

FieldNOTE

An Update on NASA's Cleanup Efforts at the Santa Susana Field Laboratory



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MESSAGE FROM THE PROGRAM DIRECTOR

Steady progress and steadfast commitment

The recent release of the Phase 1 Groundwater Corrective Measures Study (CMS) and Statement of Basis by the California Department of Toxic Substances Control (DTSC) marks a significant milestone in NASA's ongoing commitment to cleaning up groundwater at SSFL. These documents represent the culmination of an extensive groundwater investigation, technical collaboration and planning, and reflect the steady, focused progress that continues to move this project forward.



NASA SSFL Program Director Peter Zorba

Through interim actions and pilot studies, NASA has already treated nearly 540 million gallons of groundwater and removed approximately 6,000 pounds of trichloroethylene (TCE) and other volatile organic compounds (VOCs) from the underlying bedrock. The cleanup approach outlined in the Phase 1 CMS and Statement of Basis builds on that progress and ushers in a new phase—one in which NASA can begin implementing a final, comprehensive groundwater remedy for SSFL.

Reaching this point would not have been possible without the sustained involvement of the SSFL community. We are especially grateful to those who attended the recent public meeting and provided feedback during the Phase 1 CMS and Statement of Basis public comment period. We appreciate the time, care, and commitment shown by community members—not only during this process, but throughout the broader cleanup effort over the years. Your feedback strengthens our efforts and helps ensure that the path forward remains rooted in a shared goal: a safe and protective cleanup of SSFL.

NASA remains steadfast in its commitment to work with our regulatory partners and the community to achieve a cleanup that prioritizes public health and environmental protection, relies on the best available science and technology, and preserves the site's natural and Native American cultural resources for future generations.

Peter Zorba
NASA SSFL Program Director

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Proposed Groundwater Cleanup Remedy Under Review

DTSC evaluating community feedback on NASA's proposed Phase 1 approach



Pictured above: NASA's enhanced in situ bioremediation (EISB) system, which relies on naturally occurring microbes to remove TCE. EISB is one of the multiple treatment methods proposed in the Phase 1 CMS.

DTSC recently released the Statement of Basis for NASA's Phase 1 groundwater cleanup at SSFL, along with NASA's Phase 1 Groundwater CMS. These documents represent a significant milestone in NASA's cleanup process at SSFL, which is guided by the Resource Conservation and Recovery Act (RCRA) process.

NASA is taking a phased approach to groundwater cleanup, focusing on high-priority areas first to reduce risk and accelerate progress toward a comprehensive cleanup. Phase 1 focuses on areas within NASA-administered portions of SSFL that contain the highest concentrations of TCE, a compound historically used at SSFL to clean rocket engines. Phase 2 will focus on the remaining groundwater contamination beneath the NASA areas of SSFL.

The Phase 1 Groundwater CMS identifies and compares a range of treatment options for the first phase of NASA's groundwater cleanup, ultimately recommending a multi-faceted

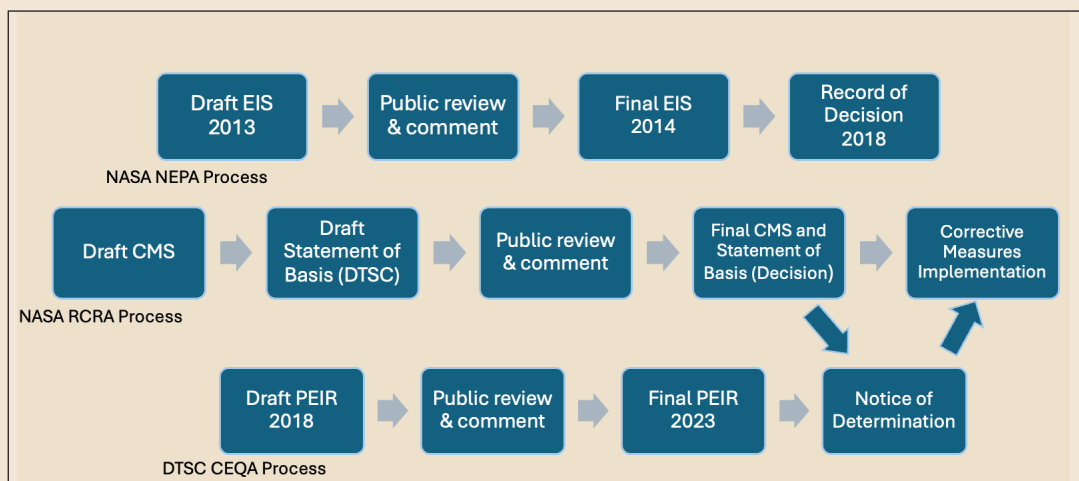
approach that targets six Target Treatment Areas (TTAs). These TTAs are located within or near historic operational areas with the highest levels of groundwater contamination.

The Statement of Basis summarizes the Phase 1 Groundwater CMS and identifies the DTSC's proposed remedy for the Phase 1 areas. The proposed approach includes technologies including pump-and-treat, bedrock vapor extraction, enhanced bioremediation, and monitored natural attenuation, tailored to site-specific conditions. The DTSC held a public comment period from April 29 to June 10, during which it sought input on the CMS and Statement of Basis, including the proposed remedy. On May 13, DTSC hosted a virtual public meeting to present the documents, answer questions, and accept formal public comments for the record. Over 60 people attended the virtual meeting.

What's Next?

With the public comment period now closed, DTSC is reviewing and responding to all comments received. Based on this input, DTSC may revise the Statement of Basis and CMS before issuing a final decision. Following final approval, the project will enter the Corrective Measures Implementation (CMI) phase, during which NASA will design and execute the selected cleanup remedy. The CMI phase will involve detailed engineering design, permitting, and field activities to implement the approved approach.

For more information about the CMS and the recommended cleanup methods for each TTA, view the Phase 1 CMS fact sheet at: <https://ssfl.msfc.nasa.gov/files/documents/FactSheets/P1-GW-CMS-Factsheet.pdf>.



The CMS and Statement of Basis are key steps in NASA's RCRA cleanup process.

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SSFL cultural resources management team recognized for outstanding leadership

NASA's Cultural Resources Management (CRM) Team at SSFL was recently presented with a NASA Agency Honor Award in recognition of its exceptional leadership in tribal consultation and cultural stewardship. As stewards of the federally owned portion of SSFL, NASA plays a vital role in preserving Native American heritage while advancing environmental cleanup efforts.



A member of the cultural resources management team works on a site recordation during an Additional Phase 1 Survey in 2015.

For more than a decade, the CRM team has demonstrated unwavering dedication to protecting the site's significant cultural resources and fostering lasting relationships with the Native American community. These relationships have helped NASA understand the tribal perspectives and historic uses of the Burro Flats Painted Cave and other archeological sites encompassed in the Simi Hills in and around SSFL.

"I am humbled by this award," said Peter Zorba, NASA SSFL Program Director and one of the recipients of the award. "I am really proud of our CRM team and the model they have established for sustained, respectful engagement with Native American tribes connected to SSFL lands."

The prestigious award also recognizes the team's key accomplishments over the years, including the development of the 2014 Programmatic Agreement and the successful completion of its requirements. They include an ethnographic study, comprehensive archaeological investigations, recordation of artifacts, and the nomination of a Traditional Cultural Property to the National Register of Historic Places.

Through continued consultation and commitment to cultural preservation, the CRM team is helping ensure that NASA's cleanup activities honor the deep significance of the land for Native American communities—now and for generations to come.

From the Archives

This photo, taken in April 1974, shows a hydrogen sphere being moved into the Coca Test Area in preparation for testing the Space Shuttle Main Engine (SSME), the first reusable liquid booster engine for human space flight. The hydrogen sphere stored liquid hydrogen. During rocket engine testing, the liquid hydrogen was piped to the engine, where it was mixed with liquid oxygen and combusted to simulate flight conditions.



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NASA Continues Progress with Demolition Work

NASA remains committed to safely and responsibly preparing its portion of SSFL for environmental cleanup, with demolition activities continuing in a phased approach.

In late 2024, NASA completed Phase 7 demolition, which included the removal of Coca Test Stand 1. Up next is the scheduled return of NASA's Phase 6 contractor this fall, following the end of the nesting bird season, to complete the demolition of the remainder of Coca Test Stand 4 (see photo, right).

Following the completion of Phase 6, the focus will turn to Phase 8, which is set to include removing the remaining concrete pads, foundations, and asphalt throughout the entire Coca Test Area. Given current and potential future budgetary constraints, NASA plans to divide Phase 8 into smaller sub-phases, allowing the agency to remain flexible on the implementation timeline.

NASA's commitment to the safe cleanup and long-term stewardship of the site remains strong. Each phase of demolition brings the agency one step closer to preparing the land for remediation and honoring its responsibility to the community and the environment.



The Phase 6 demolition and the completion of the removal of Coca Test Stand 4 will resume this fall.

Update on NASA's Soil Cleanup at SSFL

NASA continues to make steady progress toward future soil cleanup and restoration at SSFL. A major focus of recent efforts has been identifying clean backfill material that meets both environmental and ecological standards.

Earlier this year, NASA completed its portion of backfill source sampling, part of a coordinated study with the Department of Energy (DOE) and Boeing. This study, requested by DTSC, aims to identify suitable soil to restore the landscape following excavation. Backfill is crucial for stabilizing the terrain, supporting revegetation, and facilitating long-term ecological recovery at the site.

To date, locating backfill that meets the chemical standards of the 2010 Administrative Order on Consent (AOC) and the site's habitat restoration needs has proven difficult. No material has yet been identified that satisfies both sets of criteria in the quantities required. NASA is currently awaiting the final laboratory results from its sampling and will begin analysis once the whole dataset is available. Meanwhile, DOE and Boeing are continuing their respective sampling and evaluation efforts.

In parallel, DTSC is exploring a Multiple Lines of Evidence (MLE) approach to address technical and implementation challenges associated with the 2010 AOC. This approach incorporates various types of data to evaluate how cleanup goals can be achieved in a scientifically sound and practical manner. DTSC introduced the MLE framework to the public through its Soil Smarts Workshop series and also published a supporting technical memorandum outlining the proposed approach.

NASA is reviewing DTSC's MLE technical memo and continues to engage in ongoing technical discussions with DTSC about how to implement soil cleanup.

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