Santa Ana Watershed Project Authority

OVER 50 YEARS OF INNOVATION, VISION, AND WATERSHED LEADERSHIP

Santa Ana River Watershed Cloud Seeding Pilot Program

Frequently Asked Questions

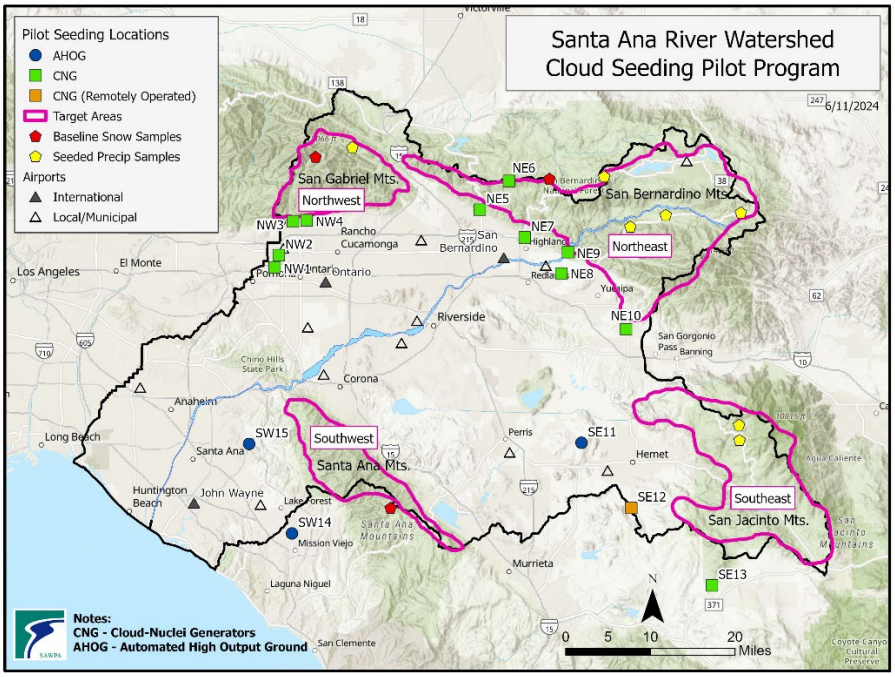
1. What is the Santa Ana River Cloud Seeding Pilot Program?
   a. The Santa Ana River Watershed Cloud Seeding Pilot Program is a four-year SAWPA project aimed at collecting data to validate the program and assess its long-term benefits, including additional precipitation and runoff, for implementation in the Santa Ana River Watershed. The first year of operation began on November 15, 2023.

2. What is cloud seeding?
   a. Cloud seeding is a weather modification technique that involves dispersing small quantities of silver iodide into clouds to stimulate the formation of ice crystals or raindrops, increasing precipitation.

3. How long will the pilot program last?
   a. The pilot program is scheduled to run for a period of four years, from November 15, 2023 through April 15, 2027.

4. Who are the stakeholders involved in this program?
   a. The Santa Ana River Cloud Seeding Pilot Program involves collaboration between SAWPA, our Member Agencies, other local water agencies, weather consultants, and a third-party research/validation expert (Desert Research Institute).

5. What areas will be targeted for cloud seeding?
   a. Cloud seeding activities will be exercised in four target areas that are generally located at high-elevation regions of the watershed. These target areas are referred to as – northwest, northeast, southwest, and southeast. These target areas would then be seeded by the 15 ground-based seeding units. See map below for details.



6. What substances will be used for cloud seeding?
    a. A solution of silver iodide and acetone will be released in small quantities by 15 ground-based units. A silver iodide and acetone mixture is widely used in cloud seeding operations for decades and is safe for the environment and human health.

7. Will cloud seeding have any negative impacts on the environment or public health?
    a. In over 50 years of research, studies have shown that cloud seeding using silver iodide and acetone does not pose a significant risk to the environment or public health. However, monitoring will be conducted to ensure the program's safety.

8. How could silver iodide exposure affect residents when disbursed into the air?
    a. SAWPA conducted a CEQA review for this pilot project to assess their impact on public health and the environment. Acetone is used in the ground-based seeding units to release silver iodide particles, but it is converted to water and carbon dioxide during the process, eliminating human exposure. Only small amounts of silver iodide are released during ground-based operations, which are well below levels that would cause any effects for people. The amount of silver iodide in the environment before and after cloud seeding events is not toxic to humans. The CEQA study confirms that the pilot project's operational activities will not expose urban areas to high levels of silver iodide.

9. Is the pilot program validated for how well it works?
    a. Yes, the pilot program is being validated for producing additional precipitation. SAWPA has partnered with Desert Research Institute (DRI), a nonprofit research organization affiliated with the Nevada System of Higher Education. DRI will be conducting a target and control approach, comparing a nearby control area without seeding to the four target seeding areas. This approach will provide us with information on how much additional precipitation is produced as a result of cloud seeding.

10. What cloud seeding methods will be used for the pilot program?
    a. The Santa Ana River Watershed Cloud Seeding Pilot Program will be using two types of ground-based seeding units, called Cloud Nuclei Generators (CNGs) and Automated High Output Ground Seeding (AHOGS). CNGs are manually operated and burn a solution of silver iodide and acetone, creating a continuous plume of seeding material that covers a broad area over mountainous terrain. AHOGs are remotely operated units, burning in-place flares that rapidly release a high concentration of silver iodide and are ideal for seeding convective bands with high concentrations of liquid water and vertical updrafts.

Cloud Nuclei Generators (CNGs)

Automated High Output Ground Seeding Units (AHOGS)

11. What are the benefits of cloud seeding?
    The estimated benefits of the pilot program include:
    - Increases precipitation by 5 to 15 percent;
    - Increases water supply for the region; and
    - Increases snowpack for snow season recreational activities.

    These are estimated benefits and DRI will assist with the evaluation of benefits during (and after) implementation of the pilot program.

12. Who is funding the pilot program?
    The pilot program is being funded by SAWPA and its member agencies, local water agencies, as well as a state grant from the Department of Water Resources (DWR). The DWR grant covers half of the program's cost.

13. Does SAWPA have any outreach resources available for the pilot program?
    Yes, SAWPA offers outreach resources such as an informational brochure on the Santa Ana River Watershed Cloud Seeding Pilot Program, a fact sheet, FAQ, newsletter signup, and a webpage. These resources can be found on our website at: sawpa.gov/cloudseeding.

14. Can members of the public submit questions or comments about the program?
    Yes. To submit a question, comment, or to request a presentation, please email cloudseeding@sawpa.gov or visit sawpa.gov/cloudseeding.

15. Where can I find out more information about the Santa Ana River Cloud Seeding Pilot Program?
    To learn more about the Santa Ana River Cloud Seeding Pilot Program, please visit https://sawpa.gov/cloudseeding.