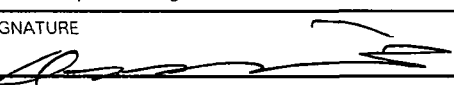
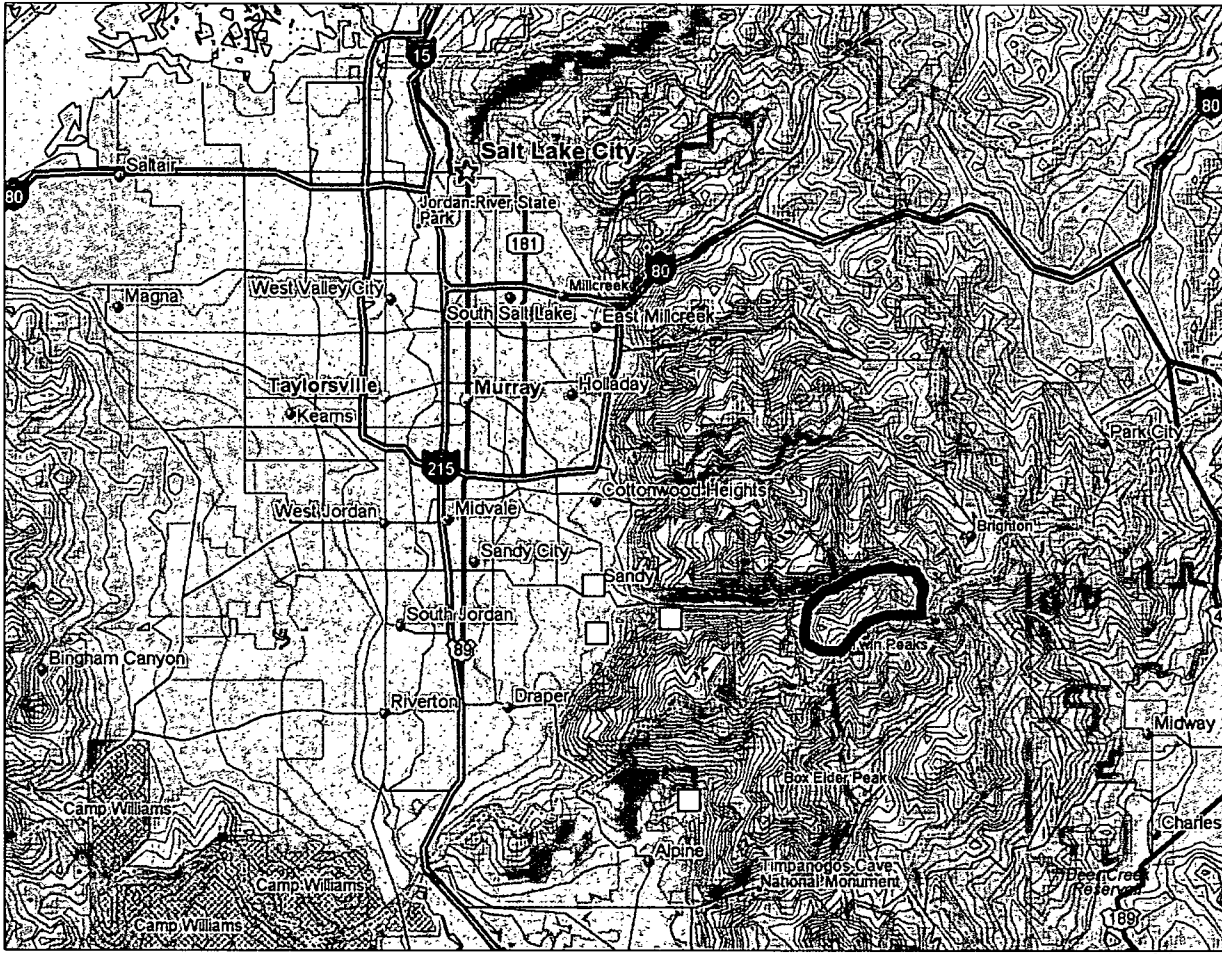
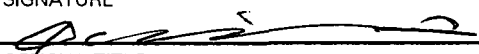


10-1485 ✓

Complete in accordance with instructions on reverse and forward copy:				Form Approved: OMB No. 0648-0025 Expires 12/31/2007			
TO: National Oceanic and Atmospheric Administration Office of Oceanic and Atmospheric Research 1315 East-West Highway SSMC-3 Room 11216 Silver Spring, MD 20910				NOAA FORM 17-4 U.S. DEPARTMENT OF COMMERCE (4-81) NAT'L OCEANIC AND ATMOSPHERIC ADM. INITIAL REPORT ON WEATHER MODIFICATION ACTIVITIES (P.L. 205, 92 ND . CONGRESS)			
1. PROJECT OR ACTIVITY DESIGNATION, IF ANY Alta/Snowbird, Utah				2. DATES OF PROJECT			
3. PURPOSE OF PROJECT OR ACTIVITY Increase snowpack for ski resorts				a. DATE FIRST ACTUAL WEATHER MODIFICATION ACTIVITY IS TO BE UNDERTAKEN 10/15/2009		b. EXPECTED TERMINATION DATE OF WEATHER MODIFICATION ACTIVITIES 12/24/2009	
4. (a) SPONSOR				4. (b) OPERATOR			
NAME Onno Wieringa				NAME Don Griffith			
AFFILIATION Alta Ski Lifts Company		PHONE NUMBER (801) 359-1078		AFFILIATION North American Weather Consultants		PHONE NUMBER (801) 942-9005	
STREET ADDRESS PO Box 8007				STREET ADDRESS 8180 South Highland Drive, Suite B-2			
CITY Alta		STATE UT	ZIP CODE 84092	CITY Sandy		STATE UT	ZIP CODE 84093
5. TARGET AND CONTROL AREAS (See Instructions)							
TARGET AREA				CONTROL AREA			
LOCATION Alta and Snowbird ski resorts		SIZE OF AREA 10 SQ.MI		LOCATION NA		SIZE OF AREA NA SQ.MI.	
6. DESCRIPTION OF WEATHER MODIFICATION APPARATUS, MODIFICATION AGENTS AND THEIR DISPERSAL RATES, THE TECHNIQUES EMPLOYED, ETC. (See Instructions)							
Four ground-based silver iodide generators have been installed. Each generator emits 12 grams per hour of silver iodide. Operational decisions will be made from NAWC offices in Sandy, Utah.							
7. LOG BOOKS: Enter name, affiliation, address, and telephone number of responsible individual from whom log books or other records may be obtained.							
NAME Don Griffith				THIS REPORT IS REQUIRED BY PUBLIC LAW 92-205; 85 STAT 735; 15 U.S.C. 330b. KNOWING AND WILLFUL VIOLATION OF ANY RULE ADOPTED UNDER THE AUTHORITY OF SECTION 2 OF PUBLIC LAW 92-205 SHALL SUBJECT THE PERSON VIOLATING SUCH RULE TO A FINE OF NOT MORE THAN \$10,000, UPON CONVICTION THEREOF.			
AFFILIATION North American Weather Consultants		PHONE NUMBER (801) 942-9005					
STREET ADDRESS 8180 South Highland Drive, Suite B-2							
CITY Sandy		STATE UT	ZIP CODE 84093				
8. SAFETY AND ENVIRONMENT							
<input type="checkbox"/> YES		<input checked="" type="checkbox"/> NO		Has an Environmental Impact Statement, Federal or State been filed? If yes, please furnish a copy as applicable.			
<input checked="" type="checkbox"/> YES		<input type="checkbox"/> NO		Have provisions been made to acquire the latest forecasts, advisories, warnings, etc. of the National Weather Service, Forest Service, or others when issued prior to and during operations? If yes, please specify on a separate sheet.			
<input checked="" type="checkbox"/> YES		<input type="checkbox"/> NO		Have any safety procedures (operational constraints, provisions for suspension of operations, monitoring methods, etc.) and any environmental guidelines (related to the possible effects of the operations) been included in the operational plans? If yes, please furnish copies or a description of the specific procedures and guidelines.			
9. OPTIONAL REMARKS (See Instructions. Use Separate Sheet.)							
NAME Don Griffith				CERTIFICATION: I certify that the above statements are true, complete and correct to the best of my knowledge and belief.			
AFFILIATION North American Weather Consultants				SIGNATURE 			
STREET ADDRESS 8180 South Highland Drive, Suite B-2				OFFICIAL TITLE President			
CITY Sandy		STATE UT	ZIP CODE 84093	DATE 11/03/2009		PHONE NUMBER (801) 942-9005	



Alta and Snowbird target area (black outline) and generator sites (yellow squares)

NOAA FORM 17-4A (4-81)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	Form Approved OMB No. 0648-0025 Expires 12/31/2007										
INTERIM ACTIVITY REPORTS AND FINAL REPORT		NOAA FILE NUMBER 10-1485 Alta/Snowbird										
This report is required by Public Law 92-205; 85 Stat. 735; 145 U.S.C. 330b. Knowing and willful violation of any rule adopted under the authority of Section 2 of Public Law 92-205 shall subject the person violating such rule to a fine of not more than \$10,000, upon conviction thereof.		<input type="checkbox"/> INTERIM REPORT <input checked="" type="checkbox"/> FINAL REPORT										
Complete in accordance with instructions on reverse and forward one copy to: National Oceanic and Atmospheric Administration Office of Oceanic and Atmospheric Research 1315 East-West Highway SSMC-3 Room 11216 Silver Spring, MD 20910		REPORTING PERIOD FROM 10/15/2009 TO 12/24/2009										
MONTH	(a) NUMBER OF MODIFICATION DAYS	(b) NUMBER OF MODIFICATION DAYS PER MAJOR PURPOSE			(c) HOURS OF APPARATUS OPERATION BY TYPE		(d) TYPE AND AMOUNT OF AGENT USED					
		INCREASE PRECIPITATION	ALLEVIATE HAIL FOG		OTHER	AIRBORNE	GROUND	SILVER IODIDE	CARBON DIOXIDE	UREA	SODIUM CHLORIDE	OTHER
JANUARY												
FEBRUARY												
MARCH												
APRIL												
MAY												
JUNE												
JULY												
AUGUST												
SEPTEMBER												
OCTOBER	2	2					43	516				
NOVEMBER	5	5					78	936				
DECEMBER	4	4					112	1,344				
TOTAL	11	11	0	0	0	0	233	2,796	0	0	0	0
TOTALS FOR FINAL REPORT	11	11	0	0	0	0	233	2,796	0	0	0	0
DATE ON WHICH FINAL WEATHER MODIFICATION ACTIVITY OCCURRED (For Final Report only.)												
CERTIFICATION: I certify that all statements in this report on this weather modification project are complete and correct to the best of my knowledge and are made in good faith.							NAME OF REPORTING PERSON Don Griffith					
AFFILIATION North American Weather Consultants							SIGNATURE 					
STREET ADDRESS 8180 South Highland Drive, Suite B-2							OFFICIAL TITLE President					
CITY Sandy				STATE UT		ZIP CODE 84093		DATE 01/04/2010				



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Silver Spring, MD 20910

OFFICE OF OCEANIC AND ATMOSPHERIC RESEARCH

November 20, 2009

Mr. Don Griffith
North American Weather Consultants, Inc.
8180 South Highland Drive, Suite B-2
Sandy, Utah 84093

Dear Mr. Griffith:

Thank you for your Initial Reports for the North American Weather Consultants, Inc.
The projects were assigned the following NOAA File Numbers:

<u>Project Name:</u>	<u>NOAA File Number:</u>
Santa Barbara	10-1478
Kings River	10-1479
Gunnison	10-1480
Western Uintas	10-1481
High Uintas	10-1482
Northern Utah	10-1483
Southern/Central Utah	10-1484
Alta/Snowbird	10-1485

As a reminder, please submit a Final Report within 45 days after the project has terminated. This is mandated under Public Law 92-205. **To ensure that all future correspondence reaches me in a timely fashion, please have my correct room number (11340) on the envelope. Thank you.**

Sincerely,

Ms. Karen Williams, Manager
Weather Modification Activities
Reporting Program



Printed on Recycled Paper



Subject: Emailing: 5 1 2009 NOAA 2009 Final Listing of Weather Modification Programs U.S. 09WXMOD5.pdf
From: Rosalind Peterson <info@californiaskywatch.com>
Date: Thu, 10 Mar 2011 08:08:21 -0800
To: karen.williams@noaa.gov

March 10, 2011

Dear Ms. Williams:

Would you be able to send the update for 2010 Final Listing of Weather Modification Programs?
The last one you sent for 2010 did not contain the same information as your link to the information on the 2009 Spreadsheet attached.
It was missing some information.

Also would you send the 2011 spreadsheet for weather modification programs that you have listed so far.

Thank you

Respectfully,

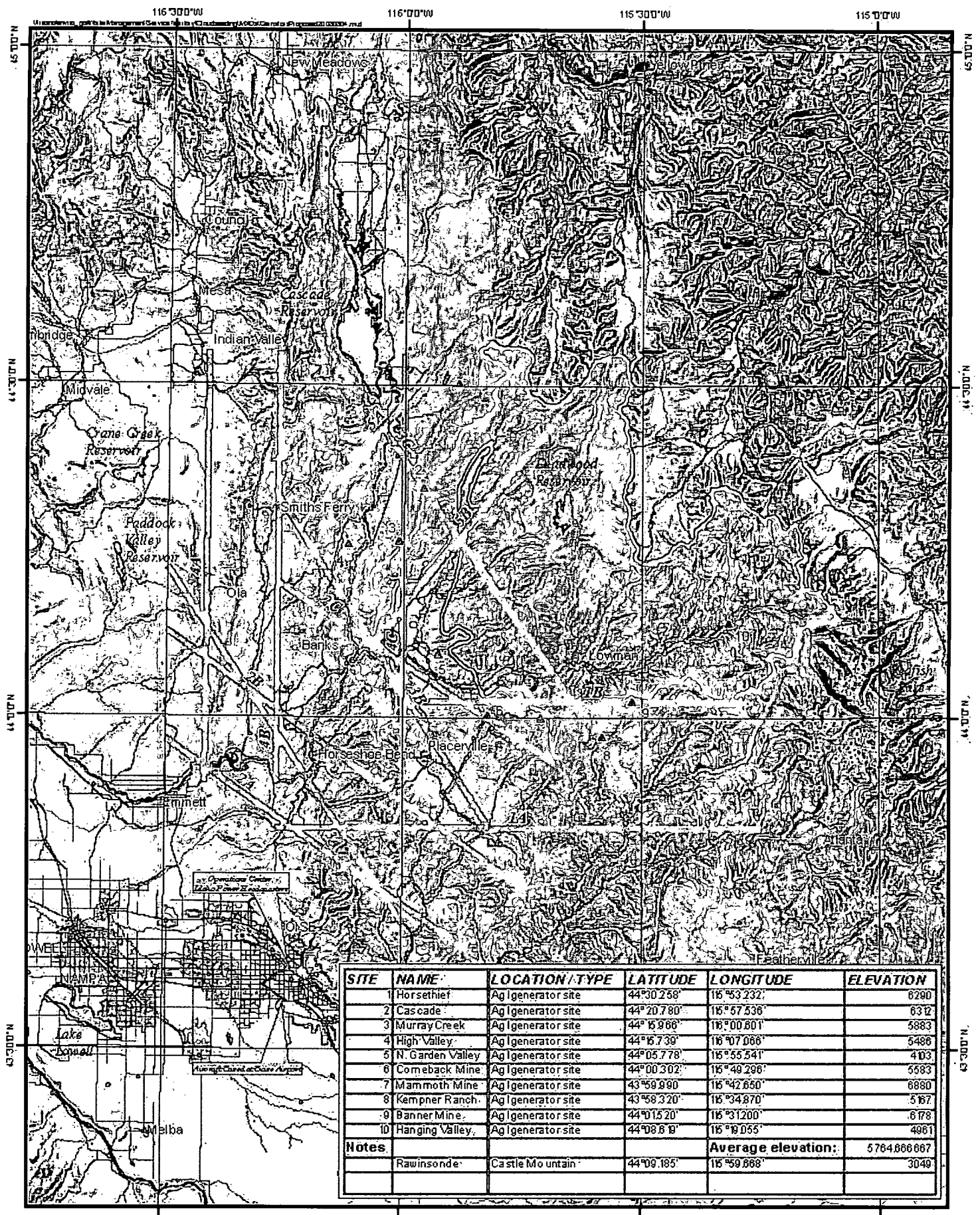
Rosalind Peterson

Your message is ready to be sent with the following file or link attachments:
5 1 2009 NOAA 2009 Final Listing of Weather Modification Programs U.S. 09WXMOD5.pdf

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.

5 1 2009 NOAA 2009 Final Listing of Weather Modification Programs U.S. 09WXMOD5.pdf

Content-Type: application/pdf
Content-Encoding: base64



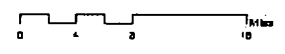
SITE	NAME	LOCATION / TYPE	LATITUDE	LONGITUDE	ELEVATION
1	Horsethief	Ag Igenerator site	44°30'258"	115°53'232"	6290
2	Cascade	Ag Igenerator site	44°20'780"	115°57'536"	6312
3	Murray Creek	Ag Igenerator site	44°15'966"	116°00'801"	5883
4	High Valley	Ag Igenerator site	44°16'739"	116°07'066"	5486
5	N. Garden Valley	Ag Igenerator site	44°05'778"	116°55'541"	4103
6	Comeback Mine	Ag Igenerator site	44°00'302"	116°49'296"	5583
7	Mammoth Mine	Ag Igenerator site	43°59'890"	116°42'650"	6880
8	Kampner Ranch	Ag Igenerator site	43°58'320"	116°34'870"	5167
9	Banner Mine	Ag Igenerator site	44°01'520"	116°31'200"	6178
10	Hanging Valley	Ag Igenerator site	44°08'819"	116°19'055"	4961
Notes:					
	Rawinsonde	Castle Mountain	44°09'185"	115°59'888"	3049
					Average elevation: 5764.866667



- Target Area
- FlightLines 2008
- Urban Areas

- Existing Generator Sites
- Rawinsonde

**Cloud Seeding Generator Sites
and Right Tracks**



4 Suspension Criteria

Any well-designed and responsibly conducted weather modification program includes guidelines for temporary suspension or complete curtailment of cloud seeding operations under certain conditions. The fact that suspension criteria may be required by law, as it is in Idaho, is essentially superfluous for a responsible program. These program safeguards are intended to avoid contributing to, or giving even the perception of contributing to, runoff or reservoir levels beyond manageable limits, whether it be a real or perceived hazardous situation. These include, but may not be limited to, such events as flooding, excessive erosion and sedimentation buildup, or avalanches resulting from natural meteorological or hydrological phenomena. The parameters used to trigger suspension of cloud seeding operations include consideration of:

- Total snow pack status;
- Potential flood situations (including rain-on-snow);
- Severe weather threats (tornadoes, locally heavy precipitation, strong or damaging winds, hail, or lightning); and
- Special Circumstances.

Consideration of these four parameters is a routine facet of ongoing forecasting and operational activities conducted as part of responsibly conducted cloud-seeding operations. The time frame for decision-making and action on these parameters is far shorter than commonly used in periodic or routine assessments. These factors are monitored on a storm-by-storm and moment-to-moment basis during rapidly changing weather conditions. National Weather Service Flash Flood or Severe Weather Warnings pertinent to the target area, its drainage area, or even adjacent watersheds can trigger curtailment of cloud-seeding operations. While curtailment relative to a severe weather threat is typically infrequent and short-lived, suspensions during potential flood situations might span several days or lead to termination of the project for the remainder of the season. Special circumstances such as search and rescue missions, avalanche threats, or other emergencies within or near the target area may result in temporary curtailment of seeding operations as deemed prudent.

4.1 Total Snowpack Status

Snowpack development in the PRB can begin as early as October and continues through April, and frequently into May. Analysis has shown that the hazard potential from snowmelt will be of concern only during excessive snow accumulations that create unmanageable runoff due to melting or when runoff is anticipated to reach flood stage. Therefore, certain percentages of April 1 basin-wide average water content are used as cutoff criteria for seeding operations. Total snowpack status is evaluated from data gathered by other agencies such as the Natural Resources Conservation System (NRCS) and snow survey and snow pillow data. Table 4.1 lists these percentages. Once suspended, the program may resume operational seeding if subsequent snow survey or snow pillow data indicate the accumulation has fallen below the percentages listed.

Table 4.1. Critical snowpack values requiring suspension of seeding operations.

Date	Cutoff value (% of April 1 average)
January 1	95%

February 1	110%
March 1	125%
April 1	140%

4.2 Rain Induced Winter Floods

There is a potential for wintertime flooding from excessive rainfall in the PRB. A large portion of the basin lies below 4500 ft elevation and frequently receives rain rather than snow. Sometimes, heavy rain falls well above the 4500 ft contour. The project will take every precaution to ensure the timely suspension of operations during these situations because of the potential for flooding. Suspension of operations under these conditions is intended to limit the effect of seeding when any increase in precipitation might contribute to the potential flood hazard or be perceived to do so. Seeding will be suspended when any of the criteria listed in Table 4.2 are met or forecast to occur within 24 hours.

River flow and encroachment forecasts are based upon information and predictions supplied by the NWS, Northwest River Forecast Center (NWRFC), USGS, and IPC. Both NWRFC and IPC use a stream flow model that predicts the inflow to Brownlee Reservoir and other upper Snake River locations, as well as tributaries of the system. Primary input to the model includes existing basin wetness and a Quantitative Precipitation Forecast (QPF). These forecasts are extremely sensitive to predicted condensate supply rates and temperatures. Suspension of seeding will occur whenever the NWS, NWRFC, or the IPC forecast exceeds these criteria.

Table 4.2. Critical river stages and discharge values requiring suspension of seeding operations.

Location	USGS Gauge Identification	Flood Stage (GH – feet)	Flood Discharge (cfs)
Boise River at Glenwood Springs	13206000	10.31	7,000
Payette River near Emmett	13249500	10.51	16,000
Snake River at Weiser	13269000	12.00	67,560
Weiser River near Weiser	13266000	9.50	8,890

In order to provide an added level of caution for suspension during possible flood situations, seeding can be suspended at the discretion of the Senior Meteorologist whenever the QPF indicates a need for prudence. This can occur even if these criteria are not explicitly met.

4.3 Severe Weather

Seeding operations will be suspended whenever the NWS issues a severe weather warning for the PRB. This will include warnings for adjacent areas if the activity prompting the warning is likely to move into the PRB. These warnings are usually issued

when strong convective activity is expected. The official criteria are locally heavy rainfall, damaging winds (50 knots (60 mph)) or higher or producing observed damage), large hail (hailstones $\frac{3}{4}$ inches in diameter or larger), tornadoes, or funnel clouds. IPCo's Senior Meteorologist has been accredited to forecast these phenomena by both DOD and the NWS, and is fully capable of assessing the potential for these conditions.

4.4 Other Special Circumstances

At their discretion, the senior project staff has the authority to suspend or terminate seeding activities under any special or unusual circumstances that may be deemed hazardous or might be perceived to be so by the public. Examples of special circumstances are extreme avalanche hazard as reported in USFS avalanche status bulletins, very strong winds, unusually warm temperatures, heavy snow at low elevations, or other unforeseen circumstances.

If suspension criteria are met during an operational seeding period, seeding will be stopped immediately, and a notification call and documenting e-mail sent to the Sr. Meteorologist.