

SAFE CLEAN WATER PROGRAM SCIENTIFIC STUDY PROPOSAL QUESTIONNAIRE

1. Proposal identification information and summary of the project goals.

Title: **Street Sweeping Study**

Proposing Organization: **City of Los Angeles**

Your summary of the Project Goals and Objectives:

The reviewers see the goal of the proposer was to identify enhancements to the street sweeping program of City of Los Angeles with the aim of improving water quality. The objectives are specifically focused on (a) method of sweeping as with a variety of street sweeping machines, (b) where to sweep, which is influenced by data collected on a range of street types with varying conditions, and (c) when to sweep or street sweeping frequencies which is influenced by data collected regarding contaminant and trash loading on various streets. The focus is not on stormwater capture, rather, it is focused on pollutant source control.

2. Are the objectives clearly stated? What portion of the objectives need more clarification?

All four reviewers agreed that the project's objectives are clearly stated and none of them have any objections or concerns. One reviewer stated that the methodology by which objective 1 would be completed could be more thoroughly discussed. Two reviewers expressed concerns that the study mentions the need to build on previous studies, but this is not clarified in Section 2.2 or any part of the study. One of these reviewers expressed concerns regarding the city's ability to obtain the latest street sweeping machines and the study was not clear on how it will have access to them for the study.

3. How do the project goals directly support a nexus to increasing stormwater or urban runoff capture and/or reducing stormwater or urban runoff pollution?

The reviewers agree that the project effectively supports the SCWP's goals of reducing stormwater urban runoff pollution. One of the reviewers expands on this by saying that the study accomplishes this task by providing information on how, where, and when to remove solid particle contaminants from the urban surface. In addition, another reviewer emphasizes that street sweeping practices are by far the most cost-effective way to reduce pollution in urban runoff as it involves collecting pollutants at the source.

4. What is (are) the overarching technical approach element(s) of the proposed project as you understand them (not necessarily the same as the elements described in the proposal)?

The reviewers all agreed that the proposed study has at its core the evaluation of a range of types of street sweepers with the aim of determining the optimal choice for given areas of the city. In addition, individual reviewers added such aspects of the technical approach as assessing dirt loading and characterization, presence of dirt before and after street sweeping, dirt accumulation rate over time, consideration of local land use, development of sweeper routes and frequency based on heat maps, and planning for street sweeping that reduces pollution overtime.

5. Has the proposal provided sufficient information to describe the technical approach for each element? If not, what information is missing?

Two of the reviewers expressed complete satisfaction with the detail provided for the methodological/technical approach of the study, but there are questions regarding the approach, and they would like to see more clarification on site selection methodology and the determination of the effectiveness of the sweepers. The other two reviewers expressed concern regarding sufficient information for describing the technical approach. One of them cited that further information on how sample analysis collection and comparison of sweepers will occur while the other reviewer would like clarification on how the city will have access to the equipment and this reviewer would like to see the assessment of the results of the previous studies. Additional concerns from 1:00 reviewer where that the methodology there's not provide much information regarding which samples will be tested for contamination. A list of contaminants is provided including heavy metals, PCBs, PAHS, FIB etcetera, but the method and the laboratory facilities where samples will be analyzed is not mentioned.

6. Is the technical approach sound? If not, what do you recommend should be done to improve the technical approach of the proposed project?

All reviewers expressed general satisfaction with the technical soundness of the proposal. While one of the reviewers expressed the same concerns that were expressed in Question 5 such as the determination of the effectiveness of the sweepers. Another expressed concerns regarding maintenance impacts for sweeping efficacy. One reviewer expressed anecdotal concerns about accounting for blown dirt particles during street sweeping, which can make post-street sweeping assessments of remaining dirt inaccurate.

7. How achievable are the study's stated technical objectives, especially within the proposed timeframe and budget?

Three reviewers agree that the study is achievable within the planned timeframe and budget. While one reviewer noted that the timeframe is certainly possible within the proposed time frame, it becomes difficult to assess how realistic the technical components are because the number of site locations for field testing and the number of experimental runs at the control site are not known This reviewer also expressed concerns about the cost of the sweepers, lab info, where, cost, number of samples, and replicates as none of these details are present in the proposal. In addition, concerning the budget, this reviewer was more pessimistic than the others and felt that the budget lacks the specificity needed to assess whether the proposed amounts can meet project needs.

8. What are the greatest technical risks that you foresee the proposing agency facing when implementing the project?

Three reviewers agreed that the project faces very low or no technical risks if the data is collected appropriately according to existing protocols. Another reviewer states that with respect to data collection, there is no technical risk if the data is collected appropriately according to current protocols. A very effective street sweeping program can emerge from this study that can function for years to come, and the conclusions can be generalized beyond the LA region. It is unclear whether the newer street sweeping equipment will be available to the city for this project,

affecting whether data will be collected with the newer technologies. This concern was echoed by another reviewer as well. This relates to the first objective of the project. Yet another reviewer expressed concerns about the comprehensiveness of dirt sampling and eliminating measures from the controlled environment that can be effective in real-world scenarios.

9. Please describe the linkages between the project's technical objectives and the types of decisions stormwater managers will make based on the project's outcome(s)? Will the technical achievements provide stormwater managers useful linkages that extend beyond this study?

The reviewers all agree that collecting new data can lead to planning changes by stormwater managers in the deployment of street sweepers that ultimately remove more significant amounts of street pollutants and sediment before they come to be washed down drain inlets. Furthermore, one reviewer notes that the study will provide stormwater managers with valuable information about the types and concentrations of pollutants in street dirt in the City of Los Angeles, and the study will make available recommendations for how these contaminants can most effectively be removed. A secondary linkage would be the categorization of city streets by contaminant levels, which permits a better understanding of the spatial distribution of source pollution.

10. Please provide any additional technical perspectives you would like to share.

One reviewer had no additional comments. The points made by other reviewers were as follows: one possible outcome of the study would be the discovery of accumulation rates that appear to outpace street sweeping frequency. In this case, it may be helpful for the investigators to consider particle loading between storm events and compare this wet season accumulation rate pattern with the dry season accumulation rate curve induced by sweeping. Another reviewer suggested a characterization study of the variables to be considered so as to determine the heat maps. The reviewer further stated that the proposal did not indicate how these would be controlled as part of the sampling task. Yet another reviewer says that the project needs to develop a model that would consider the data collected and the study needs to develop an effective parking policy that assures that streets come to be swept on an optimized schedule.

11. Please answer each of the following questions by selecting one of the following five answer choices: *Excellent, Very good, Adequate, Inadequate or Not applicable because of insufficient information.* Please add an explanation to accompany your answer choice (or refer to the question number above for appropriate context and rationale):

- a. How well do the proposal objectives address the County's goals of increasing stormwater or urban runoff capture and/or reducing stormwater or urban runoff pollution?

Three reviewers noted this measure as being 'very good,' and one rated it 'excellent.' Comments from the reviewers included that the project provides a direct connection to reducing urban runoff pollution by quantifying the amount of dirt on the streets. This project has embedded practical BMPs that could be utilized further to reduce stormwater pollution and the outcomes of this study. Another reviewer states that street sweeping is a popular BMP used by many agencies to control the pollutants in urban runoff, a desirable goal. Another noted that the project leads the city to acquire

street sweepers with newer technology that is more efficient, as well as optimizing street sweeping frequencies in many neighborhoods. Another reviewer states that St. sweeping is a vital tool to be used in stormwater programs.

- b. How well do you think the technical approaches will achieve the study objectives and stated outcomes?

Two reviewers assessed this measure as 'Adequate' as described. One of these states that it is uncertain that street sweepers with new technologies will be available for data collection in this project. The other reviewer with this rating points out the need for additional information on the technical approach, stating that sample analysis collection and comparison of St. sweepers uh needs further clarification. There is a question also from this reviewer about to serve particles that are not captured during vacuuming which are likely to reposition themselves on the roadway before a subsequent sampling occurs. Excellent was the assessment of one reviewer who states that the technical approach is appropriate and that it is likely to achieve the study objectives. Furthermore, this reviewer states that the project will test sweeper pickup efficiencies, and we'll evaluate their effectiveness in reducing contaminants from the street surface.

- c. Technical experience and qualifications of the study team?

Three of the evaluators noted that this measure appeared to be not applicable in large part because of a lack of needed information to make an assessment. One reviewer noted excellent in light of the good literature review provided in this proposal.