



FieldNOTE

MAY 2015

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

Demolition Proceeds

Demolition projects are a lot like construction projects – but they happen in reverse. Structures that were assembled years ago for rocket engine development and testing are now being disassembled and dismantled as part of NASA's disposition of SSFL. And like any construction site, increased activity requires attention to safe work practices. NASA's approved demolition work plans and worker training ensure that "safety is our priority for the on-site worker, the public and the environment, including cultural resources," said NASA SSFL Project Manager Peter Zorba.



Trucks that carry demolition debris are covered securely, wetted down to suppress dust, and fully inspected for safety before exiting the site. Trucks entering the site are uncovered because they are empty.

In early February, NASA and demolition partners - the U.S. Army Corps of Engineers and demolition contractor Bhate Environmental Associates – began demolition work in the northern part of Area II in the Service Area and the Delta Test Area. Work considered pre-demolition started on the inside of buildings, removing what is referred to as e-waste including lightbulbs, wiring, and mercury-containing light ballasts. When SSFL structures were constructed in the '40s and '50s, asbestos was used in a variety of building materials, which must be removed before demolition. Certified asbestos abatement workers have been removing floor tiles, drywall, and ceiling tiles inside each structure. This process is being supervised by third party asbestos abatement monitors to ensure the proper handling and disposal of these materials. This pre-demolition activity is nearing completion in the Service Area and actual demolition of structures has begun.

With the use of construction equipment and increased site activities there is the potential for soil disturbances. NASA is paying close attention to management of stormwater, dust, and soil erosion during demolition to prevent discharges from the work sites. In February and March work had been confined to the inside of buildings until NASA's Stormwater Pollution Prevention Plan (see stormwater article) had State approval. Protective measures specified in the Plan were required to be in place before exterior work such as asbestos abatement on roofs and siding could begin. "Everything we are doing contributes to the goal of safely removing the structures from the site," said Zorba, "but progress will really show as the walls start to come down." Full demolition is underway and is expected to start slowly and pick over time. Debris consisting primarily of steel and concrete will be generated requiring transport off site. This will result in an increase in the number of trucks traveling to and from the site. (See photo.) Protective measures will be strictly enforced to ensure transported material is securely covered and trucks undergo inspection prior to leaving SSFL property. Updates about site work and demolition debris transport will be posted to the NASA SSFL website <http://ssfl.msfc.nasa.gov/news/demolition-updates.aspx>. NASA expects this first part of demolition to be completed by June. At that time, site preparations will be in full swing in the Delta Area, with expected completion of demolition there in December. ■

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IN THIS EDITION

Demolition
Proceeds

NASA Says
Let it Rain

Understanding
Groundwater

GETS
Improvement

Lori Manes
Joins the Team

NASA SAYS LET IT RAIN

The “rainy season” in California used to last from Thanksgiving to Easter but with the record level drought conditions, the season has become considerably shorter. Less rain hasn’t dampened NASA’s drive to prepare for future storm events. Instead, NASA has initiated a number of activities to control stormwater runoff and soil erosion when rain falls again. One area NASA has focused on is improving stormwater runoff on the hillside below the Service Road in Area II. With guidance from the Surface Water Expert Panel at SSFL, NASA implemented a voluntary Best Management Practice (BMP) to better capture the runoff, treat it, and deliver it back to the natural drainage to the outfall. BMP construction activity included rehabilitating the hillside drainage channel and installing a multi-tank treatment system. This system promotes settling of sediment from the water and filters out contaminants. A monitoring process is in place to sample before stormwater enters and when it exits the tanks. With more storm events and water to measure, NASA will be able to perform sampling to determine the system’s effectiveness. Back up on the hill, indigenous vegetation has grown back since construction took place (see photo), which helps absorb runoff and reduces soil erosion overall. These improvements came on the heels of NASA completing an Interim Source Removal Action. That project was done to remove contaminated surface soils that could detach and be transported by the force of stormwater.



The drainage channel, shown just after reconstruction (left) and recently (right) with regrowth vegetation controls erosion and directs stormwater runoff to treatment tanks. Treated water is returned to the natural drainage that leads to the outfall.

Taking another large step forward, NASA has completed a Stormwater Pollution Prevention Plan to prepare for demolition activity. (See demolition article.) The Plan outlines the protective measures NASA is taking to prevent stormwater runoff, minimize soil erosion, and contain dust emissions during demolition. “When it does rain,” said hydrogeologist Randy Dean for NASA, “we’ll have controls in place” using silt fences, sand bags, straw waddles, and tire washes to reduce sediment discharges from leaving the demolition site. “NASA will implement these measures as needed throughout demolition,” said Dean. Spraying a fine mist into the air will wet the construction area and suppress dust but not so much as to generate runoff. Preserving as much vegetation on the site as possible and hydroseeding areas after demolition will also help to suppress dust and control soil erosion. NASA will follow these and other measures outlined by the Ventura County Air Pollution District. Sampling will continue at regular intervals and during storm events to ensure stormwater quality remains within permitted levels. ■

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GETS Gets Improvements

NASA has been conducting field work to expand the Groundwater Extraction Treatment System (GETS) at the Santa Susana Field Laboratory site. The system has been partially operational since 2009 as part of a Groundwater Interim Measures project. NASA's current efforts have enhanced the system's capabilities.

The GETS consists of groundwater extraction wells and a network of pipelines that deliver groundwater to a treatment facility located in Area I (owned by Boeing). The treatment facility, centrally located within SSFL, contains a number of technologies including ion exchange, air stripping, and liquid and vapor phase carbon, which remove chemicals from groundwater. As part of recent field work, NASA installed eight new groundwater extraction wells that will substantially increase the volume of water available for treatment at the GETS. Since 2009, extracted groundwater has come from only one well (NASA well WS-9A). Each of the new wells requires electricity for pumps to work and monitoring equipment to function. "This has been a great deal of work," said NASA SSFL Project Manager Peter Zorba. According to Zorba, the wells are typically located in areas where there is little to no existing electricity infrastructure. During the fall of 2014, crews cleared right of ways, dug holes to install power poles, and ran extensive lengths of wiring to provide power where it is needed. (See photo.) Another challenge, said Zorba, "has been bringing the water from the wells which are in pretty remote locations to the facility for treatment."



NASA installed utility poles and wiring providing power to operate an expanded Groundwater Extraction Treatment System.



A telemetry antenna (shown here on a new utility pole) transmits data to a central control and will automatically shut down the system until a water leak has been repaired.

NASA installed some new pipes and made improvements to existing pipelines to ensure that groundwater is fully contained while on its way for treatment at the GETS facility. These double-walled pipelines are equipped with a remote leak detection system. The system is also equipped with telemetry antennae that transmit data from the remote outposts to a central control station. (See photo.) With telemetry in place NASA will be able to monitor the wells, pumps, and pipelines to ensure all are working safely and effectively. The GETS will return to operation once NASA's groundwater investigation and characterization work (see groundwater article) have been completed. NASA anticipates the GETS will be treating groundwater by the end of the year. ■

A Deeper Understanding of Groundwater

The four plumes that are the focus of NASA's groundwater investigation are also referred to as Areas of Impacted Groundwater (AIG):

1 Liquid Oxygen (LOX) Plant

2 ELV/Building 204

3 Coca/Delta

4 Alfa/Bravo

NASA is making good progress with groundwater investigations. Field work is focusing on the source of four groundwater plumes beneath land administered by NASA. (See side bar.) NASA is taking this unique approach of looking at the plumes to fill in the data gaps identified in the Groundwater Remedial Investigation (RI) report, which is part of the overall SSFL site groundwater cleanup process.

NASA is collecting data to characterize:

the nature and extent of the groundwater contamination source areas

the groundwater flow direction and rate, and

the behavior of groundwater flow with respect to bedrock faults and fractures within the plumes

Field work has been extensive, including the installation of 21 wells and boreholes to “considerably improve our sampling capability,” said NASA SSFL Program Director Allen Elliott, “both in terms of understanding groundwater movement and contaminant characteristics.” Field surveys and mapping projects are also part of NASA’s investigation work. Passive soil vapor surveys help to identify potential contaminant sources areas. Geophysical surveys, performed in the wells, help characterize the types of rocks as well as the faults and fractures present within the rocks. Geologic mapping provides additional details about the rock structure, including the size and location of faults and the angle and direction of the bedrock, which are both essential for developing a better understanding of the groundwater flow system. NASA’s field work will continue through September. ■



Lori Manes Joins NASA SSFL Community Outreach Team

Lori Manes joined NASA’s SSFL team as Community Outreach Coordinator last November. An alumna of Baylor University and a PhD candidate at Claremont Graduate University, Manes worked ten years supporting public outreach on NASA’s Groundwater Cleanup

Program at its Jet Propulsion Lab in Pasadena. She is pleased to work with “an active community of people genuinely interested and passionate about the cleanup... and in their kids’ and grandkids’ futures.”

Lori began her work at SSFL hosting three tours (once each for community members, the media and NASA personnel). The tours occurred prior to the start of test stand demolition. Manes has since been working to ensure NASA maintains an active community outreach program, which includes a mix of “events, fact sheets, Web content, and a major redesign of the project website.” The revisions will include a document library and photo gallery. She has also initiated a new Communications E-List to which community members and interested parties can subscribe to get real-time updates about NASA cleanup activities at SSFL. “People can subscribe to the E-List via the NASA SSFL website. I am hoping that we can start building up subscribers right away.” Manes is excited about supporting NASA efforts to collect an oral history archive of SSFL that includes interviewing former SSFL workers going back a half a century. “It’s really a privilege to talk to these guys and hear about their experiences working on what at the time was such remarkable innovation.” The project will include a review of thousands of historic photographs and culminate in a documentary-type video that will be posted on the NASA SSFL website in late 2015.

Manes said meeting with a variety of individuals and groups around SSFL is a continuing focus of her work. These include community organizations and regulators such as California’s Department of Toxic Substances Control. During the winter she attended various meetings where she heard multiple opinions and acknowledged, “There is sentiment that it’s taken long to do so much investigation, sampling and data analysis. People understand this was necessary but I think we are all glad to be moving closer to cleanup.” Manes plans to post cleanup photos and updates on the NASA SSFL website and to conduct a few site tours when possible. Manes hopes her activities and outreach program will reinforce NASA’s commitment to ongoing community involvement at SSFL. ■

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