

# Tuolumne Watershed Cloud Seeding Program

**Cloud Seeding** is a scientific technique used to boost a cloud's capacity to generate precipitation. The process is performed by emitting flares containing silver-iodide particles which act as a nucleus for water molecules to bond with, create ice crystals and fall to the Earth's surface as precipitation in the form of rain or snow.

## **Why does TID/MID participate in Cloud-Seeding?**

TID and MID participate in cloud seeding to assist naturally occurring storm events to increase precipitation production, predominantly in the form of snowfall, to help increase available annual water supplies for agricultural production, environmental needs and to generate carbon-free energy for the region. Analysis has shown a potential increase of 5-15% in precipitation volumes.

## **How often does TID/MID participate in Cloud-Seeding?**

Cloud seeding is performed November through April, during dry and average water years, when the optimal conditions in naturally occurring storms are present. When natural storm conditions are present, the plane is flown into the storm to test for cloud seeding potential and if conditions are met, the operation will take place. Program suspension criteria are in place to prevent flights in which increased precipitation would lead to unmanageable runoff, and to avoid contributing to naturally occurring hazardous situations such as rain fall over burn scar areas, flood warnings, etc.

## **What Cloud-Seeding is Not**

**Cloud-Seeding does not release harmful pollutants into the air that negatively impact soil, water and the health of people, plants and animals.**

Prior to implementing the program, the TID/MID program had to be evaluated by a strenuous California Environmental Quality Act (CEQA) process and was approved. Multiple studies on cloud-seeding conducted by the US Bureau of Reclamation, the California Department of Water Resources, North Dakota Atmospheric Resource Board, North American Weather Modification Council, and others, have determined that cloud-seeding does not negatively impact humans, animals or plants.

## **Silver iodide is not poisonous.**

Silver and silver compounds have a low order of toxicity. Silver concentrations in surface water runoff have been measured from both seeded and unseeded watersheds. While a range of results has been recorded for both circumstances, available data suggests that silver in seeded waters occurs within the same concentration range as silver in unseeded surface water.

## **The Districts have not hidden our participation in the program.**

Cloud-seeding programs are used throughout California, some having been in place since the 1950's. TID/MID have never "hidden" our 30 years of participation in the program, but rather have made public notice of our intent to continue the program far beyond what is required, re-noticing roughly every time the contract with our cloud-seeding contractor is renewed.

As studies have shown no negative impacts caused by cloud-seeding, and given that the program has been shown to increase snowpack in seeded areas, creating more runoff and surface water that can be put to beneficial use for irrigation, clean hydropower generation and environmental needs, TID and MID will continue to operate a cloud-seeding program when the correct weather conditions are present. Our program includes continuous monitoring and reporting, to confirm that we continue to see benefit from the program.

If you have questions regarding the cloud seeding program, please contact Turlock Irrigation District at (209) 883-8222.