

69th Annual Meeting

Western Snow Conference

April 16-19, 2001

Sun Valley, Idaho



PROCEEDINGS
OF THE
WESTERN SNOW CONFERENCE
SUN VALLEY, IDAHO

APRIL 16 - 19, 2001

SIXTY-NINTH ANNUAL MEETING

Frank D. Gehrke (General Chair)
3310 El Camino Avenue
Sacramento, CA 80526

Robert H. Swanson (Secretary/Treasurer)
#28, 216 Three Sisters Drive
Canmore, Alberta
Canada T1W 2M2

Editorial Committee:
Kelly Elder, Editor
B. L. Fager, Assistant

Printed by

omnipress.
Educational Conference Services

phone: 800-828-0305
fax: 608-246-4237
sales@omnipress.com
www.omnipress.com

For sale by the Western Snow Conference - \$35.00

Order From:

James K. Marron
P. O. Box 2646
Portland, OR 97208-2646

ISSN 0161-0589

Cover photo:
Sun Valley Area
Idaho Department of Transportation

PROCEEDINGS OF THE
2001 WESTERN SNOW CONFERENCE

TABLE OF CONTENTS

Papers

NOHRSC OPERATIONS AND THE SIMULATION OF SNOW COVER PROPERTIES FOR THE COTERMINOUS U.S. <i>by T. Carroll, D. Cline, G. Fall, A. Nilsson, L. Li, and A. Rost</i>	1
AN ANALYSIS OF THE SPATIAL VARIABILITY OF SNOW COVER DEPLETION IN AN ALPINE WATERSHED, TOKOPAH BASIN, SIERRA NEVADA, CALIFORNIA, U.S.A. <i>by N. P. Molotch, T. H. Painter, M. T. Colee, C. W. Rosenthal, J. Dozier, and R. C. Bales</i>	11
TELEMETRY AND THE INTERNET <i>by G. Schaefer and D. Sytsma</i>	20
EFFECTS OF STORM TRAJECTORIES ON SNOWFALL CHEMISTRY IN THE ROCKY MOUNTAIN NATIONAL PARK, COLORADO <i>by G. P. Ingersoll, K. A. Tonnessen, D. H. Campbell, B. R. Glass, and A. O. Torizzo</i>	32
MAPPING SNOW ALGAE CONCENTRATION IN THE SIERRA NEVADA WITH IMAGING SPECTROSCOPY <i>by T. H. Painter, B. Duval, W. H. Thomas, M. Mendez, S. Heintzleman, and J. Dozier</i>	43
ANTHROPOGENIC CLIMATE CHANGE AND SNOW IN THE PACIFIC NORTHWEST <i>by P. W. Mote and Alan F. Hamlet</i>	51
PRELIMINARY EVALUATION OF SNOW ACCUMULATION PATTERNS BASED ON STORM TYPE, MAMMOTH MOUNTAIN, CALIFORNIA, 1996-2001 <i>by S. A. Burak and R. E. Davis</i>	53
SNOWPACK COMPARISON BETWEEN AN OPENING AND A LODGEPOLE PINE STAND <i>by W. W. McCaughey and P. E. Farnes</i>	59
SNOWPACK MODELLING OF THE SALT BASIN WITH WATER MANAGEMENT IMPLICATIONS <i>by S. R. Fassnacht, S. R. Helfrich, D. J. Lampkin, K.A. Dressler, R. C. Bales, E. B. Halper, D. Reigle, and B. Imam</i>	65
SOIL MOISTURE DATA COLLECTION AND WATER SUPPLY FORECASTING <i>by R. J. Julander and S. Cleary</i>	77
STREAMFLOW FORECASTING USING THE MODULAR MODELING SYSTEM AND AN OBJECT-USER INTERFACE <i>by A. E. Jeton</i>	85
WATER RESOURCES FORECASTING IN THE NORTH PLATTE BASIN <i>by T. Dietrich and R. Rieman</i>	92
SEASONAL STREAMFLOW FORECASTING USING CLIMATE INFORMATION <i>by C. K. Baldwin</i>	95
INCORPORATING SEASONAL STREAMFLOW FORECASTS INTO OPERATIONAL DECISIONMAKING <i>by M. D. Waage, C. K. Baldwin, R. G. Steger, and T. J. Bray</i>	99
A MODIFIED FORCE-RESTORE APPROACH TO MODELING SNOW-SURFACE HEAT FLUXES <i>by C. H. Luce and D. G. Tarboton</i>	103

Posters:

LANDSCAPE CONTROLS ON SNOW ACCUMULATION IN AN ALPINE CATCHMENT
by T. Erickson, M. W. Williams, and M. Tomaszewski 115

USING GIS TO PREDICT THE SPATIAL DISTRIBUTION OF PERENNIAL SNOW UNDER MODERN AND LATE
PLEISTOCENE CONDITIONS IN THE SNAKE RANGE, NEVADA
by R. L. Orndorff and J. G. Van Hoesen..... 119

MANAGING SNOW TO IRRIGATE SHELTERBELTS AND ABATE SALINITY
by H. Steppuhn 123

THE EFFECT OF VARIABLE PATTERNS OF SNOW DEPOSITION AND DRIFTINGS ON SNOWMELT, RUNOFF,
AND STREAM DISCHARGE IN A SEMI-ARID MOUNTAIN BASIN
by D. Marks and A. Winstral 127

TOPOGRAPHIC CONTROLS ON SPATIAL AND TEMPORAL VARIATION IN SNOW TEMPORAL VARIATION
IN SNOW TEMPERATURES IN A MOUNTAIN SNOWPACK
by J. S. Deems..... 131

THE 1994-1995 SNOW ACCUMULATION AND RUNOF EVENT IN NORTHERN COLORADO, SOUTHEASTERN
WYOMING AND THE NEBRASKA PANHANDLE
by T. Dietrich and R. Rieman 135

Historical Note:

WILL ANYONE REMEMBER US? 138

Snow Notes:

WESTERN SNOW CONFERENCE: MINUTES OF EXECUTIVE MEETING i

WESTERN SNOW CONFERENCE: MINUTES OF GENERAL BUSINESS MEETING x

WESTERN SNOW CONFERENCE: LIST OF ATTENDEES xiii

MINUTES OF THE 2001 EXECUTIVE COMMITTEE MEETING

WESTERN SNOW CONFERENCE

SUN VALLEY, IDAHO

APRIL 16, 2001

❖ Welcome to the conference: Frank Gehrke

- The 69th meeting of the Executive Committee of the Western Snow Conference (WSC) was called to order by General Chair, Frank Gehrke at 1330, April 16, 2001. Current executive committee members present were:

- Frank Gehrke, General Chair
- Bob Swanson, Secretary/Treasurer
- Jim Marron, Documents Manager, Absent

- North Continental
 - Gerald Beard, Chair
 - Derrill Cowing
 - Harold Steppuhn
 - Phil Farnes
 - Ted Gilbert
 - Jack Davis

- South Continental
 - Kelly Elder, Chair
 - George Ingersoll
 - Manual Martinez

- North Pacific
 - Jon Lea, Chair
 - Matthew Brunengot
 - Don Huffman

- South Pacific
 - Randall Osterhuber

- Past General Chairs
 - Jack Hannaford, Awards Committee
 - Bob Swanson
 - Phyllis Snow

❖ Minutes of 2000 Executive Meeting:

- The minutes of the 2000 Executive Meeting, as printed in the 2000 Proceedings, had one minor correction. At Lake Tahoe in 1999, Scott Pattee received the El Farsante award for stabbing a snow pillow in the middle during the record snowpack of 1999.

Motion 1

It was moved the minutes be approved as corrected,
the motion was seconded.

.....Motion carried.

❖ General Chair's tie:

- Bob Swanson suggested it seemed a bit odd to pass out General Chair's tie after he has finished his term of office, so he polled other General Chairs. There is general agreement among all the General Chairs, past and present: having the ties at the beginning of the term of office makes sense. There appears to be no rule against passing out ties at the beginning of the General Chair's term of office.
- Discussion: (a) the General Chair should probably have a distinctive tie Chair while they are in office and then given the regular tie when they become Past General Chair. (b) the special tie would be passed from General Chair to General Chair and the past General Chair would receive the standard Past General Chair's tie. (c) Jack Hannaford suggested a 3-½ inch snowflake that is used on the awards plaque for the special tie. It could be put on a leather thong.
- All members present at the executive meeting agreed to this suggestion.

❖ Secretary's Report: Bob Swanson

- Bob Swanson has a relatively good system now for names and finances. The financial statement and name and address list are now all in the same program. If one's receipt reads correctly and unless someone has a change of address in mid-year, each member should receive all of next year's mailings. Address changes are as simple as contacting Bob Swanson, preferably by email.

❖ Treasurer's Report: Bob Swanson

- Jon Lea stated that the hotel at Port Angeles worked well with the Western Snow Conference (WSC). Comments were positive.
- As can be seen on the Treasurer's report, total meeting income for the year 2000, was \$7,365. Expenses were \$7,863. Thus, WSC lost money last year. Enough money (about \$3,000) was carried over from the previous year. That was used to pay for the snowflake ties. At present we are just about even with a balance of \$198. This year the proceedings publication costs were included in the registration fee, which made that fee higher than usual. Mailing costs for year 2001 have also been included in the registration fee. Kelly Elder mailed the 2000 proceedings. He will be able to do it again this year for a savings of about \$1500. It is a nice contribution to the Western Snow Conference and very much appreciated
- We need a report from Jim Marron as to whether we are ordering too many proceedings. Storage costs are \$360 per year.
- Income this year so far is \$9,125, including dues and all other income but does not include credit card charges (presently estimated to be about \$150). About half of those coming to the year 2001 meeting have used credit cards. About 40% of those have been rejected because they are federal government credit cards that can be used only for motel and food unless the person has purchasing authority. There is no fee for card rejection.
- When Bob mails a proceedings copy, it costs about \$5 to \$7 to mail one proceedings at the post office--\$8 across the border to Canada and \$5.50 within the U.S. Kelly Elder sends out at book rate, which might be lower cost but takes longer.
- Jim Marron took in \$2,300 last year for the sale of proceedings (mostly those from the current year).
- Last year at the Port Angeles meeting, the spouse's program had extra spouses join because the program was so interesting. WSC cannot afford to subsidize a spouse's program to that extent. This year we added a partial fee to help defray the spouse program cost although traditionally the spouse's program has been free.

- Another large item that will not be in the budget again for several years is snowflake ties. We have WSC ties for the next ten years. We planned to spend \$1800 but ended up paying \$2800 because we could get a better unit cost on a larger quantity. Bob is having difficulty getting genuine red stones and yellow stones for the General Chair's ties. There is a jeweler in Canmore, AB, Canada, who can make them for slightly less than \$100 (U.S.) each.

Motion 2

It was moved by Phyllis Snow to accept the treasurer's report and seconded by Don Huffman.

.....Motion carried.

Western Snow Conference Income and Expenses	Jan - Dec 2000
Income	
2000 Income	
Annual Meeting	
Exhibitor Fees	1,050.00
Sale of Snowflake Ties	105.00
Registrations, etc	6,210.00
Total Annual Meeting	<u>7,365.00</u>
Member Dues	1,930.00
Total 2000 Income	<u>9,295.00</u>
Sales of Proceedings	2,321.00
Dividends	22.64
Total Income	<u>11,638.64</u>
Expense	
Annual Meeting Expenses	
Awards	
Best Paper or Poster Award	280.19
General Chair Tie	104.83
JE Church Award	250.00
Awards - Other	203.61
Total Awards	838.63
Banquet	2,529.00
Brochure	439.74
Hospitality hour	649.42
Mailing	178.60
Meeting Supplies	120.00
Refreshment Breaks	943.00
Registration Supplies	114.12
Rooms	747.58
Spouse's Program	748.00
Tour	555.00
Total Annual Meeting Expenses	<u>7,863.09</u>
Uncategorized cash Withdrawals at Portland	290.00
Legal-Prof Fees State registration	10.00
Miscellaneous	289.00
Office	
Bulk Mailing Permit	100.00
Postage	37.30
Supplies, Business	64.01
Total Office	201.31
Proceedings Storage	343.00
Purchase Snowflake Ties	2,395.50
Total Expense	<u>11,391.90</u>
Net Income	246.74

****Note: The cost of printing the 2000 proceedings, \$3,305, were not incurred until 2001 and are not included above. We had approximately \$3000 carryover from the 1999 conference that paid for this printing and the WSC snowflake ties, and the \$3,000 kept us out of the red.**

- Frank Gehrke then thanked Bob for his report.

❖ 2001 meeting:

- To date we have 61 people registered. Our budget was based on 80 registrants. Including the Banff meeting, the North Continental area has fewer attendees than other sections. Keith Cooley has kept records of attendance since 1980. This information is on the Secretary's database. The lowest number of papers presented was one paper in 1941.
- Meeting attendance can be predicted based on the meeting location. We gain attendees from the region in which the meeting is held. High attendance is always in Reno with about 160 members attending, and low attendance is in Canada with fewer attendees from the United States. This is partly due to difficulty of U.S. agency people going to a "foreign" country

❖ 2002 meeting: Kelly Elder

- Discussion: the Eastern Snow Conference (ESC) has requested a joint meeting in Vermont in June 2002.
 - On the negative side: travel cost is a factor and getting to Vermont will not be cheap.
 - Joint meetings are beneficial but can we afford to do it if we take a hit on membership attendance. June is a good month for some but not for others.
 - Expenses when we join with ESC are not straightforward. We had talked about a joint meeting with ESC every five years.
 - The group felt that a 2002 joint meeting in Vermont would be too soon after the Banff meeting. We will indicate to the ESC that we feel we are not financially solvent to meet with them next year. Maybe we should become financially solvent before we join with ESC again.
 - Maybe we should meet in a more central location than Vermont such as Minnesota? Maybe mid-May would be a good time to have a joint meeting.
- Frank Gherke will respond to ESC with these ideas:
 - Splitting the proceedings costs.
 - A more central location.
 - A different meeting date.
 - ESC has fewer restrictions on papers for printing. We need to work on that with ESC.
- Kelly Elder proposed the 2002 meeting be held at the Inn at Silver Creek (also known as Sol Vista), Colorado, near the town of Granby. It is about 80 miles northwest of Denver. The meeting is planned for the week of May 20 - Memorial Day week.

Motion 3

It was moved for Kelly Elder to go ahead as outlined for the 2002 meeting. Motion was seconded.

.....Motion carried

- A rough planning guide has been passed to Kelly Elder for the 2002 meeting.

❖ 2003 meeting:

- If we keep the traditional rotation, Arizona would host the 2003 meeting. Few people in Arizona are active, making meeting there difficult. We have kept in our rotational sequence except for Jackson, Wyoming. We went to Jackson because it was thought we should not follow the Alaska meeting with one in Canada.
- The South Pacific, in Nevada, is the next location after Arizona in our present rotation. To maintain scientific participation we may need to reevaluate meeting sites. Considering the effect of meeting sites and rotation among the four areas on participation and costs, it was decided the WSC does not need to show a profit but we do need to cover all of our expenses each year.

- The Secretary and others will look into a meeting site for 2003 (See below under Constitutional changes).

❖ Awards committee: Jack Hannaford

- Jack Hannaford reminded the Tech Program Committee Chairman to pick the best paper, best student paper, and best poster.
- Long titles and numerous authors are difficult to handle on the award plaques. A generic plaque might be better but a generic plaque is of little value in the academic world. It needs to have at least the authors name on it. Maybe a certificate would be better. It would be less costly to WSC and maybe even more satisfactory to the recipient. Agency people may not be able to receive cash. A certificate might be printed on snowflake-embossed paper. Plaques are budgeted for this year. Might use "author et al" if more than three authors. It does not take long to get the award plaques engraved. If there are no student papers, we will not present the award that year.
- There was some discussion of presenting the student paper award at the conference held the next year. No consensus on this.
- Awards: 2000 Port Angeles, Washington
 - J.E. Church (Best Student Paper)
 - Thomas Painter was the recipient of the J. E. Church Memorial Award.
 - Best Paper
 - Roy W. Koch and Austin R. Fisher "Effects of Inter-annual and Decadal-scale Climate Variability on Winter and Spring Streamflow in western Oregon and Washington."
 - Best Poster
 - Phillip Mote, Alan Hamlet, and Nathan Mantua for "Variations in snow depth and stream flow in the Pacific Northwest and their relationship to Pacific basin climate variability. This poster was not published so Moat did not receive the plaque.
 - El Farsante
 - Chuck Troendle was the recipient of the El Farsante award. Chuck is the General Chair for the 68th Western Snow Conference.
 - Art Crook Award: His son has a set up a trust account with WSC on the trust. Jim Marron has been in touch with the family.

❖ Wilderness committee: Frank Gehrke

- Snow sensors: the California Department of Water Resources (the Dept.) staff is hoping to have a solution for snow sensors in the wilderness that is not dependent upon the change of political winds. We thought we had an agreement with Region 5 (Forest Service) to consider snow sensors as temporary structures to be useable until some new technology like satellite measuring becomes available. Existence of this agreement cannot be verified. Looking back through our records, we have gone through this problem every 10 years. Each time the situation comes up the same question is asked, "Why did they not fix the problem last time?"
- With the new legislation they want to add six new wilderness areas. California would like to pattern this after what was done in Utah. It has not been totally satisfactory in Utah but better than what is happening in California. We need to make our needs known at a fairly high level. People can get pretty emotional and involved about wilderness issues. Let WSC know of any suggestions. Phyllis Snow said she would be willing to contact Dale Bosworth, the new Chief of the Forest Service. The WSC would appreciate it if she would.
- The section relating to snow sensors in wilderness areas needs to be reworded. Maybe when letters start coming across Ann Venneman's desk, Ms Venneman will remember people contacting her about it. Frank will get copies out to WSC members before the meeting ends. The rewrite is patterned almost word for

word after the Utah policy. It is not a blanket permit. It would leave the Secretary of Agriculture some discretion. It would be appropriate to send out letters of the WSC 1997 position paper

- The California Department of Water Resources received a letter from Bradley Powell, Regional Forster from Region 5, Forest Service, basically includes all of California, directing the Dept. to remove snow sensors by June 30, 2001, or they would remove them and charge the Dept. So far meetings with the Forest Service have not been productive. The Dept. is meeting again with the Forest Service on April 23, 2001. The basic problem is that the Forest Service does not consider the sensors acceptable in wilderness area. In the opinion of the Dept., the wilderness act and the congressional opinion when the wilderness act was enacted, suggest scientific use is acceptable.
- Our approach with the Forest Service is to try to get through the current impasse without allowing the situation to get out-of-hand. The Forest Service is very sensitive to the media. The co-operating agencies, which actually own the sensors are following a political/adversarial approach. They have approached their senators and congressmen to put pressure on the Department of Agriculture, and they also engaged some of their state senators and representatives and staffers who personally know Ms Venneman, Secretary of Agriculture. Frank has been telling people the need for snow sensors is not unique to California, it is a problem throughout the west. In roadless areas the inability to get permits and the gradual increase of restrictions on maintenance have increased the difficulties. Also agencies are cutting back on budgets for basic measurements. This may occur even more with the new administration.
- Jerry Beard said that local implementation of rules applies to off-road vehicles. An amendment to special-use permits would allow vehicle access to the measurement sites. In Montana the snow samplers have been told they can visit the sites but they have to have a permit for each visit.
- The new administration in Washington is not expected to cause a turnaround in the interpretation for wilderness. Change in the National Forest Service policy manual along with change in legislation is needed. We need to make our problems known. Frank Gehrke requested help on wording. Frank will get a proposed wording to replace present wording for the Forest Service manual to us for suggestions. Jack Hannaford reminded the group that the WSC position paper was adopted by WSC in 1996. The Dept is hoping for a solution that is not so dependent upon politics so snow sensors can be treated as temporary structures for the permit that just expired. This problem comes up about every 10 years. California will be trying any suggestions. This is the year to promote the need for sensors because drought and floods could cause more damage were it not for the data gained from the sensors. Power generators need snow sensor information. The Forest Service tends to not care if data is available or not, Region 5 says they have not used any data to manage the National Forests. We believe the 1997 floods would have been worse (in damage) if we did not have information from the snow sensors. PPG uses information from the sensors to manage the upper reservoirs hour by hour.
- With the sensors to be out of the California wilderness by June, we, the WSC, need to do something now. The Forest Service seems to be totally uninterested in learning why the snow sensors in wilderness areas are important to maintain. Obviously there is another side. Politics is on the side of the environmentalists who want to close everything.
- Jerry Beard said, "In Montana, if the Forest Service wants snow sensors out, let the Forest Service send a letter so stating. Then we would go to the public with the news that if the sensors are out, this data will no longer be available. Then let politics play its game. That is what the Department's official position is. I (Jerry Beard) hate to dismantle a site only to find it is approved and have to go back in and reestablish the site, but that is politics and if politics say that is the way you play the game, that's the way you play it."
- Western Snow Conference should take the position to discuss this problem being driven by wilderness politics. Snow sensors are collecting data for others, not for themselves. Some people ask, "why do we need sites when we can get the information from the web?" These people do not realize information on the web comes from sensors in the wilderness. We might put a note to the effect that after such and such date this information will no longer be available on the web because the snow sensors will be removed from the

wilderness. It seems appropriate for the executive committee to take our stand to the general membership.

- Ted Gilbert suggested the executive committee prepare a report paper related to wilderness activities to be reworked and approved. That way in June the Dept. can say that WSC supports snow sensors in the wilderness. The position paper is in the 1996 proceedings. Jack Hannaford and Frank Gehrke were asked to update the position paper that was to be sent out to congressional members. Jim Marron was to send the original position paper out but he had to get a list. Jack Hannaford said that the position paper put together by the Wilderness Committee and approved by the general membership was to be sent out to a list of congress people and regional foresters. The list was never developed and never was sent out. At the time there were not big burning issues and it was never pushed after it was approved. It was sort of out-of-sight, out-of-mind. That did not work. Use of sensors in wilderness was voted on and approved by the general membership in 1996 and reaffirmed by the general membership in 2001.

Motion 4

It was moved by Ted Gilbert the executive committee
prepare a report paper related to wilderness
activities to be reworked and approved.
Motion was seconded.

..... Motion carried.

❖ Documents committee: Kelly Elder

- Electronic submission of papers for the proceedings is generally not working. The object of electronic publication is speed of delivery. Unfortunately, with that speed and without peer review, there are all types of typographic errors and incorrect spellings.
- Every paper presented at WSC meeting is expected to be published in the proceedings. For this (2001) meeting, authors were asked to have their paper in before presentation at the meeting. No paper, no presentation. One of the objections to publication in our proceedings is that it may make it difficult for the author to publish the same material in a formal journal. However, the author could cite “based on material originally presented at the Western Snow Conference...” and this might satisfy the requirements of journals.

Motion 5

It was moved by Kelly Elder that we allow for simultaneous
publication of papers presented at our annual conference and
subsequently published in the proceedings of the Western
Snow Conference.
Motion was seconded.

.....Motion carried.

❖ Communication with members:

- Discussion: The timely receipt of registration information and other communications with WSC members continues to be a problem. Bulk mail is often not delivered in a timely manner as each post office delivers bulk mail according to its own schedule. Dick Stein received his second mailing about 1-½ weeks before the 2001 conference but Frank Gehrke never received his. The poor bulk mailing by the post offices involved put the people putting on the conference in bad light. Some members and vendors accessed the WSC web site for registration information. Mailing costs are high and email is an attractive alternative. However, it is difficult to keep track of the various members email addresses as they change rather frequently. Jim Marron does the bulk mailing from Portland and we really need his input on this item. He pays a mailing service to stuff envelopes and put on mailing labels. It was suggested that we could do the second mailing by first-class postcard (20 cents). People could be requested to register via

email or telephone. A preprinted postcard could cut down on the cost of mailing.

- If two mailings are needed each year, then we need to include the cost of those mailings in the budget. The first mailing is a call for papers and is sent from Portland in mid-to-late February. A second mailing includes the registration form. The list for these mailings contains the names of all of those who have attended the annual conference or have ordered the proceedings during the last 10 years. Presently there are 416 on this mailing list.
- There is a \$100 annual fee for the bulk mail permit. We also have to pay, as a non-profit organization about 13 or 14 cents to mail each item. Bulk mail has to be separated by zip code, with closer zip codes costing a little less than those far away. One member always mails one to himself. He has received it the same day he mails it or up to 21 days. He mails it from a post office about 8 miles away from where he receives his mail. Most members felt that it is the final post office where the delay comes. Bulk mailing has typically taken less than two weeks to reach Canada. It is not as urgent for the call for papers as is the registration information.
- Frank Gehrke will do the second mailing on first class postcards from Sacramento next year. The first mailing will go out bulk from Portland. Frank will work with Kelly Elder on these mailings for the 2002 meeting.

❖ Credit cards: Bob Swanson

- The WSC now has a merchant account with Wells-Fargo via QuickBooks. We are charged \$15 per month plus 10 cents per transaction plus 2.3% of the transaction on VISA or MasterCard. There is an extra charge to use American Express cards and I did not request that service for the WSC. We can cancel at anytime without penalty. About half of the registrants have used the credit card service. We are not allowed to charge them more than those who do not use credit card; that is illegal. Approximate credit card charges are \$150 for this 2001 meeting.

❖ Audit:

- The WSC books are open. Anyone can audit at any time. All books are in US \$.

❖ Discussion of Constitutional Items:

- Meeting frequency: this issue will have to be discussed in both the executive and general meetings. Several things were thrown out for discussion, i.e., meet every other year to fit with ISSW off-year, or maybe meet with ESC or alternate with ESC. Do we need a constitutional change for changing the rotation pattern or to have meeting in a different month than April?
- Meeting location: some people like to go to different places. Some felt like out-of-the-way places may be expensive and cut down on attendees; for example, one group met at Catalina and had free lodging. Still attendance dropped. Then we changed to a nearby, easier-to-reach location and the attendance tripled. The WSC needs make a profit, but more importantly, we are here to expedite the process of taking and sharing knowledge.
- The Geological Society of America repeats Denver every third year because Denver is close to headquarters and they can get cheaper rates by committing to one site on a regular basis. The WSC have repeated Sacramento, Reno, and Denver in earlier years. A conscious attempt was made to diversify. While an interesting location helps, cost of accommodation and ease of getting to the meeting are the two main concerns. Silver Creek will be more expensive than Denver.

Motion 6

It was moved by Harold Steppuhn that a committee of ex-general

chairs and the present general chair look at aspects of meeting location, time held, and frequency.

Seconded by Kelly Elder.

.....Motion carried.

❖ Other new business:

Motion 7

It was moved we allow, on a trail basis, a snow photo contest for the WSC meetings.

The motion was seconded.

.....Motion carried.

❖ Adjournment:

Motion 8

It was moved by Dick Stein that we adjourn.

The motion was seconded.

.....Motion carried.

**WESTERN SNOW CONFERENCE
APRIL 2001
ANNUAL BUSINESS MEETING
MINUTES OF THE ANNUAL BUSINESS MEETING, APRIL 2001**

❖ Welcome by Frank Gehrke.

• Minutes of 2000 Annual Business Meeting:

- The minutes of the 2000 Annual Business Meeting, as printed in the 2000 Proceedings, had one minor correction. At Lake Tahoe in 1999, Scott Pattee received the El Farsante award for stabbing a snow pillow in the middle during the record snowpack of 1999.

Motion 1

It was moved by Derrill Cowing to approve the minutes as corrected, motion was seconded by Bob Whaley.

.....Motion carried.

❖ Secretary/Treasurers report: Bob Swanson

- The Western Snow Conference (WSC) appears to be in the black for the year 2001. Our income up to this time in 2001 is \$10,300. This should be enough to offset our expenses for the year 2001.
- Bob Swanson said he would like to get a volunteer to begin the process of taking over the secretary/treasure position as he would eventually like to give up the post. He suggested that an agency person would be good so that person could get financial help coming to the annual meeting.
- Attendance at the 2000 Port Angeles meeting was 78 members and 5 vendors. Publication of the 2000 Proceedings was not budgeted. The spouse's program in 2000 cost much more than usual so this year a fee is being charged to avoid having so many spouses attend and to help defray part of the cost. Bob Swanson feels that WSC will need to continue to make a charge for the spouse's program.
- For the WSC meeting in Sun Valley this year: attendance is 69; tour is 27; banquet is 56; and spouse's program is 9. Sixteen papers are being presented orally and eight are presented as posters. There are three vendors.
- Some of the vendors come as attendees rather than wanting to be tied to a table. Jon Lea sent invitations to 48 vendors. Most of the vendors that replied got their information from the web site rather than from what Jon sent. Some agencies have funding problems thus the lower attendance in Sun Valley. Frank Gehrke will investigate for the 2002 meeting.

❖ 2002 Annual meeting: Kelly Elder

- Kelly Elder gave preliminary information about Sol Vista (also known as Inn at Silver Creek), Colorado near Winter Park. Rates will be at local government per diem rates. The Fraser Experimental Forest, Rocky Mountain Park, winter manipulation across the continental divide are possible technical tours. Denver International Airport is a three-hour drive from Sol Vista.
- May 21-24, 2002, is being considered. This is just before Memorial Day Weekend. Late May offers interesting recreation. Some ski areas (Aspen and Berthoud Pass) are still open. Also, there is white water rafting, mountain biking, and horseback riding.

❖ Standing committee reports

• Publications:

- Kelly Elder said the proceedings for 2000 were late because papers straggled in from September through December. For this year he set May 31 as the drop-dead date for getting papers to him for

the proceedings. Presenting a paper at WSC meeting is a commitment to have the paper ready for publication in the proceedings.

- Putting papers on the WSC web site was discussed. Revenue from past proceedings is minimal therefore WSC would not lose money by putting papers on the web. It costs about \$360 per year for storage of past proceedings.
- Randall Osterhuber would take over storage if Jim Marron will relinquish. The proceedings would be stored in California and mailed out from California. We discussed the possibility of putting the proceedings on CD ROM.
- Wilderness:
 - The Department of Water Resources in California (The Dept.) operates 15 snow sites. These were installed with a permit between 1980 and 1989. When they were being installed, one requirement of the permit was trying to correlate with a site outside the wilderness in hopes of eliminating the wilderness site. These correlations were tested and it was decided no correlation could be made, elevation differences between wilderness and outside wilderness areas proved to be too great. The distances between the two types of sites could be from 50 to 100 miles, so the correlation between sites is not realistic. The Forest Service considers snow sites a non-conforming activity for wilderness and the process of obtaining permits for each national forest results in different permit expiration dates.
 - Data from the snow sensors have important uses: help manage flow of water through dams, predict water flows throughout the year, prepare potential flood warnings, and for recreational uses such as hiking and white water rafting.
 - In 1996 WSC decided to revisit the intent of a white paper we had written and send it to regional foresters to let them know the importance of data sensors. Roadless area additions have become another influence, these issues are presently in court.
 - Frank Gehrke proposed that WSC re-adopt our 1996 policy and send it to the Secretary of Agriculture, Secretary of the Interior, as well as Senators and Congressmen throughout the west. Many Congressional members are unaware of the snow sensor sites being a problem. Although Congress says the snow sites should be measured, Region 5 of the Forest Service is ignoring the Congress.
 - Frank Gehrke pointed out the National Forest Service Policy Manual specifically refers to Snotel and snow course sensors, but includes nothing about maintenance. Sensors are a problem for probably only a few people while a multitude of downstream users benefit from information from the sensors. He knows of no complaints about sensors. The issue seems to be internal to the Forest Service, not to potential wilderness (user) groups.
 - The Forest Service has not yet done a NEPA document on removal of snow sensors versus leaving the sensors in. During a spoken process, only one comment of aversion was made. It was to aerial markers and those markers are outdated and no longer used.
 - Randy Julander pointed out that WSC is not the only group that has interest in placing or leaving something in the wilderness. Thus, if snow sensors are in the wilderness, it sets the stage for other groups to request special uses.

Motion 2

It was moved by Randy Julander to adopt the WSC wilderness paper with recommended changes in language and transmit it to the Departments of Agriculture, Interior, and the Forest Service. Motion was seconded by Bob Whaley.

.....Motion carried.

❖ Awards committee: Jack Hannaford

- The awards for 2001, as announced at the banquet are:
 - Best paper – Tom Carroll
 - Best poster – Tyler Erickson
 - J.E. Church award – Noah Molotoch
 - Best snow photo – Tom Deitrich
 - El Farsante – Harold Steppuhn

❖ New business:

- Phyllis Snow will chair a committee regarding constitutional commitments about locations and dates of future WSC meetings. Much of the work will be done by e-mail. Frank Gehrke will handle USPS mail.
- Rich Kettelman suggested WSC meet on alternate years, those during which the ISSW does not meet or with ESC. The 2003 ESC meeting will be held in Minnesota. They invited us to meet with them in Vermont in 2002.
- Even when Federal agencies meet every two years, locations can still be a problem.

❖ Adjournment:

Motion 3

It was moved and seconded the meeting be adjourned.

.....Motion carried.

ATTENDEES

WESTERN SNOW CONFERENCE

SUN VALLEY, IDAHO

APRIL 16-19, 2001

LAST NAME, FIRST NAME

Abramovich, Ron
Alserda, Larry
Beard, Gerald
Brown, Robert T.
Brunengo, Matthew
Brymer, Dwight
Burak, Sue
Carcoana, Radu
Carroll, Tom
Cecil, L. DeWayne
Collins, Robert F.
Cooley, Keith R.
Cowing, Derrill J.
Croghan, Mark
Deems, Jeffrey S.
Dietrich, Tom
Elder, Kelly
Erickson, Tyler A.
Evans, Beth
Fall, Greg
Fames, Phillip
Fassanacht, Steven
Flerchinger, Gerald
Gehrke, Frank
Gilbert, Theodore L.
Hannaford, Jack F.
Henderson, Thomas
Huffman, Don
Ingersoll, George
Jeton, Anne E.
Julander, Randy
Kjosnes, Ole
Klieforth, Harold E.
Lea, Jon
Luce, Charlie

LAST NAME, FIRST NAME

Ludwig, William G.
Marks, Danny
Martinez, Manuel H.
Meiman, Jim
Molotch, Noah
Moore, Dan
Mote, Philip
Orndorff, Richard
Osterhuber, Randall
Painter, Thomas H.
Palmer, Peter L.
Reigle, Dallas
Reynolds, Gregg A.
Roos, Maurice
Runions, Karl
Schillinglaw, Robert M.
Slaughter, Charles W.
Smith, Stephanie E.
Snow, Phyllis J.
Stein, Richard E.
Steppuhn, Harold W.
Strauss, Fred A.
Swank, Lyle
Swanson, Robert H.
Sytsma, Don
Tanner, Bertrand D.
Van Hoesen, John G.
Waage, Marc D.
Weiss, Eric
Whaley, Bob
Winstral, Adam
Yang, Daquing
Yeung, Paul
Young, Robert