Planned July Street Sweeper Testing Informational Overview

Summary: Information regarding upcoming sweeper testing focused on microplastics; the importance of sweeping for water quality; and, encouraging the sweeper manufacturing industry's engagement with these issues.

Although written by WorldSweeper's Editor, Kidwell-Ross, in the following the 'belief data' is ascribed to WorldSweeper since it reflects articles and editorials previously published at the WorldSweeper.com website, "Earth's Largest Power Sweeping Resource."(SM)

Key Themes

- **The Environmental Importance of Street Sweeping:** A central and recurring theme is WorldSweeper's long-held editorial assertion that sweeping is the "first line of defense for water quality." Emphasized is the data that reflect the cost-effectiveness of street sweepers in removing pollutants from roads before they enter waterways.

- **Microplastics as a Driving Force for New Testing:** The increasing concern and focus on microplastics in water are being presented as the catalyst for new testing initiatives, specifically the Sea Grant/NOAA grant project that will begin the week of July 14, 2025.

- **The Need for Updated and Valid Sweeper Performance Data:** WorldSweeper expresses frustration with outdated and "bogus" past testing data represented. by the South Coast Air Quality Management District's (AQMD) test from over 25 years ago. The test — where virtually all of the sweepers tested received a passing grade— doesn't accurately reflect the performance differences between sweeper technologies, particularly regarding smaller particles and microplastics.

- **Manufacturer Engagement (or Lack Thereof):** A significant point of concern at WorldSweeper is the apparent lack of engagement and interest from sweeper manufacturers in participating in, and supporting, new testing initiatives designed to highlight the cost-efficiency of street sweepers for pollutant removal.

- **The Sea Grant/NOAA Grant and Upcoming Testing:** Details have been provided to manufacturers and Seth Brown, head of the National Municipal Stormwater Association, about a specific, grant-funded, testing

project focused on microplastics removal by sweepers. This project is being administered by the City of Santa Barbara, with funding from NOAA. WorldSweeper and Roger Sutherland are contracted to design and execute the sweeper-specific portion of this test.

- **Challenges in Procuring Sweepers for Testing:** Due to the current lack of manufacturer sign-ups, which were previously requested by the end of April, WorldSweeper anticipates having to source sweepers from municipal fleets, California agencies and/or sweeping contractors, raising concerns about the condition and representativeness of the machines that will be tested. A concern is the sweepers that end up getting tested will not be in 'like new' performance condition, and that will 'cost' the industry in data quality results.
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Most Important Ideas/Facts

- **Sweeping's Cost-Effectiveness:** WorldSweeper cites previous extensive, long-term MS4 tests (in Minnesota and Florida) that found sweeping to be a "five to seven times less expensive" way to remove a pound of pavement-based nitrogen and/or phosphorus, two main pollutants. Removal via sweeping also allows the pollutants to be taken off the roads first so they don't get into waterways. The tests cited above did not separate air and mechanical broom sweepers in their results; prior knowledge suggests air sweepers are likely significantly more effective at removing small micron material than broom sweepers.

- *Even so, both Minnesota and Florida are providing credits to MS4s based upon amount of material swept off streets. A goal of the upcoming test is to expand such crediting to other states, which would result in an expansion of the power sweeping industry.*

- **Sweepers and Microplastics:** The upcoming Sea Grant/NOAA test specifically aims to determine how sweepers fit into the ability to take small micron material, including microplastics, off pavement. The test will analyze material left on the ground after sweeping, sifting it into different sizes as well as testing for the microplastics that will be part of the simulant in the test.

- **Outdated AQMD Test:** The existing AQMD test, which actually labeled passing sweepers as "AQMD Certified," is invalid for several reasons. Key criticisms include that every machine that tested either passed or was grandfathered in, including broom sweepers after modifications to dust

suppression systems. Plus, the test parameters allowed sweepers to pass even if they left *all* the PM-10 material.

- A passing grade on the test was if 80% of the material on the ground was picked up, even though only 10% of the total simulant (paint pigment powder) was sized to 10-microns. Even though a sweeper receiving a passing grade may have left *all* of the paint pigment and 9% of the rest on the ground, many manufacturers have since touted their sweepers that passed AQMD as “PM-10 Certified.” The widespread marketing of this outdated test is probably a reason qualified manufacturers haven't pushed for new testing.

- **The Sea Grant/NOAA Test Protocol:** The test will involve spreading a simulant (including different sizes of material and color-coded microplastics) on a 50-foot long, 2-foot wide strip with a curb. Each sweeper tested will make a pass at 5 mph and another at 10 mph. Material left behind will be collected with a shop vac, sifted, and analyzed for plastics as well as sieved for different particle sizes. Roger Sutherland designed and has used this protocol before. You may access his sweeping-related Vita here for more information. The Vita of Ranger Kidwell-Ross is located here.

- **The Need for Representative Sweepers:** WorldSweeper is concerned that if manufacturers don't supply the sweepers, they will have to be sourced from fleets (like Sweeping Corporation of America, the City of Los Angeles, CalDOT and others).

- There is the recent problematic example of a Los Angeles test where a potentially poorly maintained Elgin Broom Bear sweeper from the city's fleet showed a significantly lower pickup rate (35%) compared to a new Elgin Regen X regenerative air sweeper (75%). WorldSweeper stresses the importance of testing "standard production units,” but that they should be ensured to be in good working order and provided in ‘tip top condition.’

- **July Testing Window:** The Sea Grant/NOAA testing is mandated to test through the Grant on the second week of July from July 14th to 18th. WorldSweeper suggests it is very much in the sweeper manufacturers interest to either A) supply the machines to be tested via dealers or other, or B) ensure that the machines sourced from nearby cities, agencies or contractors are in top condition when tested.

- **Potential Value of Manufacturer Participation:** The test offers manufacturers the opportunity to demonstrate the effectiveness of their sweepers in picking up a variety of material sizes including microplastics. Also anticipated is a sampling of dust emitted by each sweeper during the test. The data will be submitted to AQMD, whose management officials reported the Agency does not have funds currently to participate but will assist in sourcing the air emissions testing machines, along with a request for modification of the Agency's current Rule 1186 approved sweeper models.

- **Target Audience for Results:** WorldSweeper believes the results should be disseminated to the "stormwater community," particularly via the National Municipal Stormwater Association (NMSA), as that public works segment has a mandate, as well as funding sources, to address water quality issues. That market segment is likely to invest more in street sweeping when it sees the data. In addition, sweeper testing data in this test will be separated into regenerative air, mechanical broom and vacuum results, thus illustrating any differences in the pollutant pickup ability of the three technologies.

- **For More Information and to Participate:** Primary contact is Ranger Kidwell-Ross, Editor of WorldSweeper. You may call or text to 360.739.7323 or send email to editor@worldsweeper.com. If you feel a need to contact either Roger Sutherland or Jill Murray, overall grant coordinator at City of Santa Barbara, Ranger will connect you to them by request.