Webinar:
Santa Ana River Watershed Weather Modification Pilot Program

October 14, 2021

Background and Ground Rules

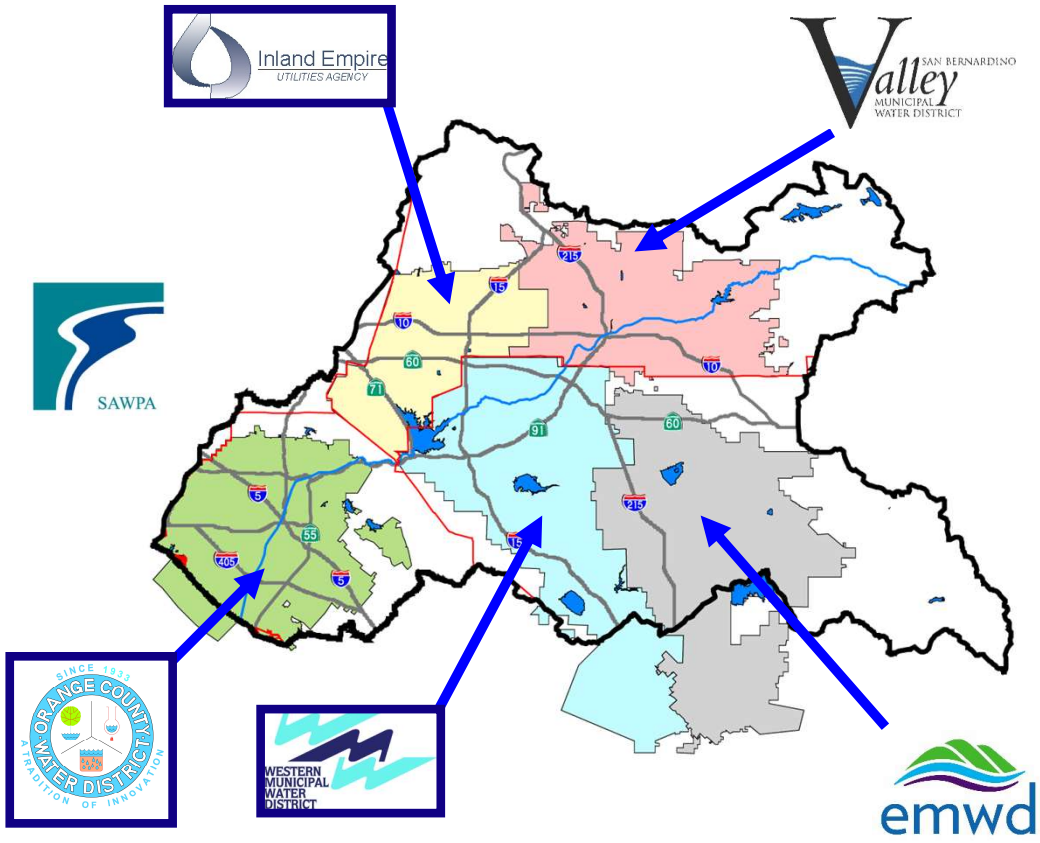
- Webinar scheduled from 1:30-3:30 pm
- Presentations will be posted on SAWPA's website
- To facilitate webinar, participants will be muted
- For Q&A: Provide comments in chat at anytime

Agenda

- Welcome by SAWPA General Manager, Jeff Mosher
- Introductions of Speakers
- Overview presentation
  - Garrett Cammans, North American Weather Consultants
- Q&A
- Santa Ana River Watershed Weather Modification Pilot Program - Next Steps
  - Mark Norton, SAWPA Water Resources & Planning Manager
- Q&A
- Closing remarks

Who is SAWPA?

Santa Ana Watershed Project Authority is a joint powers authority with five Member Agencies



Other Stakeholders

- 97 Water-related Agencies
- 4 Counties
- 63 Cities
- State water, environmental, and regulatory agencies
- Federal Agencies
- Other Special Districts
- Special Interest Groups

Speakers

Garrett Cammans is the President of North American Weather Consultants (NAWC). NAWC has performed cloud seeding and cloud seeding research for almost 70 years. Their work began in Santa Barbara and quickly expanded throughout the Western United States, with current programs in Utah, Colorado, Idaho and California.

Mark Norton serves as the Water Resources and Planning Manager for SAWPA. He is a registered professional engineer, an accredited LEED professional, and Envision Sustainability Professional. Mr. Norton's background includes 40 years of engineering experience in a broad range of civil engineering projects. He oversees SAWPA's Integrated Regional Water Management plan known as the One Water One Watershed plan and SAWPA's multi-agency water quality task forces.

An Introduction to Cloud Seeding

Garrett Cammans, North American Weather Consultants

Cloud Seeding Overview – How It Works

Understanding Water in the Atmosphere

It is surprisingly difficult for water to freeze just below its melting point: water resists freezing unless it has something to get it started, like dust or some other solid to cling to. In pure water, it takes an **energetic nudge** to jostle the molecules into the special arrangement needed to freeze.

- Pacific Northwest National Laboratory

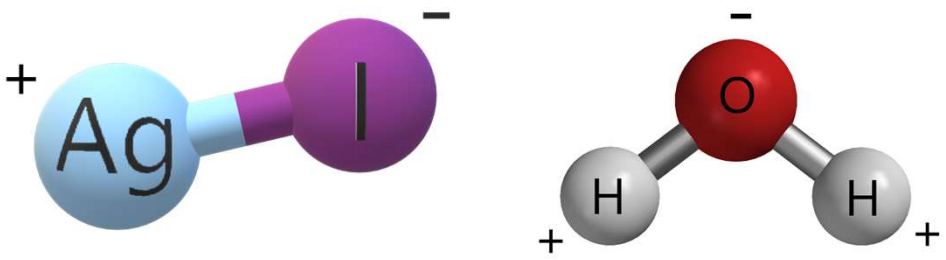
How Particulates Impact Precipitation

- Water in a cloud deck can remain a liquid until it reaches temperatures as low as -15° C.
- Precipitation occurs when water freezes and forms ice crystals that congregate to form snowflakes or graupel.
- Eventually the snowflakes or graupel grow heavy and large enough to fall.
- Introducing a *nucleating agent*, or surface for water to latch onto, can enhance the formation of snow flakes and graupel and thus influence precipitation.
- Nucleating agents can be natural (fine dust particles), circumstantial (pollution and smog) or intentional (cloud-seeding).

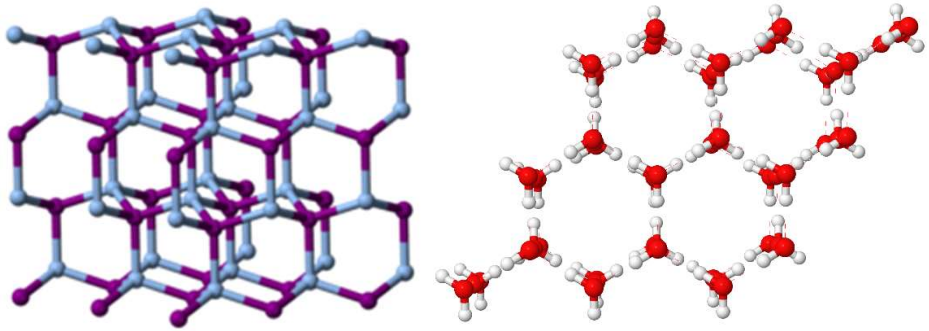
Introduction of Nucleating (Seeding) Agents Into a Storm

Silver Iodide as a Seeding Agent

Silver Iodide molecules exhibit strong electrical polarity



Silver Iodide crystals have a shape similar to ice crystals.



Seeding Methods & Design

Ground Seeding – Manual Seeders

CNG's (Cloud Nuclei Generators)

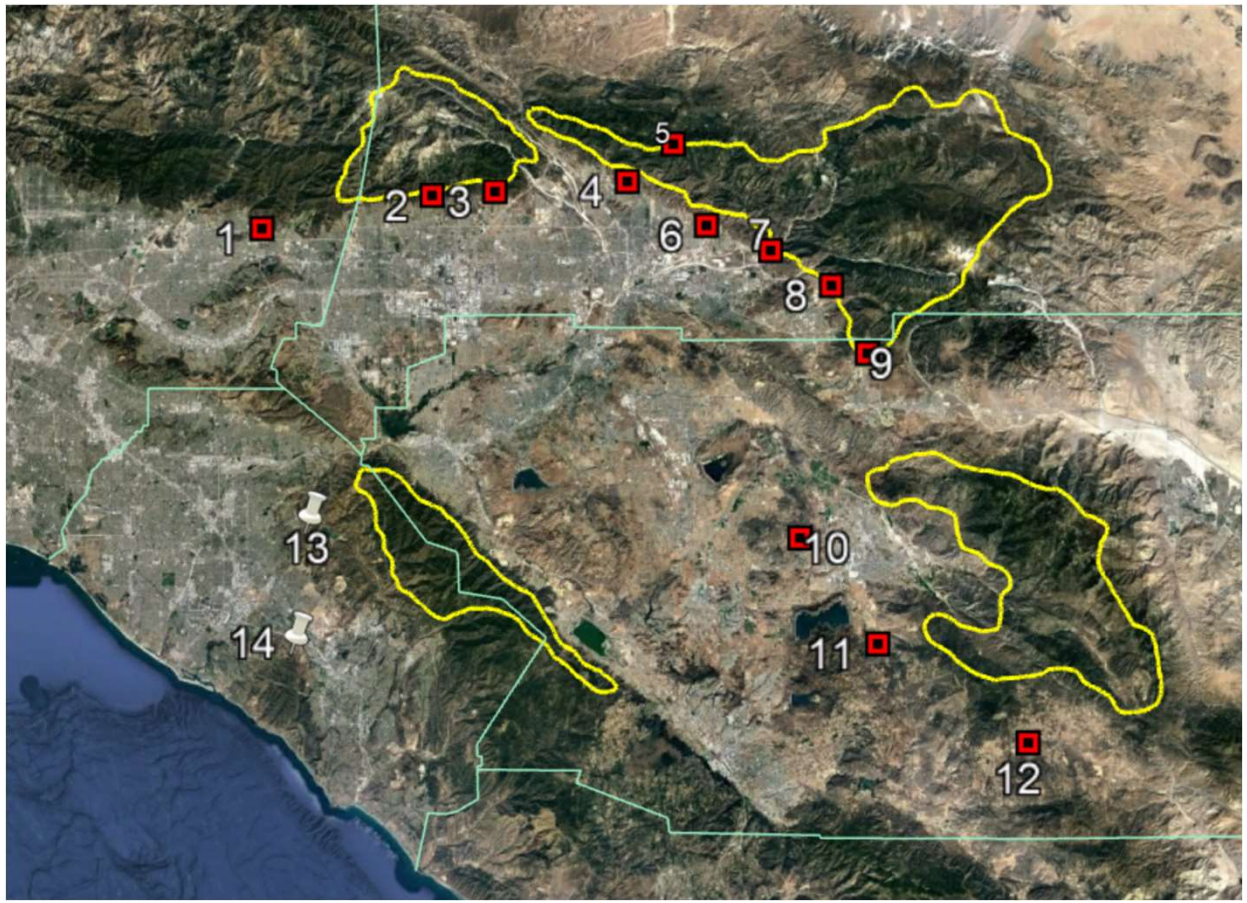
- Ideal for orographic lift (movement of air over mountain barriers)
- Create a continuous plume of seeding agents
- Inexpensive to install and efficient to operate for extended periods of time

Ground Based Seeding – Automated

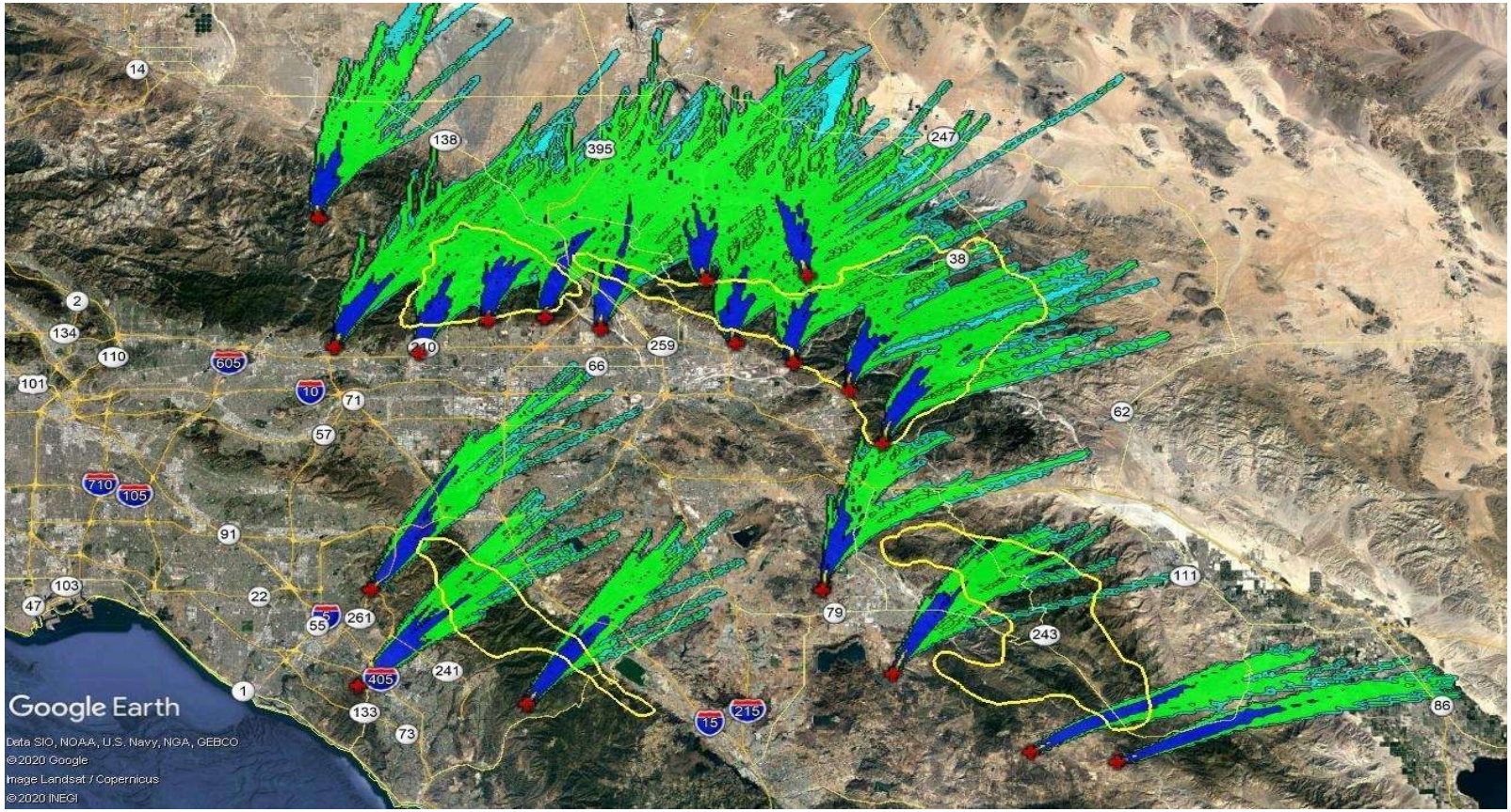
AHOGS (Automated High Output Ground Seeding) Systems

- Deliver a higher concentration of Silver Iodide – rapid release
- Operated remotely
- Ideal for storms with convective attributes (turbulence)

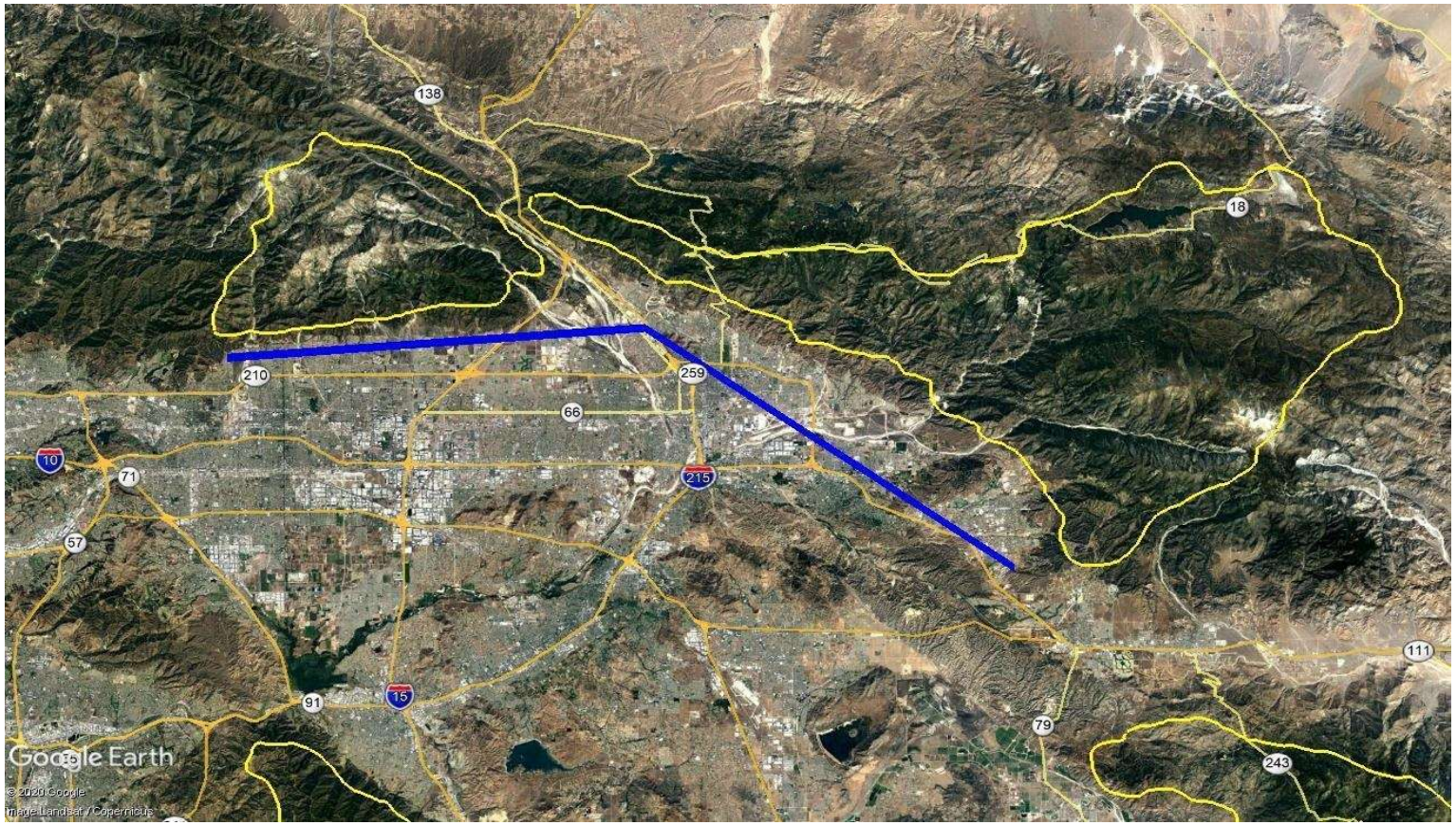
Ground Seeding Sites



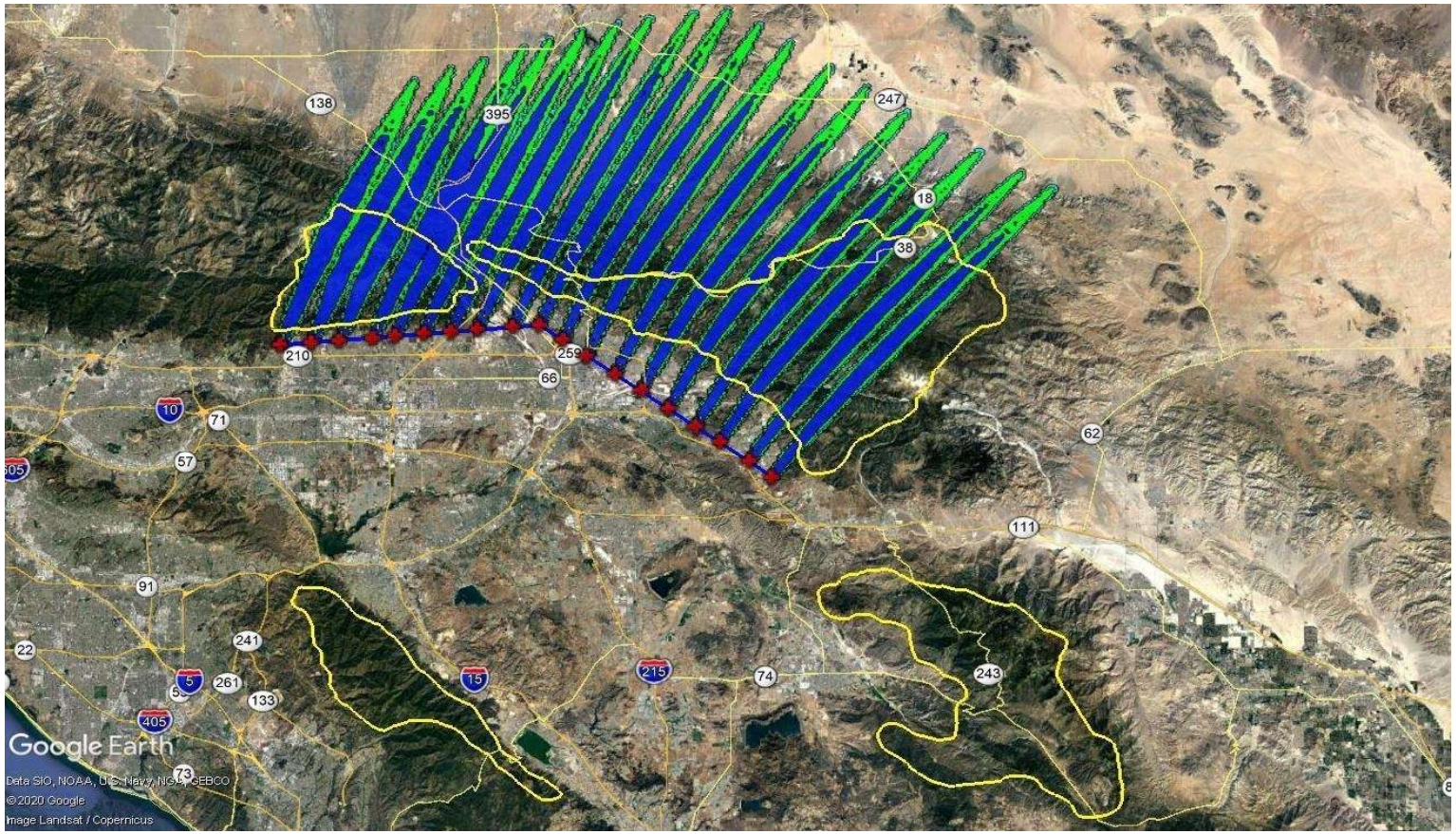
Modeling Seeding Dispersion



Aerial Seeding Flight Path



Aerial Seeding Dispersion Model



Feasibility

Technical Feasibility

- Unlike commercial air traffic that quickly leaves an area of high flight volume, cloud seeding aircraft occupy the same airspace for an extended period of time
- Flight tracks for the eastern target areas are more likely to receive FAA cooperation during times of high traffic and reduced visibility (IFR).

Economic Feasibility

- Land barriers must be of an appropriate size to benefit from aerial seeding
- Annual runoff must support the investment of an aerial component
- Preference should be given to areas with greater potential increases

Safety

Cloud Seeding – Materials

Silver Iodide

- When exposed to sunlight Silver Iodide quickly deconstructs to silver and molecular iodine.
- Silver is biologically inert.
- Molecular Iodine is a critical building block of animal hormones, including human hormones.
- Iodine is a common food additive, often found in household staples like table salt and baby formula.

INGREDIENTS: NONFAT MILK, LACTOSE, HIGH OLEIC SAFFLOWER OIL, SOY OIL, WHEY PROTEIN CONCENTRATE, COCONUT OIL, FRUCTOOLIGOSACCHARIDE (FOS), **LESS THAN 1%:** CRYPTHECODINIUM COHNII OIL[3], MORTIERELLA ALPINA OIL[4], 2'-FUCOSYLLACTOSE (2'-FL)[5], BETA-CAROTENE, LUTEIN, POTASSIUM BICARBONATE, CALCIUM CARBONATE, ASCORBIC ACID, SOY LECITHIN, MONOGLYCERIDES, CALCIUM CHLORIDE, CALCIUM HYDROXIDE, MAGNESIUM CHLORIDE, FERROUS SULFATE, CHOLINE BITARTRATE, ASCORBYL PALMITATE, SODIUM CITRATE, TAURINE, INOSITOL, ZINC SULFATE, MIXED TOCOPHEROL CONCENTRATE, VITAMIN E (*dl*-ALPHA TOCOPHERYL ACETATE), NIACINAMIDE, CALCIUM PANTOTHENATE, L-CARNITINE, VITAMIN A PALMITATE, CUPRIC SULFATE, THIAMINE HYDROCHLORIDE, RIBOFLAVIN, PYRIDOXINE HYDROCHLORIDE, FOLIC ACID, MANGANESE SULFATE, VITAMIN K_1 (PHYTONADIONE), BIOTIN, SODIUM SELENITE, VITAMIN D_3, CYANOCOBALAMIN, POTASSIUM PHOSPHATE, POTASSIUM IODIDE, POTASSIUM HYDROXIDE, NUCLEOTIDES (ADENOSINE-5'-MONOPHOSPHATE, CYTIDINE-5'-MONOPHOSPHATE, DISODIUM GUANOSINE-5'-MONOPHOSPHATE, DISODIUM URIDINE-5'-MONOPHOSPHATE). **CONTAINS:** MILK AND SOY.

DILUTED: EACH 5 FL OZ (150 mL) CONTAINS 100 CALORIES

NUTRIENTS PER 100 CALORIES:

PROTEIN g	2.07	BIOTIN mcg	4.6
FAT g	5.6	VITAMIN C (ASCORBIC ACID) mg	9
CARBOHYDRATE g	10.7	CHOLINE mg	24
WATER g	133	INOSITOL mg	24
LINOLEIC ACID mg	1000	**MINERALS:**	
VITAMINS:		CALCIUM mg	82
VITAMIN A IU	300	PHOSPHORUS mg	44
VITAMIN D IU	75	MAGNESIUM mg	6
VITAMIN E IU	1.5	IRON mg	1.9
VITAMIN K mcg	8	ZINC mg	0.79
THIAMINE (VITAMIN B_1) mcg	100	MANGANESE mcg	5
RIBOFLAVIN (VITAMIN B_2) mcg	160	COPPER mcg	95
VITAMIN B_6 mcg	63	IODINE mcg	15
VITAMIN B_{12} mcg	0.26	SELENIUM mcg	2
NIACIN mcg	1100	SODIUM mg	25
FOLIC ACID (FOLACIN) mcg	16	POTASSIUM mg	110
PANTOTHENIC ACID mcg	470	CHLORIDE mg	68

Concentrations of Seeding Materials

- Consider the size of a bag of water softener salt.
- Over the course of a season it is expected that all of the silver iodide release would fit into 2 or 3 bags of salt.
- Now imagine scattering that much salt over the roughly 500,000 acres that comprise the combined target areas
- Advanced ultra-trace metal analysis can identify silver downwind from seeding sites while in fresh snowpack. Once melted the silver is indistinguishable from background levels of silver naturally occurring in forest soil.

Cloud Seeding Suspension Criteria

High and Extreme Precipitation Events

- The program administrator will not seed events that are likely to produce flooding, particularly in populated areas or areas prone to debris flow.
- Suspension criteria has been developed with cooperation from SAWPA member agencies including flood districts.

National Weather Services

- Whenever the NWS issues a severe storm, precipitation, flood warning or flash flood warning that affects any of the target areas, the project meteorologist will suspend operations for parts or all of the program. Operations will be suspended for at least the period of time during which the warning is in effect.

Southern Target Areas (Lake Elsinore Watershed)

- Due to concerns related to infrastructure, NAWC suggests suspending operations if:
  - Hourly precipitation is forecasted to exceed 0.5 or 0.7 inches
  - 24-hr precipitation totals are forecasted to exceed 2-3 inches.
  - These threshold correspond to events that occur on average once every 2-5years.

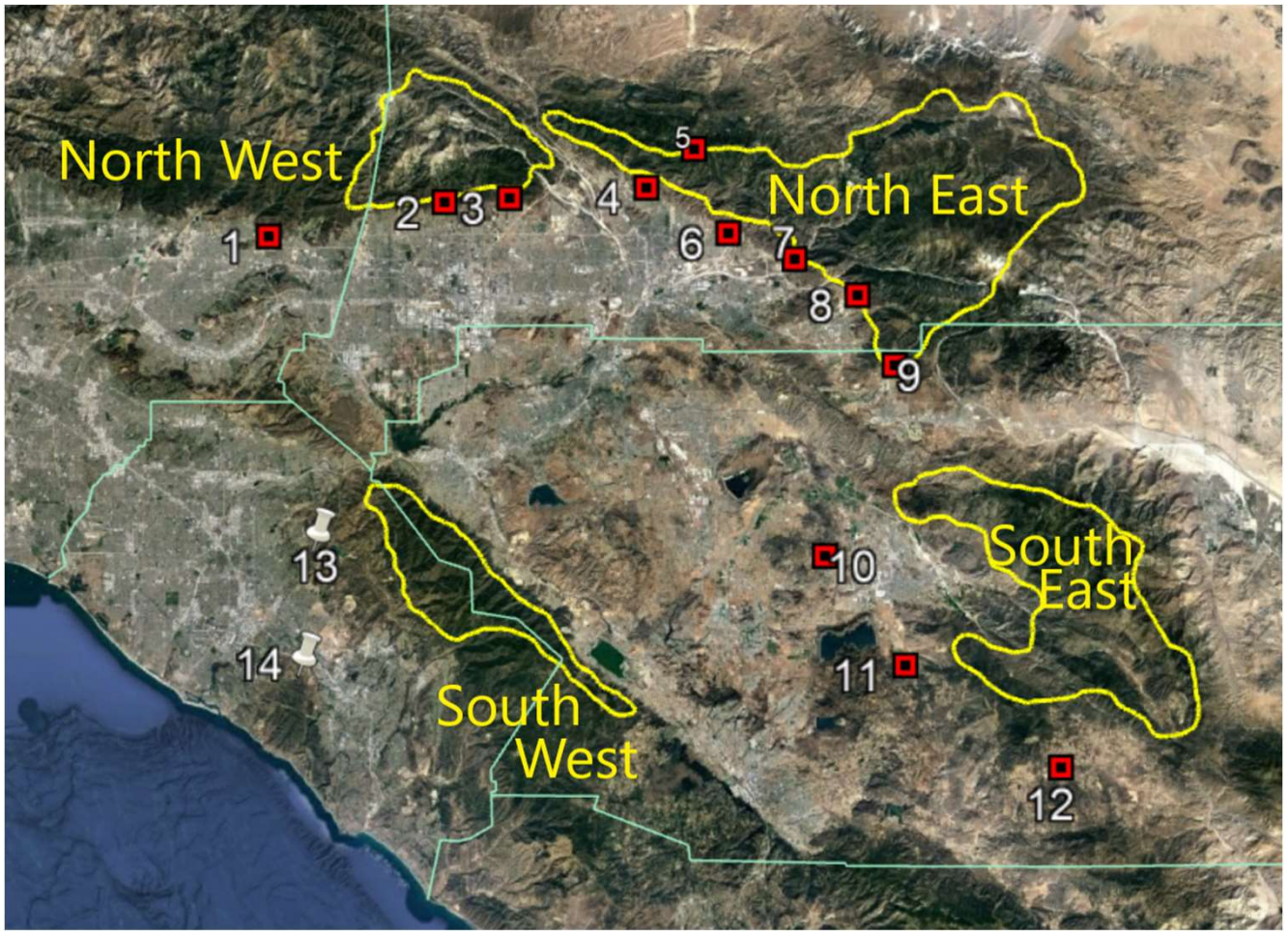
Forest Fires and Possible Long Term Suspensions

The forested areas surrounding the greater LA Metro are highly susceptible to forest fires. Program adaptations will be considered following any significant event. Long term suspensions or alterations to the program will be based on the evaluation of a fires severity and scale. Factors that will be considered include:

- Size
- Location
- Vegetation
- Soil Attributes Post Fire (glassing)
- Flood Risk
- Debris Flow

Precipitation & Streamflow Increase Estimates

Estimated Annual Increases in Streamflow



Calculating Seasonal Precipitation Increase Estimates

Increase Estimates

- Research conducted in Santa Barbara demonstrates that precipitation increases of greater than 20% are achievable when seeding coastal storms.
- Evaluations of current, and ongoing, cloud seeding programs demonstrate seasonal increases of 3-12%. The success of the program is largely determined by the climate and geography of the seeded area.
- Seasonal increase estimates for this program were based on:
  - An in depth study of the seedability of individual storms over the course of multiple representative winter seasons.
  - A comparison of this program to long running California programs.
- Aerial seeding was considered for the Northern target areas, as these areas have the highest overall yield. The impact of aerial seeding is most notable during periods of strong thermal stability (temperature inversions).

Impacts on Streamflow

Model Development -

- Mathematical models based on linear regressions between **precipitation** and **streamflow** were developed using long-term data sets from various time periods, some beginning as early as the 1920's.
- The R-values, for the derived equations for each target area were all close to 0.8 suggesting a strong correlation between precipitation and runoff.
- Once validated, the regression equation allowed us to predict the impact of cloud seeding, not just on precipitation, but also on stream flow and spring runoff.

Total Projected Increases

Ground Only Seeding

Target Area	Seasonal Precipitation Increase (inches)	Percent Increase	Avg. Natural Streamflow (AF)	Percent Increase	Streamflow Increase (AF)
NW	0.41	3.5%	25,000	8.2%	2,043
NE	0.49	4.1%	65,000	6.7%	4,330
SW	0.59	3.7%	5,000	9.0%	447
SE	0.49	4.5%	10,000	13.7%	1,373
		TOTAL	**105,000**	**7.8%**	**8,193**

With Aerial Support in the NE Target

Target Area	Seasonal Precipitation Increase (inches)	Percent Increase	Avg. Natural Streamflow (AF)	Percent Increase	Streamflow Increase (AF)
NW	0.41	3.5%	25,000	8.2%	2,043
NE	0.89	7.3%	65,000	5.3%	7,772
SW	0.59	3.7%	5,000	9.0%	447
SE	0.49	4.5%	10,000	13.7%	1,373
		TOTAL	**105,000**	**11.1%**	**11,635**

Pricing and Feasibility

Pricing Estimates – Ground Based Seeding

	Rate		Frequency		
Annual Operations					
Set Up	$	33,500	1	$	33,500
Take Down	$	24,000	1	$	24,000
Reporting	$	10,000	1	$	10,000
Monthly Operations					
Fixed Services	$	24,500	5	$	122,500
Variable Items (timed expenses are billed on a per hour basis)					
Ground Flares	$	110	60	$	6,600
Generator Run Time	$	19.50	600	$	11,700
Flight Time	$	375	N/A		-
Aerial Flares	$	110	N/A		-
			TOTAL	**$**	**208,300**
			COST PER ACRE-FOOT	**$**	**25.42**
			Benefit to Cost		**10.03**

Estimates – Ground and Aerial Seeding

	Rate		Frequency		
Annual Operations					
Set Up	$	40,000	1	$	40,000
Take Down	$	31,000	1	$	31,000
Reporting	$	10,000	1	$	10,000
Monthly Operations					
Fixed Services	$	55,000	5	$	275,000
Variable Items (timed expenses are billed on a per hour basis)					
Ground Flares	$	110	60	$	6,600
Generator Run Time	$	19.50	600	$	11,700
Flight Time	$	375	30	$	11,250
Aerial Flares	$	110	150	$	16,500
			TOTAL	**$**	**402,050**
			COST PER ACRE-FOOT	**$**	**35.61**
			Benefit to Cost		**7.16**

Preliminary Benefit to Cost Assessment

- Depending on the method of seeding, the combined total estimated runoff increase for the four target areas is between 8,193 AF and 11,635 AF for an "average year."
- With a typical retail value around $250/AF. The additional runoff from cloud seeding would be valued between $2,000,000 and $3,000,000 (if fully allocated).

Questions ?

Submitted Questions

Will the adaptations made during the performance of the 3rd task impact program effectiveness?

We removed 5 operating locations during our review of the program design.

The removal of these sites came after observing considerable redundancies or after observing plumes that evaded the intended target.

How much of the additional runoff will reach lower portions of the watershed?

In same cases the augmented rainfall will occur in areas downstream of the headwaters, particularly in the central valley.

In all of the watersheds we found that the predicated increase in stream flow far exceeded predicted increases in precipitation. Rivers tend to run more efficient when there is more water flowing in the network. The ground will always stake its claim first, this claim usually doesn't grow much as runoff increases.

Target Area	Precipitation Increase	Streamflow Increase
NW	3.5%	8.2%
NE (ground)	4.1%	6.7%
NE (air)	7.3%	5.3%
SW	3.7%	9.0%
SE	4.5%	13.7%

California, Arizona and Nevada all contribute to programs that are 700 miles or more away from where the water is being used.

Will the South West target area benefit the lowlands in the central valley?

Cloud-seeding to enhance rainfall in the SW target area, will definitely have an impact in the more inland areas to the east of the target area. Though we were initially concerned about this “down wind” affect, it became immediately apparent that a number of SAWPA members have a vested interest in water that falls in this area.

We looked at predicting the amount of increase in the central valley, but it would be impossible for us to calculate runoff projections in these urban areas.

Do wing mounted flare racks pose a fire risk?

The flares that will be used are “burn-in-place” flares, meaning the flare never leaves the wing of the plane, or the tower of the AHOGS system. At the elevations that seeding aircraft fly, any possible embers from the flares will extinguish long before they hit the ground. The AHOGS systems use specialized spark arrestors to catch the embers and prevent them from hitting the ground around the tower installations. In addition, weed abatement is performed to prevent weeds or grasses that could serve as fuel, from encroaching on the towers. Our towers are also equipped with high-resolution cameras, that are used during the illuminating of flares. If a fire ever did occur, we would be able to notify local fire authorities immediately. These systems have been in use (with or without cameras) for almost 30 years, without any issues along the California coastline.

What would we expect the enhancement over the urban/suburban valleys to look like where seasonal rainfall is much lower (9-12”)?

High elevation mountainous areas will experience higher rainfall than lower elevation sites, the increase estimates that we provided should be taken to represent the increased expected in the target area as a whole, with increase at higher elevation expected to be (in some cases) significantly higher.

The expected increase over populated areas is projected to be dramatically lower, as they are not a primary target for any of the generators. **The largest increases in urban areas would be** in those areas downwind from the AHOGS in the central valley.

Will suspension criteria impact the effectiveness of the seeding program?

NAWC understands that suspension criterium are critical to the safety and positive public perception of a weather modification program. NAWC also understands that suspending seeding activity reduces the potential impact of the program. When the issues are weighed carefully it is possible to have a highly effective and very safe program.

The suspension criteria we came up with for the most “at risk” portions of the watershed are based on precipitation levels that typically only occur once every 2-3 years (a one in 2-year event).

When suspensions are enacted they generally won’t impact the entire program.

Why are AHOGS used in Orange County versus the CNGs used elsewhere?

AHOGS release a very high concentrated amount of Silver Iodide, in a short period of time. These machines are used in costal areas where liquid water concentrations are high and there is a lot of turbulence (strong updrafts) that acts as a rapid transport and mixing agent of Silver Iodide.

These systems are more expensive than traditional ground generators, and are therefore used sparingly where the benefit outweighs the added investment.

How is debris flow managed after a large fire?

When large fires occur, we work closely with flood districts to determine the best approach for the season or seasons following the fire. Often times fires result in slight adjustments to suspension criteria in certain areas of the program. Occasionally fires will instigate a long-term suspension of seeding activity in the regions most impacted by the burn. The Santa Ana River Watershed consists of 4 separate “target areas,” are fairly well isolated from each other, and all targeted during different wind regimes. We so not remotely probably scenario that would require the cessation of all seeding activity in the watershed.

It is CRITICAL that the contractor hired have significant experience working in areas of California prone to forest fires. **This should be a critical qualifier during the RFP process.**

Why does NAWC recommend using public land for the placement of generators?

There are a few benefits to operating generators on public land:

1. Insulation from change
2. Consistency of operation (if public employees can operate them)
3. A vested interest, acute understanding, of the program benefits

What value of water should really be used to estimate the value of the program? The $255 estimate may be low.

A lower value at this stage will serve to under represent the financial value of the program. We would rather estimate low than high, but we do want to make sure we are portraying value as accurately as possible.

Additional consensus on this value would be helpful and can be integrated into the final report.

Would the current flight path be problematic, given its proximity to the Ontario International Airport?

NAWC agrees, even with the limited flight path proposed in our updated program design, there could be significant pushback from the Ontario and other airports in the region. We reaffirm that getting flights of the desired nature approved for this program will be a complicated endeavor. We are well acquainted with the process of receiving the correct flight waivers and working with all the necessary parties to get the program approved.

The permits and approvals, are not our biggest concern. The decision to allow a seeding aircraft to occupy the same airspace for an extended period of time, during intense storm activity, lies largely in the hands of air traffic control. With all the proper permits, waivers and licenses, a plane may still be grounded during critical seeding periods, if the tower is concerned about air traffic, or if the pilot is concerned about the safety of the flight.

Santa Ana River Watershed Weather Modification Pilot Program - Next Steps

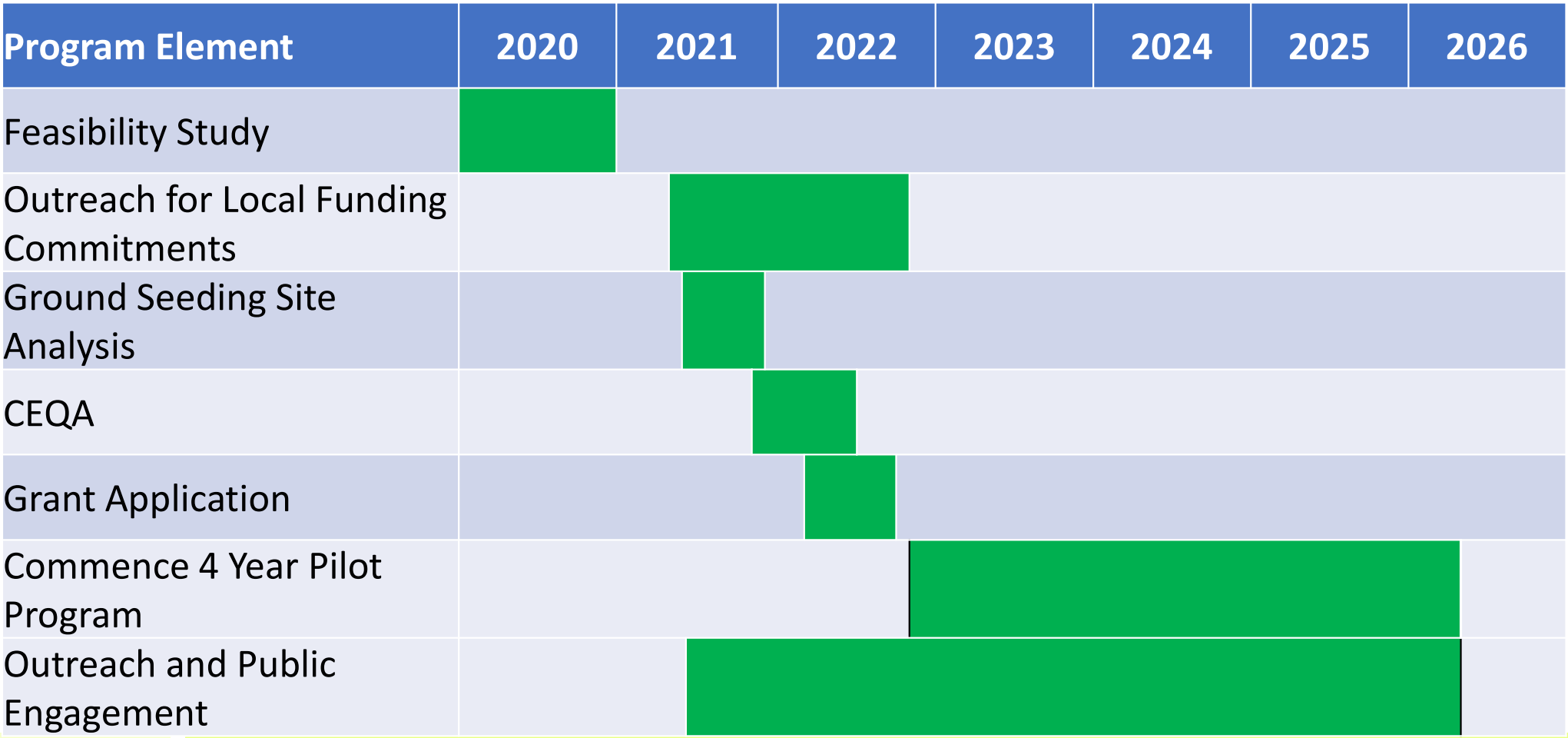
Mark Norton, Water Resources & Planning Mgr.
Santa Ana Watershed Project Authority


The Santa Ana River Watershed
San Bernardino County
Riverside County
Los Angeles
Orange County
215
210
60
83
71
91
241
90
72
39
55
261
133
22
405
605
74
15

After completing Feasibility Study, SAWPA Commission Directed Staff to take Next Steps (April 6, 2021)

1. Authorized proceeding with the ground seeding site selection analysis and CEQA Development in FY 21-22;
2. Authorized staff to prepare a watershed wide SAWPA project application for Prop 1 Round 2 seeking 50% grant funding for a multi-year pilot scale watershed weather modification program; and
3. Directed staff to perform outreach to seek additional funding partners

Pilot Program Schedule

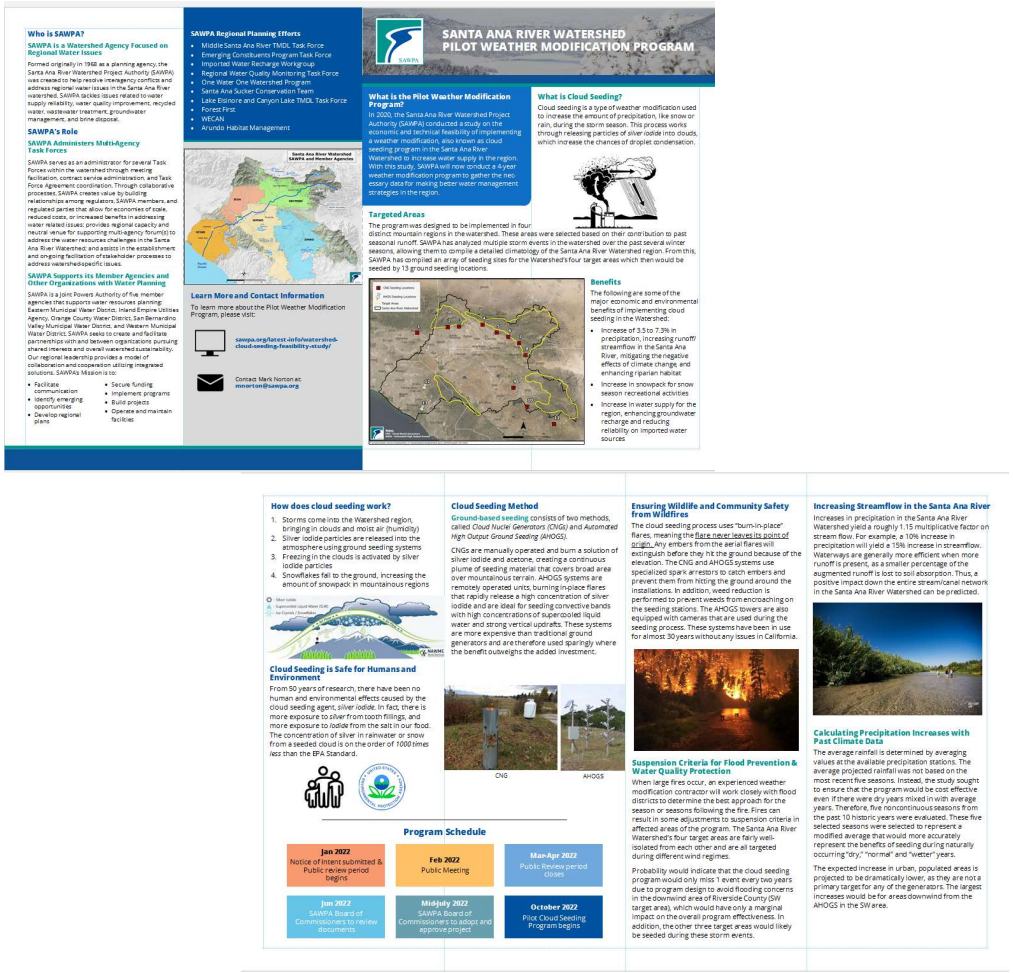


Outreach Presentations

- 20+ water agencies and other organizations contacted and provided initial information
- Several water agencies have requested more information and presentations to their governing boards
- SAWPA member agency GMs suggested more informational meetings with water agency staff and governing board members across the watershed
- Informational watershed wide Zoom meetings will be conducted to inform and receive input on a minimum quarterly basis similar to today's informational webinar until pilot project starts.

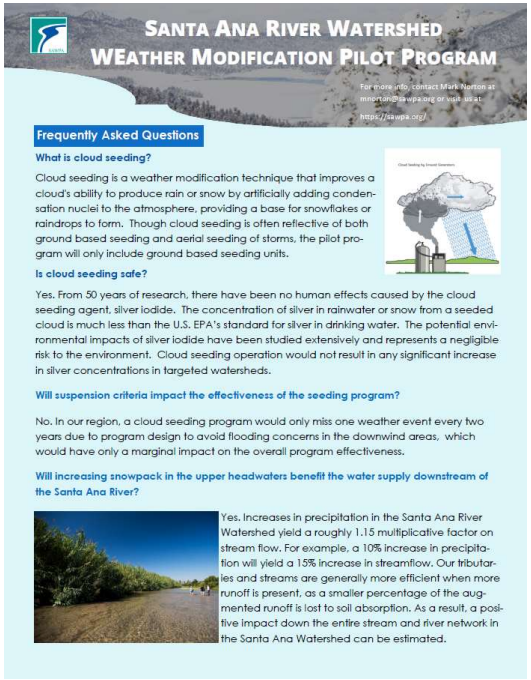
Brochure

- Electronic Brochure
  - Transmitted interested parties including:
    - Stakeholders
    - General public
  - Post on SAWPA website
- Hard copies
  - Share at in-person meetings
- Brochure is attached to Commission memo



Frequently Asked Questions document

- Handout version created in Microsoft Publisher and can be electronically transmitted or handed out in-person
- Will be posted online on SAWPA website
- A separate Word version of FAQs has also been prepared by staff with a longer running list of questions and answers as they arise.



SANTA ANA RIVER WATERSHED
WEATHER MODIFICATION PILOT PROGRAM

For more info, contact Mark Norton at mnorton@sawpa.org or visit us at https://sawpa.org/

Frequently Asked Questions

What is cloud seeding?

Cloud seeding is a weather modification technique that improves a cloud's ability to produce rain or snow by artificially adding condensation nuclei to the atmosphere, providing a base for snowflakes or raindrops to form. Though cloud seeding is often reflective of both ground based seeding and aerial seeding of storms, the pilot program will only include ground based seeding units.

Is cloud seeding safe?

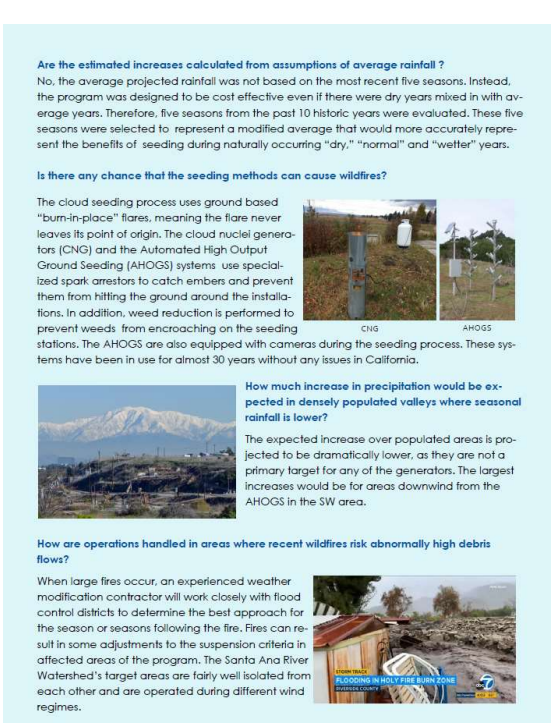
Yes. From 50 years of research, there have been no human effects caused by the cloud seeding agent, silver iodide. The concentration of silver in rainwater or snow from a seeded cloud is much less than the U.S. EPA's standard for silver in drinking water. The potential environmental impacts of silver iodide have been studied extensively and represents a negligible risk to the environment. Cloud seeding operation would not result in any significant increase in silver concentrations in targeted watersheds.

Will suspension criteria impact the effectiveness of the seeding program?

No. In our region, a cloud seeding program would only miss one weather event every two years due to program design to avoid flooding concerns in the downwind areas, which would have only a marginal impact on the overall program effectiveness.

Will increasing snowpack in the upper headwaters benefit the water supply downstream of the Santa Ana River?

Yes. Increases in precipitation in the Santa Ana River Watershed yield a roughly 1.15 multiplicative factor on stream flow. For example, a 10% increase in precipitation will yield a 15% increase in streamflow. Our tributaries and streams are generally more efficient when more runoff is present, as a smaller percentage of the augmented runoff is lost to soil absorption. As a result, a positive impact down the entire stream and river network in the Santa Ana Watershed can be estimated.



Are the estimated increases calculated from assumptions of average rainfall ?

No, the average projected rainfall was not based on the most recent five seasons. Instead, the program was designed to be cost effective even if there were dry years mixed in with average years. Therefore, five seasons from the past 10 historic years were evaluated. These five seasons were selected to represent a modified average that would more accurately represent the benefits of seeding during naturally occurring "dry," "normal" and "wetter" years.

Is there any chance that the seeding methods can cause wildfires?

The cloud seeding process uses ground based "burn-in-place" flares, meaning the flare never leaves its point of origin. The cloud nuclei generators (CNG) and the Automated High Output Ground Seeding (AHOGS) systems use specialized spark arrestors to catch embers and prevent them from hitting the ground around the installations. In addition, weed reduction is performed to prevent weeds from encroaching on the seeding stations. The AHOGS are also equipped with cameras during the seeding process. These systems have been in use for almost 30 years without any issues in California.

CNG AHOGS

How much increase in precipitation would be expected in densely populated valleys where seasonal rainfall is lower?

The expected increase over populated areas is projected to be dramatically lower, as they are not a primary target for any of the generators. The largest increases would be for areas downwind from the AHOGS in the SW area.

How are operations handled in areas where recent wildfires risk abnormally high debris flows?

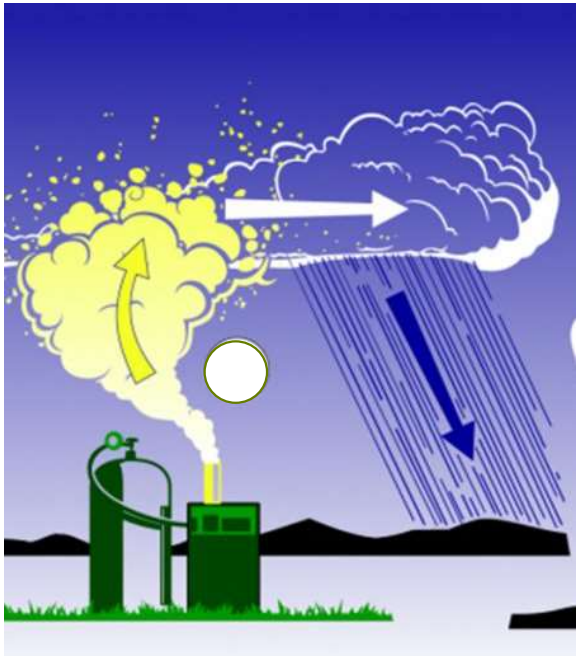
When large fires occur, an experienced weather modification contractor will work closely with flood control districts to determine the best approach for the season or seasons following the fire. Fires can result in some adjustments to the suspension criteria in affected areas of the program. The Santa Ana River Watershed's target areas are fairly well isolated from each other and are operated during different wind regimes.

Ground Seeding Locations Analysis Status - Ongoing

Consultant: North American Weather Consultants

Providing all personnel, equipment, and services to:

- Select locations for ~13 ground seeding sites
- Contact public water agencies to ensure that operations from the location are feasible
- If a site cannot be located within a 2-mile radius of the designated location in feasibility study, consultant will identify replacement sites
- Prepare a project summary report detailing the locations identified by consultant

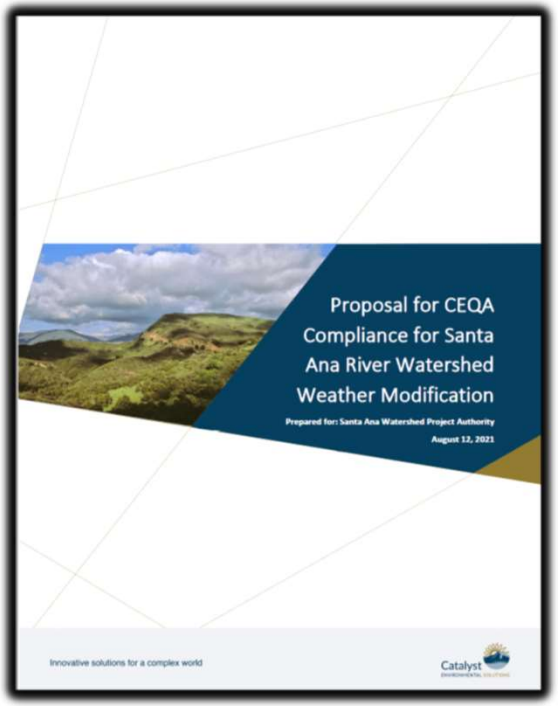


California Environmental Quality Act – Mitigated Negative Declaration Analysis - Status

- July 15, 2021: Request for Proposals released
- August 26, 2021: Four proposals received
- Consultant Proposal Review Panel composed of:
  - SAWPA staff
  - OCWD CEQA expert
  - EMWD CEQA expert
- September 28, 2021: Interviews held with consultant firms by SAWPA staff and review panel via Zoom
- October 19, 2021: General Services Agreement and Task Order will be brought to the SAWPA Commission
- North American Weather Consultants will assist CEQA consultant to provide context, feedback and basic assistance.

Proposed CEQA Scope of Work – Catalyst Environmental Solutions

- TASK 1 – Project Management and Administration
- TASK 2 – Collect and Review Existing Data
- TASK 3 – Refine Project Alternatives and Phasing
- TASK 4 – Prepare Initial Study and Notice of Preparation
- TASK 5 – Support Scoping Meeting
- TASK 6 – Draft Mitigated Negative Declaration
- TASK 7 – Support Public Meeting
- TASK 8 – Prepare Final Mitigated Negative Declaration and Findings



Proposition 1 Round 2 IRWM Implementation Grant Application - Status

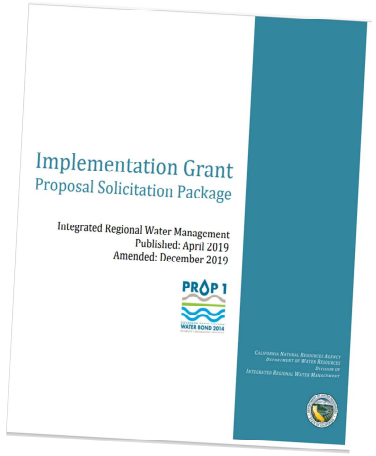
- SAWPA staff is waiting for Proposal Solicitation Package (PSP) for this round of grant funding from DWR
- Next Steps:
  1. OWOW Steering Committee and SAWPA Commission approves selection criteria
  2. SAWPA completes Call for Projects info form submittal for Weather Modification Pilot.
  3. Update Pilot program costs to reflect validation of effectiveness
  4. Seek 50% local share commitment to match 50% grant request by Feb. 2022
- Typically, DWR does not require completion of pilot CEQA until 18 months after grant

PROP 1

GOVERNOR GAVIN NEWSOM

WATER BOND 2014

RELIABILITY | RESTORATION | RESILIENCE



Pilot Program and Validation

- Pilot program will be conducted based on ground seeding sites at this time due to cost effectiveness compared to aerial seeding.
- A four-year pilot span was recommended to ensure validation phase is effective for each of the four mountain target areas to be seeded.
- Aerial seeding by plane may be added in the future to further supplement program if ground seeding is validated and deemed effective.
- Validation will be conducted by independent contractor separate from pilot program operators for watershed.

Questions ?