



Memorandum

TO: TRANSPORTATION AND
ENVIRONMENT COMMITTEE

FROM: John Ristow

**SUBJECT: CITY STREET SWEEPING
STATUS REPORT**

DATE: May 19, 2021

Approved

Date

5/25/21

RECOMMENDATION

Accept this status report on street sweeping operations.

BACKGROUND

City streets are designed to convey water to curbs and gutters, and then to storm drains which discharge untreated water into local creeks and the San Francisco Bay. The 1972 Clean Water Act initiated the National Pollutant Discharge Elimination System (NPDES) to protect these waterways and mitigate potential pollution via stormwater discharge. The San Francisco Bay Area Regional Water Quality Control Board is the regulatory agency that issues permits to most of the Bay Area, including the City of San José. Street sweeping is included as a best practice requirement in the stormwater discharge permit issued to San José. In accordance with this permit, the primary mission of the street sweeping program is to prevent pollutants such as sediment, nutrients (e.g., fertilizers and animal waste), toxic metals, and organic material from entering storm drains and polluting waterways.

Street sweeping in San José is delivered using a hybrid model employing both “in house” and contractual services. This hybrid model allows the Department of Transportation (DOT) to cost-effectively and flexibly deploy resources 24-hours per day as required. Sweeper operators employed by the City sweep the downtown area, neighborhood business districts, and major streets including arterials, connectors and bikeways. This team is also able to respond to urgent matters by providing clean up services after fires, vehicle crashes, or civil unrest. Most local and neighborhood streets are swept by GreenWaste Recovery Inc., contracted by the City to provide both green waste collection and residential street sweeping services.

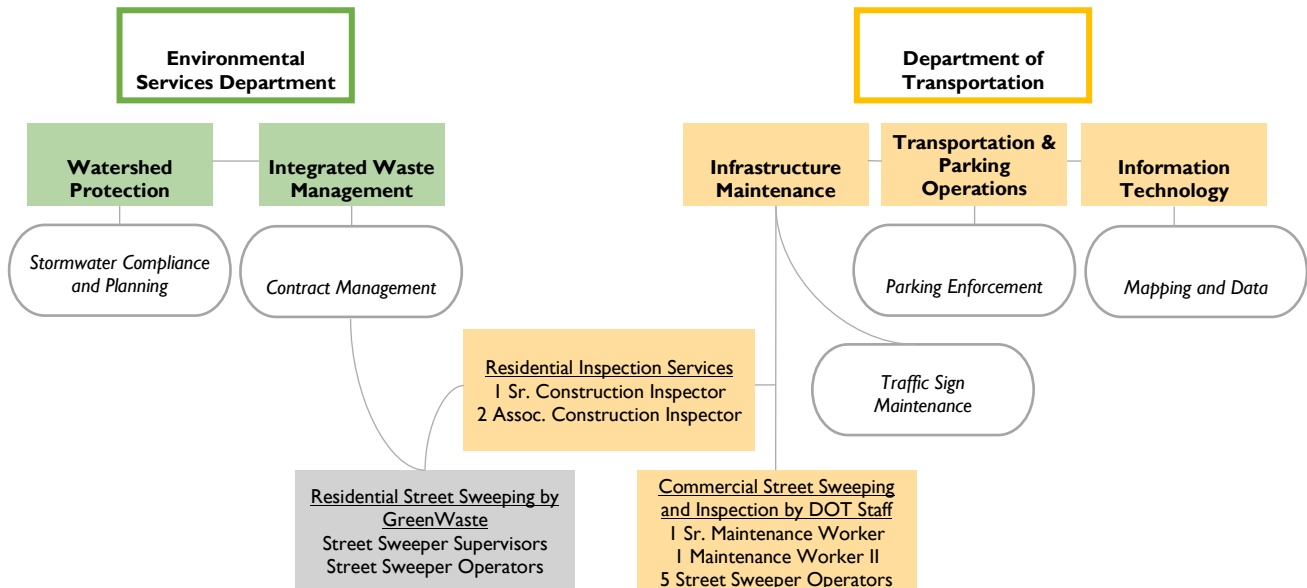
In addition to street sweeper operators, staff within several DOT divisions and sections perform key street sweeping related functions as described below:

- The Infrastructure Maintenance Division's Sweeping Inspection Services Section has inspectors who ensure satisfactory contractor performance and sweeps, and investigate complaints/service requests
- The Infrastructure Maintenance Division's Traffic Maintenance Section houses staff who install and maintain parking prohibition signs
- The Transportation & Parking Operations Division's On-Street Parking Management Section has parking enforcement staff who monitor compliance with posted signs along signed routes (approximately 14.7% of miles)

The Environmental Services Department (ESD) also plays a significant role in street sweeping. The ESD Watershed Protection Division oversees permitting and compliance with federal, state, and local regulations, and coordinates with DOT to meet trash reduction targets related to the stormwater discharge permit. The contract with GreenWaste is also negotiated and managed by the ESD Integrated Waste Management Division.

The roles and responsibilities for this program are shown in Figure 1 below:

Figure 1: Street Sweeping Organization Chart



Source: Audit team analysis of departmental organization structures

ANALYSIS

Program Management

DOT is responsible for providing or overseeing sweeping of 67,000 curb miles each year between the in-house and contractual street sweeping programs. Of this total, DOT sweeper operators have the goal of sweeping approximately 31,000 curb miles, representing 46% of overall program production. The Residential Street Sweeping Program (RSS) is responsible for sweeping approximately 36,000 curb miles, representing 54% of overall program production. The street sweeping program has two distinct branches: in-house and the RSS programs.

Frequency and Route Distinctions

The frequency of street sweeping varies by road classification. Some areas receive more frequent sweeps than others due to higher levels of traffic that produce higher levels of pollutants which must be prevented from reaching the bay. The frequency of routes is defined as follows:

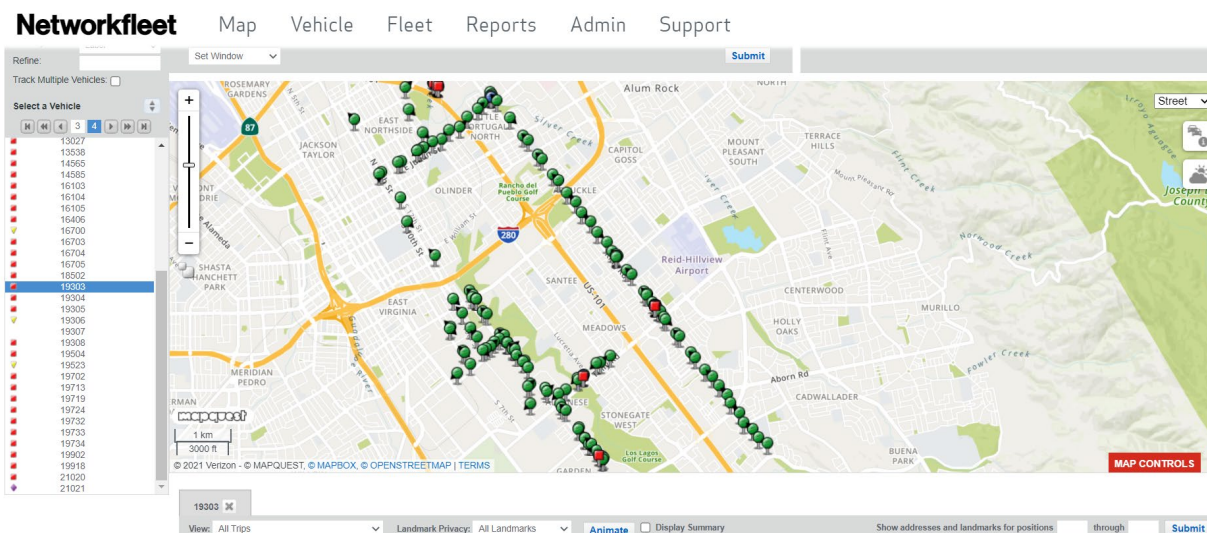
- **Downtown:** Daily, Monday-Thursday during graveyard shift
- **Neighborhood Business Districts (NBD):** Twice per week during graveyard shift
- **Arterials, Connectors, and Bikeways (ACB):** Twice per month, during graveyard shift
- **Residential (RSS):** Once per month, day shift service provided by GreenWaste as outlined in the contract which expires in 2036

In particular, DOT is working on a plan to sweep bikeways more frequently in recognition of the growing importance of biking as a climate-friendly transportation alternative and to ensure safer facilities for users as the amount of bike lanes increases. Residents and businesses can look up their sweep day at: www.sjenvironment.org/lookup. Questions can also be directed to the Street Sweeping Section at (408) 794-1920. The workflows of the respective programs are described below.

City Street Sweeping Crew (In-House)

The in-house street sweeping team provides street sweeping service during the graveyard shift to areas where cars are not expected to be parked overnight. The program is staffed by a graveyard shift supervisor, a senior maintenance worker (SMW), five sweeper operators and a maintenance worker II (MWII). The sweeper operators complete one route per night, Monday through Thursday, leaving Friday as a make-up day for routes or portions of routes that are missed for various reasons including staff being away on vacation or sick leave. All City-owned vehicles are equipped with Verizon Telematics technology, which tracks the vehicles and creates a visual map of traveled routes. Figure 2 below provides a sample screenshot of the Telematics record of a completed route. While the technology does not provide data granular enough to determine how close a sweeper was to the curb, the in-house team uses this technology to confirm route completion. Route inspections are used to evaluate sweep effectiveness.

Figure 2: Telematics Screenshot of Completed In-House Sweeping Route



In addition to assisting the supervisor by providing leadership to the team, the SMW conducts route inspections to evaluate the quality of sweeps. As proposed in an open audit recommendation and discussed below, DOT is in the process of procuring sweep waste bins and a hook-lift truck to facilitate the staging of swept debris until it can be hauled to its final disposal site. The MWII will be primarily responsible for this task, but until the equipment arrives, this employee is assisting with route inspections and special cleanups. Both the SMW and MWII operate a parking-lot sweeper to pick up debris if found during inspections. The team also responds to special requests for debris pickup overnight, which are often received from the Police and Fire Departments in the wake of crashes, fires, civil unrest, and other miscellaneous circumstances.

Residential Street Sweeping (RSS)

Residential streets are swept once per month by GreenWaste. The RSS program is staffed by three City employees: one senior construction inspector (SCI) and two associate construction inspectors (ACIs), who monitor the residential routes for completion and effectiveness of the contracted sweepers. The majority of sweeping issues and community complaints are related to conditions in the field such as parked cars and low-hanging trees. Inspection staff will make contact with property owners and inform them how to get their street trees pruned properly with a DOT issued permit. Inspectors are also able to assist with any issues related to placement of yard waste and other garbage or recycling collection issues. The inspection team utilizes tablets to log route completion data and identify field conditions that is used to generate reports leading to corrective action. The virtual inspection form with visual aid is provided as Attachment A.

In addition to performing sweeping inspections, the SCI coordinates with the residential sweeping contractor to address deficiencies. If a sweeping route is not completed, the SCI can redirect the contractor to perform a follow up sweep. The SCI is primarily responsible for tracking complaints and assigning inspection staff to locations on sweep days to identify

sweeping issues. The SCI also responds to requests for “enhanced sweeps” which are described later in this memorandum.

Program Performance

DOT assesses program performance using the following core service measures and activity highlights which are reported annually during the budget process as shown in Figure 3.

Figure 3. Street Sweeping Performance Measures and Activity Highlights			
	19-20 Actual	20-21 Estimate	Target
% of swept curb miles rated by City as good or better based upon effectiveness and satisfaction with street appearance (4 or greater on a 1-5 scale)	53%	45%	75%
% of customers rating street sweeping services good or better based upon effectiveness and satisfaction with street appearance (4 or greater on a 1-5 scale)*	46%	46%	55%
# curb miles swept	60,908	57,600	67,000
Thousands of tons of sweeping debris collected	4.76	5.0	9.0

* The Environmental Services Department conducts a resident survey once every two years (Recycle Plus Survey). The next Survey is scheduled in winter 2022.

Inspection and maintenance staff spot check sweeping routes every day, and utilize the inspection sheet shown in Attachment A to report on the effectiveness of the sweep. Results are then aggregated to determine the overall percentage of streets rated as “very good” or better as shown in the first measure above. A lower score may be indicative of poor contractor or sweeper performance, but is most frequently attributable to conditions preventing the sweeper from accessing the curb line. Survey data shown in the second measure is provided bi-annually from the Recycle Plus Survey, administered by ESD. Although the data collection methods between DOT internal assessments and the resident survey vary, there appears to be alignment between the assessments performed by inspectors and residents as seen in the similar ratings above.

The final two rows are program outputs. DOT and its contractors have completed all routes as assigned if 67,000 miles are swept in a year. DOT’s completion rate fell from 90% in 2019-2020 to an estimated 85% in 2020-2021, which is largely attributable to staffing and operational challenges resulting from the COVID-19 pandemic. Although street sweeping is not primarily a waste disposal service, debris collected can be correlated with the ability of the sweeper to access the curb line. The measures and activity numbers reported above cannot tell the entire story with respect to street sweeping effectiveness and efficiency, but collectively they provide staff with useful data to guide program management and response decisions.

Street Sweeping Audit: Significant Investment and Re-Tooling Required

The February 2016 City Auditor’s Office report describes the audit conducted to assess the effectiveness and efficiency of street sweeping services, and includes 14 recommendations to improve sweeping operations. The full audit recommendation list and

current status is included as Attachment B. DOT and ESD have fully implemented all but three of the recommendations, one of which is expected to be completed by June 2022. The remaining two recommendations require additional funding to implement.

A significant finding of the Auditor's Office report is that street sweeping operations are under-resourced. This finding was reached through a comparative analysis of San José with nearby cities, as well as an analysis of performance data and objectives. Street sweeping operations are almost exclusively funded through the Storm Sewer Operating Fund (Fund 446). This special revenue fund accounts for revenues collected from owners of properties that benefit from the storm drainage system. Funds may only be used for maintenance and operation of the storm drainage system, as well as non-point source pollution reduction activities, including street sweeping.

The City Auditor's report estimated that the in-house program required an additional \$805,000 for additional sweeper operators and street sweeper vehicles, to successfully sweep its routes as assigned. Since the audit, DOT has requested and received funding to implement several audit recommendations. One-time funding of \$287,000 was received for sweeper operator overtime, street sweeping sign installation, and purchase of a hook lift truck and bins. DOT was also able to secure \$284,000 in ongoing funding to hire 3.0 FTE and cover ongoing costs of supplies and maintenance of new equipment purchased. However, two additional sweeper operators and vehicles are still needed to provide the level of staffing recommended by the City Auditor to enable the in-house team to satisfactorily complete their assigned curb miles. The 2020-2021 Adopted Operating Budget includes funding of approximately \$2.1 million for DOT to operate both in-house and contractual oversight, while the contract with GreenWaste accounts for an additional \$2.2 million with an estimated 3% annual escalator for contractual services.

Although the street sweeping program has made improvements with respect to funding, service delivery, and technology following the 2016 audit, ongoing funding levels remain the largest challenge to successfully sweep all routes as assigned.

Common Impediments to Sweeping

The audit also discussed several obstacles that prevent both in-house and contracted street sweeping crews from performing complete and satisfactory sweeps. Of these, parked cars are the most frequently occurring and impactful. For every parked car, the sweeper is unable to sweep approximately three car lengths of curb line due to maneuverability constraints of the sweeper. In San José, signs that prohibit parking during scheduled street sweeping cover only 14.7 % of curb miles. There are a number of reasons for this, including additional contract costs, additional enforcement costs, and lack of public support due to parking impacts in neighborhoods with limited nearby parking options.

Other barriers to street sweeping include yard waste piles, waste containers, and low-hanging tree branches. Loose-in-the-street yard waste can be especially challenging for street sweepers because piles of landscape debris can hide items that may damage the sweeper or act as a

projectile and harm nearby residents. For these reasons, if a sweeper encounters a pile of landscape debris it will drive away from the curb to avoid it. DOT sometimes receives complaints regarding landscape waste and debris; however, it is important to note that per the municipal code, property owners are responsible for ensuring their curb lines are clear.

Sweepers must also avoid low-hanging trees, those with branches within 14 feet of the street pavement. At this level, sweepers will hit branches, resulting in damaged equipment and compromised trees. Property owners are also responsible for ensuring tree clearance, and DOT operators and inspectors utilize an online inspection tool to document and address these impediments.

Sweeping Remediation Tools

When sweeping issues arise, there may be a need to address the problem before the next scheduled sweep. DOT has some tools that can be used to provide relief to the neighborhood. If parking is severely impacting a residential sweeping route, GreenWaste can distribute trilingual flyers (English, Spanish, and Vietnamese) on windshields of parked cars in two neighborhoods per month to encourage compliance from residents.

If the curbs have a significant amount of buildup that sweepers cannot address, DOT can dispatch staff from the San José Bridge program (SJ Bridge) to clear the gutter area. This action provides immediate relief for the neighborhood and allows the inspection team time to address and follow up on issues, such as low-hanging trees. This tool is effective because it does not require a lot of lead time or coordination.

Enhanced sweeps can also be used to address areas that can range from two to three miles in length that have not been receiving effective street sweeping. Enhanced sweeps must be scheduled well in advance due to required coordination with the parking compliance unit. Notices are placed on A-frame barricades throughout the sweep area and set out 24 hours prior to the sweep to inform residents that their vehicles need to be moved prior to the sweep. DOT deploys parking compliance staff to go door-to-door to make contact with residents to move vehicles, but in extreme cases where the vehicle owner is not found, parking compliance staff facilitate the towing and removal of remaining vehicles. The contract with GreenWaste allows for up to 20 enhanced sweeps per year, an 80% increase from 2016 when the audit was performed.

Parking Prohibition Signs

The most significant and long-term form of sweeping remediation consists of the installation and enforcement of parking prohibition signs. Residents, neighborhood groups, and councilmembers can request signage in neighborhoods. All requests are considered, and DOT inspectors field-verify the need for signs based on their assessments of parking impacts. Following the 2016 audit, DOT received funding to add limited signage throughout the city, resulting in 46 miles of added routes. As of May 2021, there are only three requests for new locations in the queue, down from 70 listed in the audit report. Currently, there is no funding to expand signage in the city, but

when funding is available DOT will consider installing signs in those areas where at least 40% of curb miles is impacted by parked cars. If an area exceeds the parking impact threshold of 40%, additional considerations determine if parking prohibition signs should be installed, and the priority of their installation. These include neighborhood support, compliance, and contractual and enforcement cost increases which can vary depending on the location of the signed routes.

Once parking prohibition signs are installed, DOT deploys parking compliance staff to enforce street sweeping parking prohibitions. In San José, parking prohibition signs prohibit parking for up to five hours. Limiting street sweeping to strict timeframes presents logistical challenges and raises costs because it limits the flexibility of when a street can be swept from a 24-hour window to a much narrower window, which necessitates more precise routing. In addition, one-time equipment and labor are needed to install the signs. DOT estimates that the installation of 100 curb miles of parking prohibition signs could cost approximately \$750,000 excluding parking enforcement. This estimate accounts for one-time costs for the procurement and installation of signs, and significant ongoing costs to provide inspection services to the routes and increase the contract amount with GreenWaste. Parking enforcement would add further substantial ongoing costs, which could be partially offset by citation revenue, but more information is required to provide a detailed cost estimate for these services.

COVID-19 Challenges and Lessons Learned

All DOT operations experienced sudden challenges due to COVID-19. When the shelter-in-place order went into effect, street sweeping was designated as an essential service, but with some required modifications. While the in-house graveyard shift continued its daily operations, the DOT Heavy Equipment staff who pick up on-street sweep waste daily were redeployed to other pandemic response activities, and the program had to stop dumping sweep waste on the street. To create travel time for in-house sweeper operators to dump sweep waste at the corporation yard nearest their daily route, the program was reconfigured to stop regular sweeping of outlying areas. These outlying areas were regularly inspected and swept periodically when inspections determined sweeping was needed.

Parking compliance activities were designated as a non-essential service and many parking staff were redeployed to pandemic response activities. In addition, staff recognized that it would have been challenging for residents to relocate vehicles given the shelter-in-place order, and that towing vehicles in this situation would be neither compassionate nor in alignment with the City's response to the public health emergency. These factors had a negative impact on the efficiency and effectiveness of street sweeping on in-house routes, which is reflected in the core service numbers shown in Figure 3. Lack of parking enforcement in business districts and on major streets, where most parking restrictions are posted, created great challenges to effective sweeping even while these areas were less busy. In January 2021, the parking compliance unit began restoring daytime street sweeping enforcement and is working to resume its graveyard shift capacity. Contractual services continued relatively seamlessly as inspectors were able to operate independently and assess routes and sweeps in the field, although the contractual program faced the same challenges as the in-house team with respect to parked vehicles.

CONCLUSION

The street sweeping program has made significant progress by implementing new technologies and processes, but fundamental challenges with respect to funding, equipment, and staffing remain. Many of these challenges were exacerbated by the COVID-19 pandemic and accompanying City response, as external factors and priorities impacted every facet of service delivery for this program. However, DOT has many of the administrative and technological tools to analyze programmatic challenges and shortcomings in order to more fully understand resource needs and provide more satisfactory service. DOT will continue to update the Council and collaborate with ESD to assess these issues, quantify gaps and needs in service, and seek to address them both by improving internal processes and outlining additional resource needs in future budget cycles. Like many infrastructure programs, street sweeping can be overlooked when compared to other large or high-profile City initiatives. However, the residents of San José have indicated that this is an important program and DOT is committed to providing a more efficient and effective service.

COORDINATION

This report has been coordinated with the Environmental Services Department.

/s/

John Ristow

Director of Transportation

For questions, please contact Rick Scott, Deputy Director, (408) 794-1925.

Attachments