuant to the CWA section 311(b)(2)(A); b) any element, compound, mixture, solution or substance designated pursuant to section 102 of CERCLA; c) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA); d) any toxic pollutant listed under CWA section 307(a); e) any hazardous air pollutant listed under section 112 of the Clean Air Act; and f) any imminently hazardous chemical substance or mixture with respect to which the Administrator has taken action pursuant to section 7 of the Toxic Substances Control Act. See 40 CFR 302.4 for the list of such hazardous substances.

Part 6.2.3.3 Spills and Leaks

The operator must document in the SWPPP where potential spills and leaks could occur that could contribute pollutants to stormwater discharges, and the corresponding discharge point(s) that could be affected by such spills and leaks. The pollutant list must include all significant materials that have been handled, treated, stored or disposed, and exposed to stormwater in the three years prior to SWPPP preparation or amendment. New owners/operators of existing facilities should try to identify any significant spills or leaks attributable to past owners (within reason). Significant spills include, but are not limited to, releases of oil or hazardous substances in excess of quantities that are reportable under section 311 of the CWA (see 40 CFR 110.10 and 40 CFR 117.21) or section 102 of CERCLA (see 40 CFR 302.4). Note that significant spills may also include releases of materials that are not classified as oil or hazardous substances. The list of significant spills and leaks should include a description of the causes of each spill or leak, the actions taken to respond to each release, and the actions taken to prevent similar spills or leaks in the future. This effort will aid operators in developing spill prevention and response procedures and any additional procedures necessary to fulfill the requirements per Part 2.1.2.4.

As required in Part 5.1.2 of the permit, the operator must document any spills or leaks that occur while covered under the permit. Documenting spills does not relieve operators of any reporting requirements established in 40 CFR 110, 40 CFR 117, and 40 CFR 302, or any other statutory requirements relating to spills or other releases of oils or hazardous substances.

Part 6.2.3.4 Unauthorized Non-Stormwater Discharges Evaluation

This Part requires the operator to evaluate and document unauthorized non-stormwater discharges as part of the SWPPP. The documentation must include: the date of any evaluation; a description of the evaluation criteria used; a list of the discharge points or onsite drainage points that were directly observed during the evaluation; if there are any unauthorized non-stormwater discharges, and, if so, the actions taken and/or control measures used to immediately eliminate those or documentation that shows the facility obtained an individual NPDES wastewater permit; and an explanation of everything done to immediately eliminate the unauthorized discharge per Part 5 corrective actions. EPA also includes added flexibility on the timing if it is infeasible to complete the evaluation within the first year of permit coverage. For example, this flexibility can allow operators with particularly large sites to complete their evaluations within a time frame that may take longer than one year. Operators unable to complete the evaluations within one year must

document in the SWPPP why more time is needed and identify the schedule by which they expect to complete the evaluation.

Acceptable test or evaluation techniques include, but are not limited to, dye testing, television surveillance, visual observation of discharge points or other appropriate locations during dry weather, water balance calculations, and analysis of piping and drainage schematics. A combination of these mechanisms may be appropriate to complete a thorough evaluation. In general, smoke tests should not be used for evaluating the discharge of non-stormwater to a municipal separate storm sewer as many sources of non-stormwater typically pass through a trap that may limit the effectiveness of the test. Where the operator discovers unauthorized non-stormwater discharges, the documentation must also include a description of how the facility immediately eliminated those discharges or a documentation showing the facility obtained an individual NPDES wastewater permit for those discharges.

Common unauthorized discharges and common resolutions include: re-routing sanitary wastes (e.g., sinks, drinking fountains, toilets) to sanitary sewer systems; obtaining an appropriate NPDES permit for cooling water or industrial process wastewater discharges; capping or plugging floor drains; and prohibiting practices such as paint brush washing or wash bucket dumping into storm drain inlets.

Where an operator identifies an unauthorized non-stormwater discharge, the operator must document in their SWPPP the location of that discharge and the appropriate control measures implemented to meet limits. In many cases, the same types of control measures for contaminated stormwater would suffice, but the nature and volume of potential pollutants in the non-stormwater discharges must be taken into consideration in selecting control measures.

Part 6.2.3.5 Salt Storage

The operator must identify in the SWPPP any storage piles containing salt, including piles that are only partially comprised of salt, used for deicing or other commercial or industrial purposes.

Part 6.2.3.6 Sampling Data

This Part requires existing MSGP-permitted facilities to summarize in their SWPPP all stormwater discharge sampling data collected during the previous permit term, as appropriate. Such a summary will support the identification of potential pollutants and pollutant sources at a facility and also the selection of source control practices to meet permit limits. The summary must include an adequately descriptive narrative and may also include data table/figures. Narrative summaries only are appropriate where available data is very limited or where data results and findings are otherwise easily and concisely conveyed in a brief paragraph. Summaries utilizing tables or charts are appropriate where more data are available. New dischargers must provide a summary of any available stormwater discharge sampling data that they may have, including the methods used to collect the data and the sample collection location.

Part 6.2.4 Description of Stormwater Control Measures to Meet Technology-Based and Water Quality-Based Effluent Limits

Operators must describe in their SWPPP the location and type of stormwater control measures implemented at their site to achieve each of the effluent limits in Parts 2.1.2, 2.1.3, 2.2, 2.3, 8 (if applicable) and 9 (if applicable), and to address any stormwater run-on that

commingles with discharges covered under the permit. The description of the control measures must include the location and type of control implemented, including how the Part 2.1.1 selection and design considerations were followed, and how they address the pollutant sources in Part 6.2.3. EPA updates the example given to match the requirement in Part 2.1.2. The control measures in Part 2.1 marked with asterisks are not required to be elaborated on in the SWPPP beyond the inclusion of the requirement language word-for-word. Further discussion of this relaxed documentation requirement is provided in Part 2.1 Stormwater Control Measures in this Fact Sheet.

Part 6.2.5 Schedules and Procedures

Part 6.2.5.1 Pertaining to Stormwater Control Measures Used to Comply with the Effluent Limits in Part 2

This Part specifies what schedules and operating procedures the operator must document in a SWPPP for the appropriate Part 2 effluent limits. Documenting these activities will help improve facility compliance with the requirements.

Good Housekeeping (see also Part 2.1.2.2). Document the schedule or the convention used for determining when pickup and disposal of waste materials occur, and also a schedule for routine inspections for leaks and conditions of drums, tanks and containers.

Maintenance (see also Part 2.1.2.3). Document the preventative maintenance procedures and schedules, including for regular inspections, testing, maintenance and repair of all stormwater control measures.

Spill Prevention and Response Procedures (see also Part 2.1.2.4). Document the procedures for preventing and responding to spills and leaks, including notification procedures. Document the stormwater control measures for material handling and storage, and the procedures for preventing spills that can contaminate stormwater. Also specify cleanup equipment, procedures and spill logs, as appropriate.

Erosion and Sediment Controls (see also Part 2.1.2.5). Identify any polymers and/or other chemical treatments used and the purpose.

Employee Training (see also Part 2.1.2.8). Document the content of the training and the frequency/schedule of training for employees who have duties in areas of industrial activities subject to this permit along with a log of the dates on which specific employees received training.

Part 6.2.5.2 Pertaining to Inspections and Assessments

This Part requires operators to document in their SWPPP the procedures to be followed for routine facility inspections (Part 3.1) and for quarterly visual assessments (Part 3.2). The SWPPP must include information such as person(s) or position(s) performing the inspections/assessments, the specific items to be covered by the inspections/assessments, and the respective schedules. Operators invoking the exception for inactive and unstaffed sites for quarterly inspections or visual assessments must provide information in the SWPPP to support such a claim.

Part 6.2.5.3 Pertaining to Monitoring

This Part requires operators to document in the SWPPP the specific monitoring requirements and procedures that that they will follow. EPA added indicator monitoring to the list of analytical monitoring addressed in this Part. Operators must include information such as

locations where samples are to be collected, person(s) or position(s) responsible for collecting samples, the frequency of sampling and the pollutants to be sampled, sampling protocols, natural background level information, if applicable, and procedures that will be followed to gather storm event data. Requiring this documentation helps ensure that operators know about their monitoring responsibilities and should improve facility compliance with the permit's requirements.

If operators choose to use the substantially identical discharge point (SIDP) exception for quarterly visual assessments (Part 3.2) or for indicator monitoring (Part 4.2.1), benchmark (Part 4.2.2), or impaired waters (Part 4.2.5) monitoring, they are required to describe in their SWPPP the locations of each SIDP, the general industrial activities conducted in the drainage area of each discharge point, the stormwater control measures being implemented for each discharge point, the exposed materials that are likely to be a significant contributor of pollutants to the stormwater discharge, an estimate of the runoff coefficient of the drainage area, and why the discharge points are expected to discharge substantially identical effluents.

Part 6.2.6 Documentation to Support Eligibility Considerations Under Other Federal Laws

Part 6.2.6.1 Documentation Regarding Endangered and Threatened Species and Critical Habitat Protection

This Part requires SWPPP documentation that supports operators' eligibility criterion selected per Part 1.1.4 and Appendix E related to the protection of species federally listed as endangered and threatened, including: whether listed species or critical habitat are found in proximity to the facility; a description of any communication between the operator and the U.S. Fish & Wildlife Service and/or the National Marine Fisheries Service (the Services); results of the listed species screening process; and, if applicable, a description of the measures implemented to protect the listed species or critical habitat. The operator must document this information to ensure it is properly eligible for permit coverage with regard to endangered species and may be separately reviewed by EPA and/or the Services.

Part 6.2.6.2 Documentation Regarding Historic Properties

With respect to the National Historic Preservation Act, the 2021 MSGP SWPPP documentation required for historic properties is the same as in the 2015 MSGP that supports operators' historic properties eligibility determination per Part 1.1.5 and Appendix F, including: results of their historic property screening investigations; whether stormwater discharges would have an effect on a property listed or eligible for listing on the National Register of Historic Properties (NRHP), a summary of any consultation with the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO); and, if applicable, a description of the measures the operator will implement to avoid or minimize adverse impacts on historic properties. The operator must document this information to ensure it is properly eligible for permit coverage with regard to historic properties and may be separately reviewed by SHPOs/THPOs.

Part 6.2.7 Signature Requirements

This Part requires the operator to sign and date the SWPPP consistent with procedures detailed in Appendix B, Subsection 11 (a standard permit condition for signatory requirements, pursuant to 40 CFR 122.22). Operators may appoint an authorized representative consistent with EPA regulations if they think it is more appropriate for someone else to sign the SWPPP certification, e.g., a member of the stormwater pollution

prevention plan team. The signature requirement includes an acknowledgment that there are significant penalties for submitting false information.

Part 6.3 Required SWPPP Modifications

This Part requires that the operator update the SWPPP whenever any of the triggering conditions for corrective action in Part 5.1 occur, or when a review following the triggering conditions in Part 5.1 indicates that changes to an operator's control measures are necessary to meet the effluent limits in the permit. The SWPPP must be signed and dated by an authorized representative each time it is modified. Note that failure to update the SWPPP is a recordkeeping violation, not a violation of an effluent limit. For example, if an operator changes its maintenance procedures, but fails to update its SWPPP to reflect these changes, a recordkeeping violation will result.

Part 6.4 SWPPP Availability

Identical to the 2015 MSGP, this Part requires that a complete and current SWPPP be accessible in any format at the facility and must be immediately available to facility employees; EPA, a state, or tribe; the operator of an MS4 receiving discharges from the site; and representatives of the Services at the time of a site inspection. In addition, as described below, operators must make available either their SWPPP or certain information from their SWPPP to the public (except for any confidential business information (CBI) or restricted information [as defined in Appendix A]).

Enhanced transparency and public accessibility of required NPDES documentation are Agency priorities and will better enable the goals and requirements of the CWA to be met. Timely, complete, and accurate information regarding potential pollutant sources, the types and concentration of receiving water pollution, stormwater control measures implemented, etc., are vital for protecting water quality and can provide a powerful incentive to improve compliance and performance. Operators who object to making SWPPP information publicly available may instead apply for an individual NPDES permit.

Part 6.4.1 Making a SWPPP Publicly Available

The permit provides three options for meeting the requirement to make the operator's SWPPP or SWPPP information publicly available. Part 6.4.1.1 details the option to attach the SWPPP to the NOI. Part 6.4.1.2 details the option to provide a URL of the operator's SWPPP location on their NOI form. Part 6.4.1.3 details the option to provide SWPPP information on the NOI form. Operators using this option must post their SWPPP on their own website or on an associated website, i.e., a relevant and easily discerned website such as a corporate or government website, where the facility submitting the SWPPP is identified on the homepage and facility information is presented on and easily accessed at that website. Operators must post an updated SWPPP at least once a year no later than 45 days after conducting the final routine facility inspection for the year required in Part 3.1.

After an NOI is submitted, the URL would be accessible via EPA's Integrated Compliance Information System (ICIS) and Enforcement and Compliance History Online (ECHO) System. Although CBI and restricted information may be withheld from the public, such information may not be withheld from EPA or the Services.

Part 6.4.1.1 Attaching the SWPPP to the NOI

Unlike for the 2015 MSGP, operators now have the option to attach a copy of their SWPPPs, and any SWPPP modifications, records, and other reporting elements that must be kept

with the SWPPP to their NOIs in NeT-MSGP. This new flexibility provides operators with a time-saving option to easily upload SWPPPs and other documents that must be kept with the SWPPP.

Part 6.4.1.2 Providing a URL of the SWPPP in the NOI

Operators who post their SWPPP on the internet may include the URL location in the NOI in NeT-MSGP and maintain the current SWPPP at this URL. Operators must post any SWPPP modifications, records, and other reporting elements that must be kept with the SWPPP required for the previous year at the same URL as the main body of the SWPPP.

Part 6.4.1.3 Providing SWPPP Information in the NOI Form

This Part provides the third option for meeting the requirement for operators to make their SWPPP or SWPPP information publicly available. For those facilities with SWPPPs not in a format that lends themselves to being put online or that lack a website to host it, salient SWPPP information can be extracted or summarized and input into the NOI in NeT-MSGP. Although not as complete as an entire SWPPP, the information required, such as the control measures and control measures implemented to comply with the non-numeric technology-based effluent limits required in Part 2.1.2, will be sufficient for stakeholders to be aware of what a facility is doing to protect local resources and comply with permit provisions. Operators must post an updated SWPPP at least once a year no later than 45 days after conducting the final routine facility inspection for the year required in Part 3.1.

Part 6.5 Additional Documentation Requirements

This Part includes a list of documents, findings, activities and information that the operator must keep with the SWPPP. EPA requires documentation of various implementation activities, such as reports of routine facility inspections and descriptions of corrective actions and/or AIM responses, after facilities are authorized to discharge. This documentation is useful both for facility personnel and EPA (and other agencies') inspectors to assess overall performance of the control measures selected to meet the technology-based and water quality-based effluent limits in the permit.

Part 7 Reporting and Recordkeeping

Part 7.1 Electronic Reporting Requirement

Operators must comply with a number of different reporting requirements described throughout the 2021 MSGP. Part 7.1 requires all operators to submit all NOIs, NOTs, NECs, Annual Reports, and Discharge Monitoring Reports DMRs electronically, unless the EPA Regional Office has granted them a waiver. Waivers may only be granted on a case-by-case basis and must be based on one of the following conditions: (1) If the operator's headquarters is physically located in a geographic area (i.e., zip code or census tract) that is identified as under-served for broadband Internet access in the most recent report from the Federal Communications Commission; or (2) If the operator has significant issues regarding available computer access or computer capability. This requirement is consistent with EPA's NPDES Electronic Reporting Rule (80 FR 64063).

Part 7.2 Submitting Information to EPA

Part 7.2 includes a summary of all of the required information that the operator must submit to EPA. Operators must submit NOIs, Change NOIs, NECs, NOTs, and Annual Reports via

EPA's electronic NPDES eReporting tool (NeT), unless the permit states otherwise or unless granted a waiver per Part 7.1. Operators must also submit the following information to the applicable EPA Regional Office (see Part 7.~~9~~ 8 for addresses): New Dischargers and New Sources to Water Quali~~ti~~y-Impaired Waters (see Part 1.1.6.2); Exceedance Report for Numeric Effluent Limitations (see Part 7.~~6~~5); and Additional Reporting (see Part 7.7).

Part 7.3 Reporting Monitoring Data to EPA

The purpose of submitting monitoring data to EPA is to document stormwater quality and identify potential water quality concerns to EPA, states, and stakeholders. Monitoring requirements *(*i.e., parameters required to be monitored and sample frequency) will be prepopulated on a facility's electronic DMR forms based on the information reported on the NOI form (through the NeT system). Accordingly, operators must report certain changes in monitoring frequency to EPA through the submittal of a "Change NOI" form in NeT. These monitoring changes include:

- All benchmark monitoring requirements have been fulfilled for the permit term;
- All impaired waters monitoring requirements have been fulfilled for the permit term;
- Benchmark and/or impaired monitoring requirements no longer apply because the facility is inactive and unstaffed;
- Benchmark and/or impaired monitoring requirements now apply because the facility has changed from inactive and unstaffed to active and staffed;
- For Sector G2 only: Discharges from waste rock and overburden piles have exceeded benchmark values;
- A numeric effluent limitation guideline has been exceeded;
- A numeric effluent limitation guideline exceedance no longer occurs.

Once monitoring requirements have been completely fulfilled, operators are no longer required to report monitoring results using EPA's electronic DMR reporting tool.

For both indicator monitoring and benchmark monitoring, EPA notes that sampling results must be submitted to EPA no later than 30 days after receiving laboratory results for each monitoring period that samples are required to be collected per Parts 4.21 and 4.2.2. For any of monitored discharge points that did not have a discharge within the reporting period, operators must report using Net-DMR reporting tool that there was no discharge for that discharge point no later than 30 days after the end of the reporting period.

Part 7.4 Annual Report

In the 2021 MSGP, EPA is retaining the requirement to submit via NeT-MSGP an Annual Report. This provision, along with SWPPP information being made accessible, will provide citizens and other stakeholders with more information about activities and discharges that could affect their receiving waters. The Annual Report must include a summary of the routine site inspection and visual assessment findings, corrective action and AIM responses documentation, and any noncompliance observed. Operators must submit Annual Reports (unless the applicable EPA Regional office has granted a waiver from electronic reporting) by January 30th for each year of permit coverage.

Part 7.5 Exceedance Report for Numeric Effluent Limitations

As described in Part 4.2.3.3, operators must conduct follow-up monitoring any time a monitoring event identifies an exceedance of a numeric effluent limitation. Part 7.5 specifies that the operator must submit an exceedance report to the EPA Regional Office no later than 30 days after receiving laboratory results. Part 7.5 also identifies the specific information the operator must include in this report, which is necessary for EPA to assess the potential impact of this discharge on water quality and the adequacy of the operator's response in addressing the exceedance.

Part 7.6 Additional Standard Recordkeeping and Reporting Requirements

Operators must comply with a number of different reporting requirements in the 2021 MSGP. Specific reporting requirements are included in Part 7; however, additional standard reporting requirements are included in Part 9 applicable to certain states or tribes as well as standard reporting requirements detailed in Appendix B, Subsection 12. Part 7.6 includes a summary of all of the required reports from Appendix B, Subsection 12, and specifies which reports the operator must submit to the applicable EPA Regional Office. Reports required to be submitted include:

- 24-hour reporting (see Appendix B, Subsection 12.F) for any noncompliance which may endanger health or the environment. Any information must be provided orally within 24 hours from the time the operator became aware of the circumstances;
- 5-day follow-up reporting to the 24-hour reporting (see Appendix B, Subsection 12.F) - A written submission must also be provided within five days of the time the operator became aware of the circumstances;
- Reportable quantity spills (see Part 2.1.2.4) – The operator must provide notification, as required under Part 2.1.2.4, as soon as there is knowledge of a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity.
- Planned changes (see Appendix B, Subsection 12.A) – The operator must give notice to EPA promptly, no fewer than 30 days prior to making any planned physical alterations or additions to the permitted facility that qualify the facility as a new source or that could significantly change the nature or significantly increase the quantity of pollutants discharged;
- Anticipated noncompliance (see Appendix B, Subsection 12.B) – The operator must give advance notice to EPA of any planned changes in the permitted facility or activity which they anticipate will result in noncompliance with permit requirements;
- Compliance schedules (see Appendix B, Subsection 12.~~F~~E) – Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date;
- Other noncompliance (see Appendix B, Subsection 12.G) – The operator must report all instances of noncompliance not reported in your Annual Report (pursuant to Part 7.2), compliance schedule report, or 24-hour report at the time monitoring reports are submitted; and
- Other information (see Appendix B, Subsection 12.H) – The operator must promptly submit facts or information if the operator becomes aware that they failed to submit relevant facts in the NOI, or that they submitted incorrect information in the NOI or in any report.

Part 7.7 Record Retention Requirements

This Part requires operators to maintain certain records to help them assess performance of stormwater control measures and as a way to document compliance with permit conditions. These requirements are consistent with federal regulations at 40 CFR 122.41(j), but have been tailored to more closely reflect requirements of the MSGP. Part 7.7 describes recordkeeping requirements associated with activities covered under the permit. These include the original SWPPP and any modifications, to provide an historical record of the SWPPP and its evolution, additional documentation, all reports and certifications required by the permit, monitoring data, and records of all data used to complete the NOI. Operators must retain copies of these documents for a period of at least three years from the date that the operator's coverage under the permit expires or is terminated. The recordkeeping requirements in Appendix B, Subsection B.12 include a more general statement of the NPDES standard condition for records retention, but does not impose additional requirements on the operator above what is required in Part 7.7.

Part 7.8 Addresses for Reports

This Part lists the addresses for EPA Regional Offices for reports that must be submitted to EPA.

Part 8 Special Requirements for Discharges Associated with Specific Industrial Activities

Except for the changes to the monitoring requirements described in Part 4 of this Fact Sheet and the changes to individual sectors listed below, the general format and requirements in the sector-specific parts of the permit (Part 8) are similar to the 2015 MSGP.

Sectors G, H and J (Mining Sectors)

EPA clarifies the language for Sector G monitoring requirements for discharges from waste rock and overburden piles at active metal mining facilities (Part 8.G.8.3 and 8.G.8.4). These particular monitoring requirements for Sector G under the 2015 MSGP had a unique, and potentially confusing, monitoring schedule. Under the 2015 MSGP, Part 8.G.8.3 for discharges from waste rock and overburden piles required the operator to conduct benchmark monitoring once in the first year for the parameters listed in Table 8.G-3, and twice annually in all subsequent years of permit coverage for any parameters for which the benchmark had been exceeded. Part 8.G.8.4 required operators to conduct additional analytical monitoring for other pollutants of concern listed in Table 8.G-4. Where a parameter overlapped for both Parts 8.G.8.3 and 8.G.8.4, the operator could use any monitoring results conducted for Part 8.G.8.3 to satisfy the monitoring requirement for that parameter for Part 8.G.8.4. Part 8.G.8.4 specified that the monitoring schedule for this additional analytical monitoring should be quarterly monitoring as per Part 4.2.2.2 (Part 6.2.1.2 in the 2015 MSGP). Given the overlap in parameters the operator is required to monitor for in these two parts and the potential confusion about the monitoring schedules for the same parameter, in the 2021 MSGP, EPA aligns the monitoring schedule for Part 8.G.8.4 to that of Part 8.G.8.3, that is, once in the first year and twice annually in all subsequent years of coverage under this permit for any parameters for which the benchmark threshold has been exceeded. Radium and uranium analytical monitoring is also required in Part 8.G.8.4 but these parameters do not have corresponding benchmarks values in Part 8.G.8.3. Without a benchmark value for comparison, the operator would be unable to determine if the parameter has been exceeded; therefore the monitoring schedule of "once in the first year and twice annually in all subsequent years of coverage under this permit for any parameters for which the benchmark has been exceeded" would not make sense for these two parameters. Under the 2021 MSGP, EPA requires the operator to monitor for radium and uranium quarterly for the first four full quarters of permit coverage

commencing no earlier than May 30, 2021, after which the operator may discontinue monitoring for these two parameters. EPA also suspends the analytical monitoring currently required for radium and uranium in Part 8.G.8.4 until a relevant national recommended water quality criterion and possible benchmark value can be developed.

Part 9 Permit Conditions Applicable to Specific States, Indian Country or Territories

Section 401 of the CWA (see also 40 CFR §122.44(d)(3) and §124.53(a)) provides that no federal license or permit, including NPDES permits, to conduct any activity that may result in any discharge into navigable waters shall be granted until the State/Tribe in which the discharge originates certifies that the discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the CWA. The requirements under this Part of the permit provide state, U.S. territory and tribal requirements that these entities certify are necessary in order for the permit to include conditions to achieve their water quality standards.

EPA has two sets of regulations that implement CWA Section 401. The 40 CFR Part 121 regulatory requirements are generally applicable to all 401 certifications. In addition, 40 CFR 124.53applies specifically to 401 certifications of EPA-issued NPDES permits. In June 2020, EPA updated the 40 CFR Part 121 regulations. See 85 Fed. Reg. 42210 (July 13, 2020) ("2020 Rule")). However, because the certification process for this permit was initiated prior to the effective date of the updated regulations, those updated regulations do not apply to the certifications that were granted for this permit.

EPA regions requested certifications from states and tribes authorized to provide such certifications. These requests were sent to States and Tribes at various times in the spring of 2020. In response, certification decisions were received, also at various times and different months. All certification requests were sent, and all certification decisions were received, before September 11, 2020, which was the effective date of the updated 40 CFR Part 121 regulations. As a result, the certifications, including the conditions incorporated into this permit, were issued pursuant to the Part 121 regulations that were in place prior to the 2020 Rule and 40 CFR §122.44(d)(3) and §124.53.

Appendices

Appendix A Definitions and Acronyms

Appendix A provides definitions for permit-specific terms and a list of acronyms used throughout the permit.

The following definitions are revised in the permit:

- Green Infrastructure - the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspirate stormwater and reduce flows to sewer systems or to surface waters. See Section 502(27) of the Federal Water Pollution Control Act (33 U.S.C. 1362(27)).
- Primary Industrial Activity – EPA mistakenly omitted 40 CFR 122.26(b)(14)(xi) from the list of activities under this definition in the 2015 MSGP and amends the definition in the permit to match 40 CFR 122.26(b)(14).

The following acronym is added to the permit:

- AIM – Additional Implementation Measures

The following term was edited to match the text used in the permit:

- "Stormwater Team" was changed to "Stormwater Pollution Prevention Team."

Appendix B Standard Permit Conditions

Appendix B includes the standard NPDES permit conditions consistent with 40 CFR 122.41. EPA makes no changes the standard permit conditions or to this appendix.

Appendix C Areas Covered

Appendix C specifies in what areas of the country the permit applies and includes specific corresponding permit numbers. EPA has added areas where EPA is the permitting authority in Indian country within the state of New York and Region 4 to the areas eligible for permit coverage under the MSGP. Previously eligible operators in Region 4 worked with the Region directly to get industrial stormwater permit coverage. For the 2021 MSGP, those operators can seek coverage under EPA's MSGP.

Appendix D Activities Covered

Appendix D describes the types of activities covered by the permit by subsector, SIC or Activity Code, and activity represented. EPA makes no changes to activities covered under the MSGP or to this appendix.

Appendix E Endangered Species Procedures

Appendix E specifies the Part 1.1.4 eligibility criteria related to the Endangered Species Act and protection of endangered and threatened ("listed") species and critical habitat and the procedures operators must follow to meet the criteria. See Fact Sheet discussion for Part 1.1.4 for final changes.

Appendix F Historic Properties Procedures

EPA has not made any changes to the historic preservation requirements or this appendix. Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects of Federal "undertakings" on historic properties that are either listed on, or eligible for listing on, the National Register of Historic Places. The term Federal "undertaking" is defined in the NHPA regulations to include a project, activity, or program of a Federal agency including those carried out by or on behalf of a Federal agency, those carried out with Federal financial assistance, and those requiring a Federal permit, license or approval. See 36 CFR 800.16(y). Historic properties are defined in the NHPA regulations to include prehistoric or historic districts, sites, buildings, structures, or objects that are included in, or are eligible for inclusion in, the National Register of Historic Places. This term includes artifacts, records, and remains that are related to and located within such properties. See 36 CFR 800.16(1).

EPA's issuance of the MSGP is a federal undertaking within the meaning of the NHPA regulations. To address any issues relating to historic properties in connection with issuance of the permit, EPA has included criteria for operators to use to certify that potential impacts of their covered activities on historic properties have been appropriately considered and addressed. Although individual applications for coverage under the general permit do not constitute separate Federal undertakings, the screening criteria and certifications provide an appropriate site-specific means of addressing historic property issues in connection with EPA's issuance of the permit.

Coverage under the 2021 MSGP is available only if operators certify that they meet one of the eligibility criteria following the procedures in Appendix F related to compliance with historic properties protection pursuant to the NHPA. These criteria are used to identify whether land disturbances associated with the installation or revision of subsurface stormwater control measures would affect properties listed in, or eligible for listing in, the National Register of Historic Properties; and, if so, to determine the measures that will prevent or mitigate adverse effects to the properties.

EPA does not anticipate any effects on historic properties from the pollutants in the stormwater discharges covered by the 2021 MSGP. However, existing and new operators could undertake activities in connection with the 2021 MSGP that might affect historic properties if they install or new or modify stormwater control measures that involve subsurface disturbance. The overwhelming majority of sources covered under the 2021 MSGP will be operators that are seeking renewal of previous permit coverage. If these existing dischargers are not planning to construct new stormwater controls or conveyance systems, they have already addressed NHPA issues. In the 2015 MSGP, they were required to certify that they were either not affecting historic properties or they had obtained written agreement from the applicable SHPO, THPO, or other tribal representative regarding methods of mitigating potential impacts. EPA is not aware of any adverse effects on historic properties under the 2015 MSGP, nor the existence or need for a written agreement. Therefore, to the extent the 2021 MSGP authorizes renewal of prior coverage without relevant changes in operation, it has no potential to affect historic properties.

Where operators install or modify control measures that involve subsurface disturbance, the area of potential effect (APE) for the activities performed to comply with the permit, for historic preservation purposes, is limited to the location and depth of the earth disturbance associated with the installation or modification of the stormwater control measures. Operators need only consider the APE when doing the historic properties screening procedures to determine their eligibility criteria in Appendix F. This is the only scenario where activities authorized or undertaken in connection with the 2021 MSGP may affect historic properties. Since both new and existing dischargers could undertake such activities, all operators are required to follow the historic property screening procedures to document eligibility.

Appendix G Notice of Intent

Parts 1.3.2 and 7.1 require operators to use the electronic NPDES eReporting Tool system, or "NeT" system, to prepare and submit NOIs. However, where operators request and receive approval from their EPA Regional Office, they are authorized use the paper NOI form provided in Appendix G on a case-by-case basis.

Operators must provide the following types of information on the NOI form: (1) Permit Information, (2) Facility Operator Information, (3) Facility Information, (4) Discharge Information, (5) SWPPP Information, (6) Endangered Species Protection, (7) Historic Preservation, and (8) Certification Information. The NOI form provides EPA with the information necessary to help determine whether industrial operators have issues that could affect their eligibility to discharge under the permit and enables EPA to better match operators with their respective monitoring requirements and to prioritize oversight activities.

The NOI form has been updated from the 2015 MSGP. New questions on the form include:

- *For new dischargers only:* Do you have a pending enforcement action related to industrial stormwater by EPA, a state, or a citizen (to include both notices of violation (NOVs) by EPA or a state and notices of intent to bring a citizen suit)? (Note that no

additional time for discharge authorization is added as contemplated in the proposed permit.)

- Added two questions to determine if PAH indicator monitoring in Part 4.2.1.1.b should apply:
    - Will you have stormwater discharges from paved surfaces that will be sealed or re-sealed with coal-tar sealcoat where industrial activities are located during coverage under this permit?
    - *For operators in Sector A only:* Do you manufacture, use, or store creosote or creosote-treated wood in areas that are exposed to precipitation?
- *For operators in Subsector K1 and G2 only to determine which selenium benchmark should be applied:* Is your receiving water(s) still/standing (lentic) (e.g., a lake or impoundment) or flowing (lotic) (e.g., a river or stream)?
- *For operators in New Mexico only (based on CWA section 401 conditions specific to operators in New Mexico in Part 9 of the permit):*
    - Do you anticipate the discharge of groundwater or spring water from your facility?
        - If answered yes:
            - What is the anticipated flow rate of the groundwater or spring water?
            - Provide information on the potential to encounter impacted groundwater or spring water in the space provided.
            - Using the Mapper tool [link provided] for reference, check if the following groundwater pollutant sources are located nearby the anticipated source of groundwater or spring water such that there is potential for contamination [displays options for project location relative to a source of potential groundwater contamination and the corresponding constituents likely to be required for testing].
                - If any selected:
                    - Provide a summary of test data indicating the quality of the groundwater or spring water to be discharged.
                    - Use the space provided [for an attachment] to provide test data indicating the quality of the groundwater or spring water to be discharged.
- Added the SIC code field for co-located activities
- Added Options for Answer Selections
    - *For facilities in Sector G only to determine which additional analytic monitoring for discharges from waste rock and overburden piles at active metal mining facilities in Part 8.G.8.3 should apply:* Updated the ore options available to select to include "Ore Not Listed."
    - Added option for user to upload/attach their SWPPP (in addition to the existing options to provide a URL or provide select SWPPP information in the NOI itself)

- Added questions related to the following topics to the NOI form in NeT-MSGP in lieu of providing information to EPA via email communication or in another form to streamline and reduce burden:
    - Endangered species protection criterion determination questions and Criterion C3 information per Part 1.1.4
    - Historic properties criterion determination questions per Part 1.1.5
    - New dischargers to impaired waters eligibility information per Part 1.1.6.2
    - CERCLA-related eligibility information per Part 1.1.7

Appendix H Notice of Termination

Parts 1.4 and 7.1 require operators to use the NPDES eReporting Tool system, or "NeT" system, to prepare and submit their NOT when any of the conditions in Part 1.~~3.2~~4.2 have been met. However, where the EPA Regional Office specifically authorizes operators to use a paper NOT form, those operators are required to complete and submit the paper form provided in Appendix H. EPA makes no changes to the NOT requirements or this appendix.

Appendix I Annual Reporting Form

Parts 7.1 and 7.4 require operators to use NeT to prepare and submit an Annual Report. However, where the EPA Regional Office specifically authorizes operators to use a paper Annual Report form, those operators must complete and submit the paper form provided in Appendix I. Information required consists of general information on the facility, summary findings from the routine facility inspections and quarterly visual assessments, and a description of corrective actions and/or AIM responses taken and the status of follow-up repairs, maintenance activities, or new SCMs installations for the previous year. EPA added the requirement to include AIM responses in the Annual Report form for the 2021 MSGP.

Appendix J Calculating Hardness in Receiving Waters for Hardness-Dependent Metals

Appendix J provides guidance to operators for determining their receiving water's hardness level for hardness-dependent metals benchmark monitoring. EPA no longer uses a hardness range for the copper benchmark thresholds and updated the benchmark threshold based on the 2007 national recommended aquatic life criteria for freshwater, as described further in Part 4.2.2.2. Therefore, the copper values have been removed from this appendix.

Appendix K No Exposure Certification (NEC)

Part 7.1 requires operators to use the NPDES eReporting Tool system, or "NeT" system, to prepare and submit a No Exposure Certification. However, where operators request and receive approval from their applicable EPA Regional Office, they are authorized to use the paper NEC form provided in Appendix K on a case-by-case basis. The NEC form informs EPA that the industrial operator has certified eligibility for the no exposure permitting exemption. EPA finalized the acronym for the No Exposure Certification from NOE to NEC.

Appendix L List of Tier 3, Tier 2, and Tier 2.5 Waters

Appendix L provides a list of Tier 3, Tier 2, and Tier 2.5 waters to assist industrial operators in determining eligibility for coverage under Parts 1.1.6.3, and in complying with any applicable requirements in Part 2.2. This appendix has been updated with the most current information on Tier 3, Tier 2, and Tier 2.5 waters.

Appendix M Discharge Monitoring Report (DMR) Form

Part 7.1 requires operators to use Net-DMR, EPA's electronic DMR tool to prepare and submit their Discharge Monitoring Reports. However, where an operator requests and receives a waiver from their EPA Regional Office, the operator is authorized use the paper DMR form included in Appendix M. The DMR form provides EPA with the information necessary to determine compliance with monitoring requirements. EPA updated the form to match the language included in the permit as follows: updated Part 3.d of the form to allow operators to indicate if monitoring was for indicator monitoring, updated Part 3.l of the form to match the abnormal event exception, added Part 3.n (demonstration that discharges of copper do not result in an exceedance of facility-specific criteria) and Part 3.o (demonstration that discharges of aluminum do not result in an exceedance of facility-specific criteria) to match the permit.

Appendix N List of SIC and NAICS Codes

For informational purposes only, Appendix N contains all the 1987 Standard Industrial Classification (SIC) codes that are regulated under stormwater regulations and matches them up with corresponding North American Industrial Classification System (NAICS) codes. NAICS codes have been in use since they replaced the SIC codes in 1997. There is not a one-to-one correspondence between the two systems, so a comprehensive list of regulated codes for both systems was generated. Such a list of codes and how these codes fit into the MSGP's sectors may be of interest to stakeholders. EPA adds the following SIC codes that were mistakenly omitted from pervious permits:

- Sector P: 4221-4225 (Farm Product Warehousing and Storage; Refrigerated Warehousing and Storage; and General Warehousing and Storage)
- Sector X: 2761 (Manifold Business Forms)
- Sector AA: 3442 (Metal Doors, Sash, Frames, Molding, and Trim Manufacturing)

Appendix O Summary of Permit Reports and Submittals

Appendix O provides a list of reporting and recordkeeping information that must be generated and, in many cases, submitted to the EPA. There were no changes made from the 2015 MSGP.

Appendix P List of CERCLA Sites

Appendix P provides a list of receiving waters associated with EPA Region 10 CERCLA sites to assist industrial operators in determining eligibility for coverage under Part 1.1.7. These receiving waters have been identified by EPA Region 10 as the ones most likely to experience contamination/recontamination due to toxic pollutants (particularly pollutants for which the site became associated with CERCLA clean ups) being introduced/reintroduced into the receiving water. The eligibility criterion in Part 1.1.7 (Part 1.1.4.10 in the 2015 MSGP) only applies to facilities in EPA Region 10.