



MINUTES

BEAR RIVER COMMISSION REGULAR MEETING ONE HUNDRED TWENTY-SEVENTH COMMISSION MEETING NOVEMBER 17, 2015

BEAR RIVER COMMISSION

106 West 500 South
Suite 101
Bountiful, Utah 84010-6203
801-292-4662
801-524-6320 fax

CHAIR
Jody Williams

IDAHO
COMMISSIONERS
Gary Spackman
Kerry Romrell
Curtis Stoddard

UTAH
COMMISSIONERS
Eric Millis
Blair Francis
Charles W. Holmgren

WYOMING
COMMISSIONERS
Sue Lowry
Sam Lowham
Gordon Thornock

ENGINEER-MANAGER
Don A. Barnett

I. Call to order – The regular meeting of the Bear River Commission was called to order by Chairwoman Jody Williams at 1:30 p.m. on Tuesday, November 17, 2015, at the Utah Department of Natural Resources building in Salt Lake City, Utah. This was the one-hundred twenty-seventh meeting of the Commission. Williams noted that Jeff Peppersack was sitting in for Gary Spackman from Idaho and Mike Johnson was sitting in for Gordon Thornock from Wyoming. She asked the Commissioners and audience to introduce themselves. An attendance roster is attached to these minutes as Appendix A.

Williams then addressed the agenda for the meeting. The agenda was approved and a copy is attached to these minutes as Appendix B.

II. Approval of minutes of last Commission meeting – Williams asked if there were any changes to the draft minutes of the previous Commission meeting held on April 21, 2015, in Brigham City, Utah. A motion was made to approve the minutes with no changes. The motion was seconded and passed.

III. Reports of Secretary and Treasurer – Randy Staker handed out a sheet showing final numbers for FY2015. Total income for the year amounted to \$128,846.98 and expenditures were \$127,184.53, leaving a cash balance in the account of \$110,928.87. Another handout showed income and expenditures through November 13, 2015. He reported that all three states had made their yearly payments. He also noted that invoices had just gone out to the water quality agencies for stream gaging costs, so those payments should be coming in later. Staker noted that stream gaging costs were down a little from the previous year and expenses to date totaled \$71,470.65. Copies of Staker's handouts are attached in Appendix C. Eric Millis then recommended that the Commission approve the financial reports presented. They were approved by motion of the Commission.

IV. Wyoming's Weather Modification Study and Plans – Barry Lawrence gave a report on Wyoming's weather modification study and program. He explained that Wyoming has been involved in a cloud seeding study for about ten years, with the majority of the funding coming from the Wyoming State Legislature and additional funds from the University of Wyoming and some Lower Basin partners. They began by doing a six-month feasibility study to assess the viability of conducting winter snowpack augmentation in the Wind River, the Sierra Madre and the Medicine Bow mountain ranges. Results of the study suggested that the potential existed for natural snowpack to be

increased 10-15 percent in winters with close to normal conditions. This became the blueprint for the ten-year program. Lawrence explained many details of their program which can be found in his PowerPoint attached as Appendix D. Lawrence reported that the scientists believe there was a seeding effect over those years, based on the program they were running, of between 5 and 15 percent. As far as the cost of additional water generated, it ranged from about \$27 to \$54 per acre-foot. He explained that because the research was over, they dismantled all the equipment in the Medicine Bow and Sierra Madre about a year ago. However, the equipment was left in the Wind River Range because there was a real interest from the agencies in the Lower Basin of the Colorado to do flow augmentation activities. They actually ran the generators during the preceding winter and plan to run them again during the upcoming winter. Lawrence reported that, based on the results of the study, the Wyoming Legislature amended into the Omnibus Water Bill \$1.4 million to “jump start” cloud seeding activities across the State of Wyoming. In summary, they have transitioned from research to operation. They are pursuing collaborative opportunities and continuing education and outreach activities.

V. Paris Hills Water Study and Plans – Dave Kramer, General Manager of Paris Hills Agricom, gave an update on their phosphate mine project located in the southeast corner of Idaho. Most of his presentation is detailed in his PowerPoint, which is included in these minutes as Appendix E. He noted that in January of 2014, immediately following the construction of a test well, they conducted a three-day aquifer pump test. The results of that test were inconclusive, showing dewatering rates anywhere from half to two or three times the 16,000 gpm estimate from their feasibility study. They reached out to several other hydrologic companies to review the work that was done. They could find no flaws in the work done, but suggested that a three-day test was nowhere near long enough to be able to determine the dewatering rates or to capture the essence of the hydrology on the property. Consequently they immediately began to plan a 30-day high rate pump test. This test took place in July 2015, and although they don't yet have a completed report, they were able to determine that they are back in the realm of a dewatering requirement of 16,000 gpm. Kramer commented that they were pretty happy with the progress made in the last year. He noted that one of the questions that were asked during an earlier presentation to the Commission was what effects the project might have from a regional standpoint. He reported that they had hired a group out of Idaho Falls to begin a regional groundwater study, but they put that on hold while they were investigating the varying dewatering rates. The study was about 80 percent complete and waiting on a hydrology model and report. Kramer indicated that they intend to provide the report and complete that regional study soon. He reviewed the next steps they will be taking. He also noted that they are revisiting the timing of their mine plan to try to sequence the mine in such a manner that they get to the deepest part of the mine at year 19, therefore reducing overall dewatering requirements on a per annum basis.

XIII.A. Activities of the Bear River Water Users Association – As Carly Burton had to leave the meeting early, this agenda item was moved up. Burton commented on the amazing outcome of the 2015 irrigation season as the summer rains relieved the dire situation that existed in the spring. He noted that the members of the Association did a remarkable job of conserving water during the summer. He shared some numbers for water use and remaining unused allocation for 2015, with an unused amount of almost 97,000 acre-feet, which is preserved for Bear Lake recovery. He noted that the combination of unused allocation for the two-year period of 2014 and 2015 was approximately 238,000 acre-feet, which is about equal to the maximum allocation. He indicated that this is a great benefit for Bear Lake interests. With regard to new water applications, the Association has done a lot of work with Nibley City and Cache County to develop a framework agreement that would enable Nibley City to move forward with water development while at the

same time protecting the interests of PacifiCorp and the Bear River Water Users Association. Burton suggested this could be a sort of template for future water development in other cities in Cache County.

VI. Twin Lakes' FERC EIS – Don Barnett expressed appreciation to Jody Williams for arranging a conference call with someone in the Federal Energy Regulatory Commission (FERC) who knew this project from beginning to end. She was able to provide information relative to the process and the status. Barnett noted that the Commission had not taken a position on the project, so his report was just to update the group on the current status and the process yet remaining. He shared a list with the group showing the main points of the process (see Appendix F). He reported that this project has been more than a decade in the making and formally in the process for the last eight years. Barnett explained that FERC has a pre-application process which requires the applicant to scope out all the issues and do the needed studies so they can submit a well-informed application. This pre-application process cost the Twin Lakes folks about \$3 million. The application was then formally filed in November 2013 and accepted nearly a year later, in October 2014. Following public comments and an examination of the information, a draft EIS was issued on September 30, 2015, recommending that FERC take the “No Action” alternative, which was to not build the project. However, the draft was unusual in that it also included language that suggested elements that should be required if a permit were to be granted. The FERC staff made it clear that, as far as new construction is concerned, this is probably the biggest project they have received in 30 years, so they reviewed this application carefully and in detail before issuing the draft EIS. The 60-day comment period expires on November 30, 2015. Barnett explained that moving ahead, FERC will address and respond to all meaningful comments, which will result in a response in the appendix of the EIS, as well as possible changes to the EIS. Whether or not those changes might change the ultimate recommendation is yet to be seen. The target date is about April 2016 when they believe the staff will issue a final EIS. At that point, legal counsel will prepare a draft order for FERC that is consistent with the findings in the final EIS. There is then a 30-day period where the applicant can file a request for re-hearing, submit new documentation or data, and have an opportunity to be heard by the Commission and present their position. Following any rehearing, FERC will issue a final order one way or the other. After that, there is an opportunity for a judicial review at some point in the future.

In answer to a question, Barnett reported that the applicant is responsible for the costs incurred in the pre-application process, but FERC takes over once the application is approved. They often hire outside contractors to assist where they don't have the expertise in-house.

The Commission then took a short break.

X. Management Committee Report – Eric Millis had to leave early so he gave his Management Committee report earlier on the agenda. In addition to reviewing budget information and agendas for the meetings, he reported that the main thing they discussed was the assignments given to the TAC, especially regarding depletions. They are making great progress and are currently working on updating the crop mixes throughout the Basin. Those mixes have changed since the last assessment in 1990. Idaho is taking the lead on efforts for the post-1976 changes, but all the states are working together with their GIS staff. The TAC is also working on the municipal depletions. Utah has spent considerable time recently going through their numbers and trying to assess what the municipal depletions really are for the Utah portion of the Basin. They are now working with Idaho and Wyoming to see if the method and numbers Utah is using are reasonable and can be applicable throughout. The third item is supplemental acreage depletions. This has been a difficult

assignment for the TAC, but they believe they have made some major breakthroughs recently that will allow for progress. The states are working together to get some commonality on the methods. He expressed appreciation to the TAC for their excellent work.

VII. Records & Public Involvement Committee Report – As Liz Cresto took the notes for the Records Committee, Curtis Stoddard asked her to give a brief review of the meeting. Liz reported that the USGS will keep funding for stream gaging at the current level for the coming year and that the water quality agencies will continue to support the stream gaging effort. They discussed the report that Jack Barnett is working on summarizing the real-time gaging effort. There were reports from the states of new gaging efforts that will be added in the coming year. They discussed the biennial report which should be submitted by the end of the year. Regarding the Commission website, the committee learned of some new updates which would include the “About” section and a real-time gage monitoring report that Jack Barnett is working on. There has also been a series of USGS reports that have been put on the site, as well as some historical documents that discuss the development of the Compact. The WIS continues to be supported by the water quality group and they want to keep that updated. Lastly, the committee discussed future public events and the possibility of having a tour in the future.

VIII. Operations Committee Report – Blair Francis mentioned that the Operations Committee discussed how the river responded in the Upper Division. There was no Compact restriction as everyone worked together with the available water. Most of the reservoirs ended up with a pretty good amount of water and, with Bear Lake above 5911, there will be no upstream Compact storage restrictions this winter. In the Central Division, they went into emergency mode and started regulating on May 1st. Due to some good rains in mid-May, they ceased regulating until July. There was good distribution and good cooperation amongst the operators in the Central Division. The gains to Idaho were quite confusing, so they are working on that. In the Lower Division there was no request for regulation. Francis mentioned that they had a little discussion about weather stations and comparing rainfall numbers in certain areas. The states discussed what was available for rainfall measurement and the possibility of upgrading to get better real-time data on rainfall in the various areas.

Connely Baldwin handed out his summary on Bear Lake operations for the 2015 water year (see Appendix G). He noted the irrigation water use of 117,000 acre-feet is fairly typical for this type of a water year. The Bear Lake outlet was open on June 13th, which is typical of a normal water year, instead of the dry year which we actually had, with a 42 percent of normal runoff to Bear Lake. Looking ahead, if there is an elevation increase at Bear Lake of three feet from the seasonal low, the allocation would be 230,000 acre-feet. If the increase is as low as a one foot elevation increase, the allocation would still be 217,000 acre-feet. As far as operations, Baldwin reported that the Outlet Canal was open. Alexander Reservoir was being refilled after releasing some irrigation water while they replaced the spill gates. Water will be released in the Black Canyon for recreational use from April 1st to June 5th. There are no other planned drawdowns for 2016.

Francis mentioned that the Operations Committee also discussed the depletion assignments that the TAC had been working on. They also discussed the new Delivery Schedule No. 1 regarding water inventory in the Lower Division states. The states can come to the Operations Committee for minor changes. Several changes were made the previous April, but there were no changes this year. It’s an ongoing process. The TAC was assigned to look at storage changes parallel to this. The committee also discussed new water uses. In addition to Twin Lakes and Paris Hills, which had

already been discussed, Trout Unlimited is looking at a project in the Upper Division that they are just getting started on.

IX. Water Quality Committee Report – Walt Baker reported that the Water Quality Committee had a great meeting the previous day. They heard reports on the Paris Hills project and the FERC action on the Twin Lakes project that have already been reported to the Commission. They also had a very interesting report from Jim DeRito of Trout Unlimited about infrastructure and diversion projects in the Bear River watershed that facilitate spawning of the Bonneville Cutthroat Trout. Baker felt there was a great opportunity of partnering with Trout Unlimited with a perspective of improving fish habitat, improving water quality, reducing sediment loading, etc. Baker noted items of interest in the three states that have implications for the Bear River watershed. Utah is updating its lower Bear River from Cutler to the Great Salt Lake TMDL, which will take a couple of years to complete. Wyoming is having issues with third parties submitting water quality data that would be included in the integrated report that is sent to Congress every two years on the quality of the waters in each state. The issue deals with some third party folks that have an agenda, perhaps relative to grazing in particular, where they are shading in one direction what the quality of the water may be. Baker mentioned that Utah has not struggled with this problem and they have a very strict quality control regime which only allows certain entities to submit data, but it is on their radar screen. He mentioned that this is an issue that the west is facing right now.

Baker reported that they are continuing with their tri-state monitoring plan which has been in effect now for ten years. This has allowed for efficiency and cost savings and has been very effective. The technical committee will evaluate the data over that ten-year period to determine if the tri-state effort should continue, which he suspects will be the case.

Regarding efforts in the states that affect the Bear River watershed, Baker noted that Logan City is moving ahead on its \$115 million project to build a new wastewater treatment plant replacing what has been in place for the last 50-60 years. It will be in construction for three years, and it will offer the prospect of very improved water quality coming out of the facility and improved water quality in Cutler Reservoir and the Lower Bear River.

Utah struggles with nutrient pollution and has implemented its technology based phosphorus effluent limit. Phosphorus is a pollutant that sometimes sequesters itself in the sediment, but it never goes away. Though the nutrients are not toxic and don't present water quality problems, they do act as a source of fertilizer, turning the waterways green and producing algae, which affects fisheries and recreational activities. By the year 2020 wastewater treatment plants will need to meet a 1 mg/L limit. Lagoon systems will have a cap on their phosphorus loading which will require enhanced treatment.

Baker mentioned that new ammonia standards are coming. They are already on the books for EPA and will be on Utah's books in 2017 and probably thereabouts for the states of Wyoming and Idaho. This will have a profound effect on wastewater treatment facilities which will have to upgrade to meet the more stringent ammonia limit. This nationwide standard is based on mussels and snails in the Great Lakes Region and 48 states have confirmed their existence. It's kind of interesting where these little critters are. East of the Rockies they are prevalent. They are also found west of the Rockies, except for a sliver down the Rockies where they may not be able to find hospitable habitat. Baker reported that Colorado and Utah are partnering in a study, hoping to show that these critters do not exist in those two states. They are trying to see if they can have a relaxation of that standard, which is really an expensive game changer for a lot of wastewater treatment plants.

Similar to 45 other states, Idaho is seeking delegation from EPA to administer the Clean Water Act in Idaho. Currently there are only a handful of states where EPA administers the Act and permits. Idaho is seeing that there are some advantages to running the program out of Boise instead of Seattle. They will submit their application in 2016, and it will probably be a two-year process to get the delegation. Idaho is also developing the human health criteria for fish consumption. Baker noted that this effort has received some media attention having to do with possible EPA influence on Idaho in the development of that standard.

Wyoming indicates that it is getting a lot more scrutiny in its water quality program. They used to be on the down-low, and they are finding that they are not so much anymore. There is a lot of scrutiny relative to QA/QC, their monitoring, their listings, their standards, etc. Consequently they are having to a lot more work than they used to.

Finally, Baker commented that we just need more water. The Great Salt Lake's footprint is shrinking and is within a foot of the all-time low. The brine shrimp industry and some of the mineral extraction industries are a bit concerned about that.

XI. Engineer-Manager's Report – Don Barnett explained that he had no items to report beyond what had already been discussed in the meeting.

XII.A. State Report – Wyoming – Sue Lowry reported that Wyoming's Statewide Water Association held their annual meeting in Evanston and they toured some of the water development projects, including the intake on Bear Lake for the City of Evanston and Sulphur Creek Reservoir.

Lowry reported that one of the initiatives from Governor Mead's water strategy is called the Credible Data Initiative. They were hopeful to see an expansion of their weather station network within the state and had put together metrics criteria for where to put up to 40 weather stations. These stations would involve full-blown solar radiation which would provide better ET calculations. Lowry mentioned that Wyoming is dealing with new air quality standards that are hitting coal production very hard, as well as \$40 per barrel oil, which is not good for the economy of the state. With these issues in the forefront, they are doubtful that they could get their project funded in the upcoming biennium. Along those same lines, Wyoming has a budget session coming up. There is about a \$600 million shortfall. The Governor has put on a hiring freeze, and right now people are just hopeful that it won't mean a reduction in staff. So things aren't looking very rosy, but those are the economic woes of being an energy producing state.

XII.B. State Report – Idaho – Jeff Peppersack presented the report for Idaho. He noted the delivery calls in the southeast part of the state in the Snake Plain aquifer, which have resulted in extensive litigation and the need for methodology orders to determine shortfalls and mitigation or curtailment. Just this past year there has been a settlement agreement between the surface water users and the groundwater pumpers. An important component is an actual reduction in consumptive use of about 240,000 acre-feet per year, which will be difficult. He felt that there is a realization that something like that has to occur. Otherwise there is continued uncertainty each year and potential curtailment. So if that is successful, there will be a lot of monitoring and measuring efforts by the Department rather than going through the methodology order each year, so there will still be a lot of work and a lot of monitoring and measuring to ensure that it actually is effective. But if it is effective, it also would help with other delivery calls that are ongoing in the

Eastern Snake Plane Aquifer, as well as the minimum stream flows that are established under the Swan Falls Agreement.

Peppersack also reported that the Department designated a groundwater management area and a temporary moratorium in the Malad Valley based on concerns about groundwater levels in the area. The groundwater management area allows for the development of a management plan which will help to establish a path forward for years to come. The moratorium is currently for two years, but it could develop into something longer. There is also the Bear River adjudication. Last year there were public meetings held and they had pretty good support, but it didn't make it to the Legislature. This year they are hearing that there may be enough local legislative support to actually get it before the Legislature.

XIIC. State Report – Utah – Todd Adams gave the report for Utah. He mentioned that the Governor of Utah about two years ago started a Governor's Water Strategy with about 40 people on the team. They are hoping to have a report out by the end of 2015.

Adams reported that ever since Eric Millis has become the Director of the Division of Water Resources, they have been going through an audit. They are trying to provide answers having to do with the State Water Data Program that deal with accuracy, how to improve that, some issues with water conservation pricing and metering, secondary water and working with other state agencies to look at solutions. This will be part of some legislative fixes they will ask the Legislature to consider this year.

Adams reported on two large water projects they are currently working on. They are preparing a pre-application document on the Lake Powell Pipeline to be submitted to FERC by the first of December. They are working hard to get this project moving forward, even though it is not due to deliver water until 2025. They are also continuing to work on studies in the Bear River development. They narrowed down a list of potential reservoir sites from 40-45 to around 7. They are studying the potential and feasibility of each of these sites for that development.

XIII. Other/Public Comment – David Cottle from Bear Lake Watch addressed the group. He expressed appreciation to PacifiCorp and the Bear River Water Users Association for their attention to close water management. He noted that they often get questions about wasting water, and they feel they can respond that everyone is trying their best to conserve every drop.

Cottle mentioned that Bear Lake Watch hosts the Merlin Olsen Summer Classic golf tournament each year to raise money for research and data collection on Bear Lake. To date they have raised over \$160,000 and they are starting to look quite seriously at what to study next. They are planning to convene a Scientific Advisory Committee (SAC) composed of people associated with the state agencies, Utah State University, the Bear River Commission and other entities to determine what studies to pursue at Bear Lake.

Cottle also mentioned the Lidar flyover of northern Utah that was initiated by Utah's Forestry, Fire and State Lands. Their intent was to fly to the Utah State border. Cottle asked if they might consider flying over the rest of Bear Lake if he could get additional partners to help with the funding. He was happy to report that the Bear Lake National Wildlife Refuge, Idaho Department of Lands and Bear Lake Watch have all contributed to extend this flyover to cover the rest of Bear Lake and the Refuge portion of the Lake. He felt that there were some management implications for the Commission, as well as for the agencies in those states.

XIV. Next Commission Meeting – Chairwoman Williams reported that the next Bear River Commission meeting will be held on April 19, 2016, at the Utah Department of Natural Resources building in Salt Lake City.

The meeting was adjourned at 4:00 p.m.

ATTENDANCE ROSTER

BEAR RIVER COMMISSION REGULAR MEETING

Utah Department of Natural Resources
Salt Lake City, Utah
November 17, 2015

IDAHO COMMISSIONERS

Kerry Romrell
Curtis Stoddard

WYOMING COMMISSIONERS

Sue Lowry
Sam Lowham

FEDERAL CHAIR

Jody Williams

UTAH COMMISSIONERS

Eric Millis
Charles Holmgren
Blair Francis
Norm Weston (Alternate)

ENGINEER-MANAGER & STAFF

Don Barnett
Jack Barnett
Donna Keeler

OTHERS IN ATTENDANCE

IDAHO

Jeff Peppersack, Department of Water Resources
James Cefalo, Department of Water Resources
Liz Cresto, Department of Water Resources
Josh Hanks, Water Master

UTAH

Walt Baker, Department of Environmental Quality
Will Atkin, Division of Water Rights
Todd Adams, Division of Water Resources
Randy Staker, Division of Water Resources
Ron Hoffman, River Commissioner

WYOMING

Mike Johnson, State Engineer's Office
Travis McInnis, State Engineer's Office
Levi Walker, State Engineer's Office
Barry Lawrence, Wyoming Water Development

OTHERS

Connely Baldwin, PacifiCorp Energy
Claudia Conder, PacifiCorp Energy
Cory Angeroth, U.S. Geological Survey
Voneene Jorgensen, Bear River Water Conservancy District
Darin McFarland, Bear River Canal Company
Claudia Cottle, Bear Lake Watch
David Cottle, Bear Lake Watch
Carly Burton, Bear River Water Users Association
Bob Fotheringham, Cache County
Adrian Hunolt, Whitney Reservoir
Scott Clark, Barnett Intermountain Water Consulting
Dave Kramer, Paris Hills
Dan Thompson, Paris Hills

BEAR RIVER COMMISSION REGULAR MEETINGS

November 16-17, 2015

Water Quality Committee Meeting

Utah Department of Environmental Quality
195 North 1950 West
Salt Lake City, Utah

All Other Meetings

Utah Department of Natural Resources
1594 West North Temple
Salt Lake City, UT

COMMISSION AND ASSOCIATED MEETINGS

November 16

10:00 a.m. Water Quality Committee Meeting – Red Rock Conference Room Burnell

November 17

9:00 a.m. Records & Public Involvement Committee Meeting – Room 314 Stoddard

10:00 a.m. Operations Committee Meeting – Room 314 Francis

11:15 p.m. Informal Meeting of Commission – Room 314 D. Barnett

11:30 p.m. State Caucuses and Lunch Peppersack/Millis/Lowry

1:30 p.m. Commission Meeting – Main Floor Auditorium (Rms. 1040/1050) Williams

PROPOSED AGENDA
REGULAR COMMISSION MEETING

November 17, 2015

Convene Meeting: 1:30 p.m.

Chair: Jody Williams

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|------------------|---|---------------|
| I. | Call to order | Williams |
| | A. Welcome of guests and overview of meeting | |
| | B. Approval of agenda | |
| II. | Approval of minutes of last Commission meeting (April 21, 2015) | Williams |
| III. | Reports of Secretary and Treasurer | Millis/Staker |
| | A. 2015 budget closeout | |
| | B. 2016 expenditures to date | |
| | C. Other | |
| IV. | Wyoming's Weather Modification Study and Plans | Lawrence |
| V. | Paris Hills Water Study and Plans | Kramer |
| VI. | Twin Lakes' FERC EIS | Barnett |
|
BREAK | | |
| VII. | Records & Public Involvement Committee report | Stoddard |
| VIII. | Operations Committee report | |
| | A. Committee meeting | Francis |
| | B. Operations in 2015 | Baldwin |
| | C. PacifiCorp operations | Baldwin |
| IX. | Water Quality Committee report | Baker |
| X. | Management Committee report | Millis |
| XI. | Engineer-Manager's report | Barnett |
| XII. | State reports | |
| | A. Wyoming | Lowry |
| | B. Idaho | Peppersack |
| | C. Utah | Millis |
| XIII. | Other / Public comment | Williams |
| | A. Activities of the Bear River Water Users Association | Burton |
| | B. Bear Lake Watch | Cottle |
| | C. Other | |
| XIV. | Next Commission meeting (Tuesday, April 19, 2016) | Williams |

Anticipated adjournment: 4:00 p.m.

BEAR RIVER COMMISSION
STATEMENT OF INCOME AND EXPENDITURES

FOR THE PERIOD OF July 1, 2015 to November 13, 2015

INCOME	CASH ON HAND	OTHER INCOME	FROM STATES	INCOME
Cash Balance 07-01-15	110,928.87			110,928.87
State of Idaho			40,000.00	40,000.00
State of Utah			40,000.00	40,000.00
State of Wyoming			40,000.00	40,000.00
Water Quality				
Interest on Savings		312.50		312.50
 TOTAL INCOME TO				
13-Nov-15	110,928.87	312.50	120,000.00	231,241.37

DEDUCT OPERATING EXPENSES

	APPROVED BUDGET	UNEXPENDED BALANCE	EXPENDITURES TO DATE
Stream Gaging/USGS Contract	40,755.00	-	40,755.00
SUBTOTAL	40,755.00	-	40,755.00
 EXPENDED THROUGH COMMISSION			
Personal Services	63,088.00	36,801.30	26,286.70
Travel (Eng-Mgr)	1,200.00	1,159.00	41.00
Office Expenses	1,600.00	1,346.55	253.45
Printing Biennial Report	1,000.00	1,000.00	
Treasurer Bond & Audit	1,400.00	1,400.00	
Printing	1,600.00	1,585.50	14.50
Realtime Web Hosting	8,400.00	4,800.00	3,600.00
Clerical	8,180.00	7,660.00	520.00
Contingency	2,000.00	2,000.00	
SUBTOTAL	88,468.00	57,752.35	30,715.65
 TOTAL EXPENSES	129,223.00	57,752.35	71,470.65
 CASH BALANCE AS OF 11/13/2015			159,770.72

BEAR RIVER COMMISSION

DETAILS OF EXPENDITURES

FOR PERIOD ENDING November 30, 2015

811	STONEFLY	1,800.00
812	processed in previous year	
813	BIWC	10,514.68
814	VOID	
815	STONEFLY	1,800.00
816	USGS	40,755.00
817	BIWC	10,768.38
	bank service charge	59.00
818	VOID	
819	BIWC	5,773.59

71,470.65

BANK RECONCILIATION

Cash in Bank per Statement 11/13/15	7,716.55
Plus: Intransit Deposits	
Less: Outstanding Checks	
Total Cash in Bank	7,716.55
Plus: Savings Account-Utah State Treasurer	152,054.17
	159,770.72

BEAR RIVER COMMISSION
STATEMENT OF INCOME AND EXPENDITURES

FOR THE PERIOD OF July 1, 2014 to June 30, 2015

INCOME	CASH ON HAND	OTHER INCOME	FROM STATES	INCOME
Cash Balance 07-01-14	109,266.42			109,266.42
State of Idaho			40,000.00	40,000.00
State of Utah			40,000.00	40,000.00
State of Wyoming			40,000.00	40,000.00
Water Quality		8,151.00		8,151.00
Interest on Savings		695.98		695.98
 TOTAL INCOME TO				
30-Jun-15	109,266.42	8,846.98	120,000.00	238,113.40

DEDUCT OPERATING EXPENSES

	APPROVED BUDGET	UNEXPENDED BALANCE	EXPENDITURES TO DATE
Stream Gaging/USGS Contract	48,540.00	-	48,540.00
SUBTOTAL	48,540.00	-	48,540.00
 EXPENDED THROUGH COMMISSION			
Personal Services	61,700.00	-	61,700.00
Travel (Eng-Mgr)	1,200.00	270.22	929.78
Office Expenses	1,600.00	1,137.64	462.36
Printing Biennial Report	1,000.00	1,000.00	-
Treasurer Bond & Audit	1,400.00	1,300.00	100.00
Printing	1,600.00	963.60	636.40
Realtime Web Hosting	8,400.00	1,184.01	7,215.99
Clerical	8,000.00	400.00	7,600.00
Contingency	2,000.00	2,000.00	-
SUBTOTAL	86,900.00	8,255.47	78,644.53
 TOTAL EXPENSES	 135,440.00	 8,255.47	 127,184.53
 CASH BALANCE AS OF 06/30/15			 110,928.87

BEAR RIVER COMMISSION

DETAILS OF EXPENDITURES

FOR PERIOD ENDING June 30, 2015

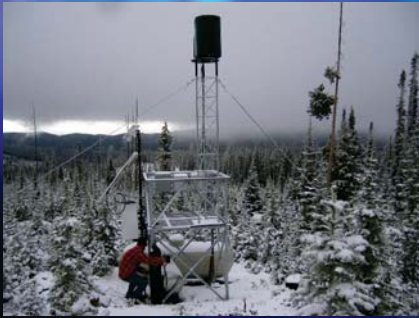
790	BIWC	10,283.34
791	VOID	
792	Stonefly Tech	1,800.00
793	BIWC	5,459.34
794	VOID	
795	VOID	
796	USGS	48,540.00
797	Stonefly Tech	1,800.00
798	BIWC	5,949.93
799	BIWC	5,291.42
800	Stonefly Tech	1,800.00
801	BIWC	5,493.81
802	BIWC	6,850.67
803	Stonefly Tech	15.99
804	VOID	
805	BIWC	5,460.44
806	BIWC	5,446.93
807	Stonefly Tech	1,800.00
808	BIWC	5,321.02
809	C N A Surety	100.00
810	BIWC	14,613.41
811	processed in new year	
812	BIWC	1,158.23
	TOTAL EXPENSE	127,184.53

BANK RECONCILIATION

Cash in Bank per Statement 06/30/15	4,187.20
Plus: Intransit Deposits	
Less: Outstanding Checks	
Total Cash in Bank	4,187.20
Plus: Savings Account-Utah State Treasurer	106,741.67
	110,928.87

Wyoming's Weather Modification Study and Plans

Bear River Commission Meeting
Salt Lake City, Utah



Barry Lawrence
Wyoming Water Development Office
Cheyenne, WY

November 17, 2015



Presentation Overview

- History/Project Impetus
- Program Components
- Target Areas/Study Design
- Preliminary Findings and Recommendations
- Next Steps: Collaborative Weather Modification



Wyoming Weather Modification Pilot Program Funding Acknowledgements

Wyoming State Legislature

Legislative Select Water Committee
Wyoming Water Development Commission

Additional Funding

- University of Wyoming Office of Water Programs
- Central Arizona Project
- Colorado Water Board of California – Six-Agency Committee
- Southern Nevada Water Authority



The Impetus ...



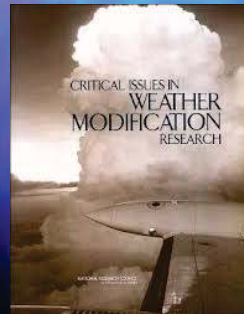
- Drought, Drought, Drought ...
- Several inquiries received concerning the State's lack of involvement with weather modification technology.
- Area V of the Wyoming Association of Conservation Districts sent a resolution and formal application to the WWDC in 2003 asking for a weather modification project.



2004 Feasibility Study ...

- Six month study to assess the viability of conducting winter snowpack augmentation operations in the Wind River and Sierra Madre/Medicine Bow Ranges.
 - Significant fractions of cloud water were not being converted to precipitation (snow).
 - The potential existed for natural snowpack to be increased in the target areas from 10-15% annually.
 - Impact would be greatest in winters having normal or near-normal snowfall.

WWMPP consistent with the 2003 National Research Council Report:



- High resolution computer modeling of the clouds and airflow should be used to support both operations and evaluations.
- Remote-controlled ground-based seeding generators should be used to optimize targeting.
- Program evaluation should be independent and use both physical and statistical methods.
 - Physical studies that examine processes important to the seeding concepts.
 - Randomized experiment: quantitative assessment.

Operations ...



Weather Modification, Inc.

– Fargo, ND



Heritage Environmental, Denver, CO

Research & Evaluation ...



National Center for Atmospheric Research – Boulder, CO



Desert Research Institute, Reno, NV

Technical Advisory Team (TAT)



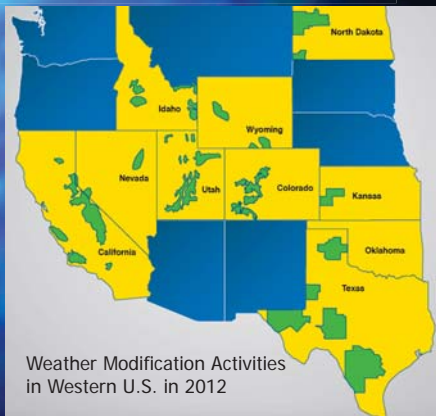
Next Meeting:

January 27, 2016
Cheyenne, WY

- Bureau of Land Management
- Natural Resources Conservation Service
- National Weather Service
 - Riverton and Cheyenne offices
- University of Wyoming - Atmospheric Science
- U.S. Forest Service
 - Medicine Bow, Bridger-Teton, Shoshone
 - Rocky Mtn Research Station
- U.S. Geological Survey
- Wyoming Dept. of Environmental Quality
- Wyoming Dept. of Transportation
- Wyoming Game & Fish Department
- Wyoming State Engineer's Office

North American Weather Modification Council (NAWMC)

- Snowpack augmentation
- Precipitation enhancement
- Hail damage mitigation



Program Components



Weather Balloon Launches (Saratoga, WY)



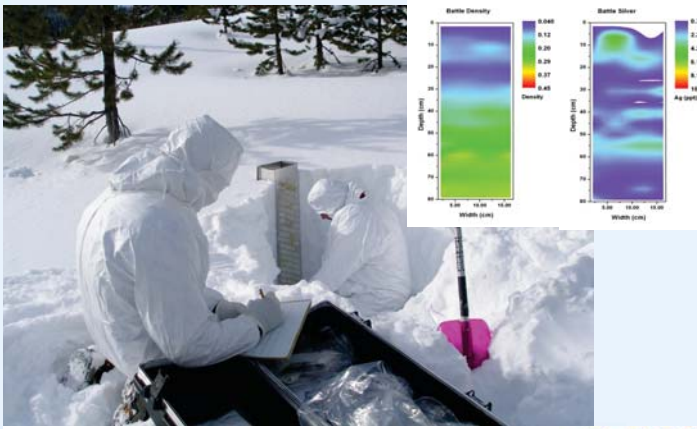
Radiometers

Units deployed near:

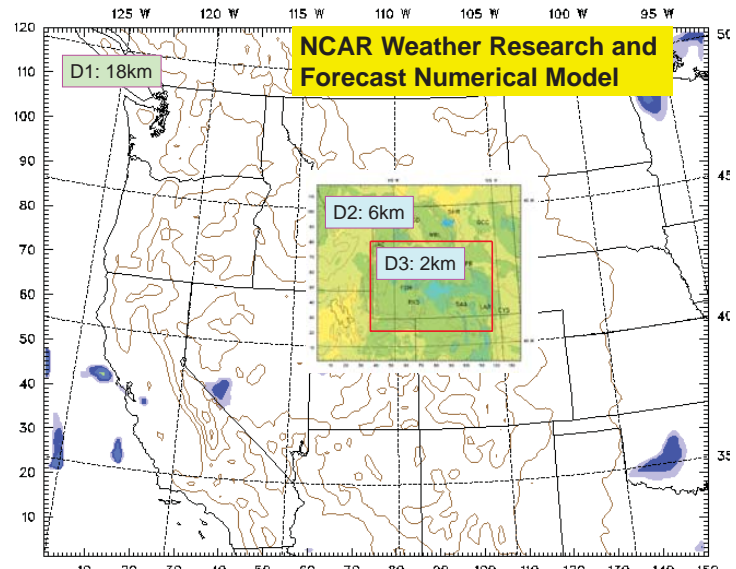
- Boulder, WY (Wind River Range)
- Saratoga, WY (Medicine Bow Range)
- Savery, WY (Sierra Madre Range)



Targeting – “Detailed” profile snow samples



Trace chemistry snow sample collection



High Resolution Precipitation Gauge Sites



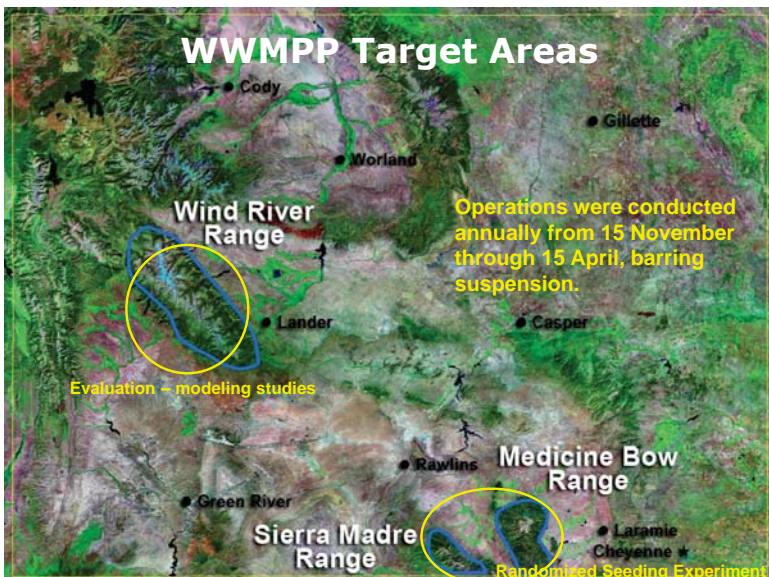
Three gauges per site
(Two different style gauges)

Education & Outreach Efforts



Saratoga Middle/High School

WWMPP Target Areas



Medicine Bow/Sierra Madre Ranges

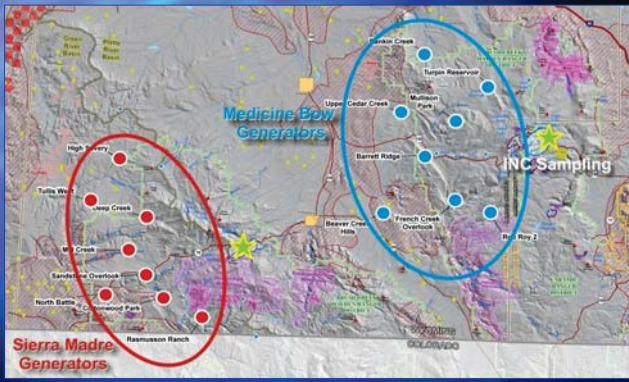


Approach to the evaluation, recommended by National Research Council 2003 report, focused on the following areas:

1. Statistical
2. Physical
3. Modeling

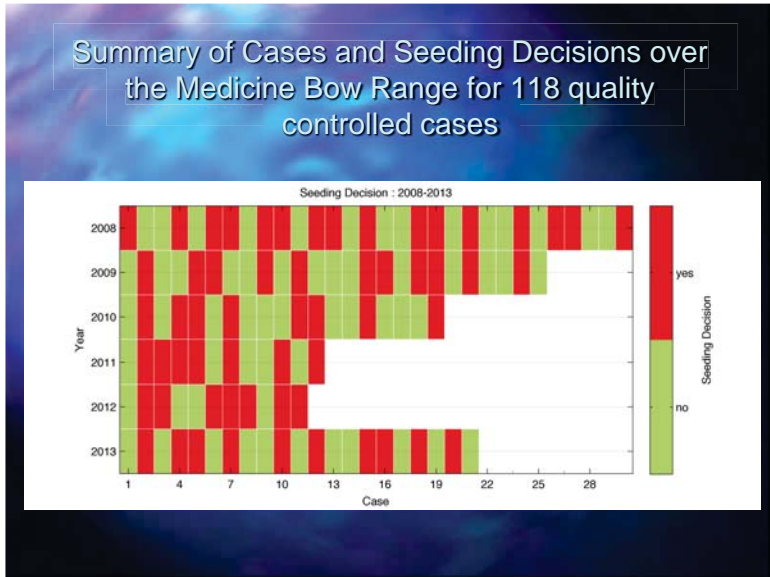
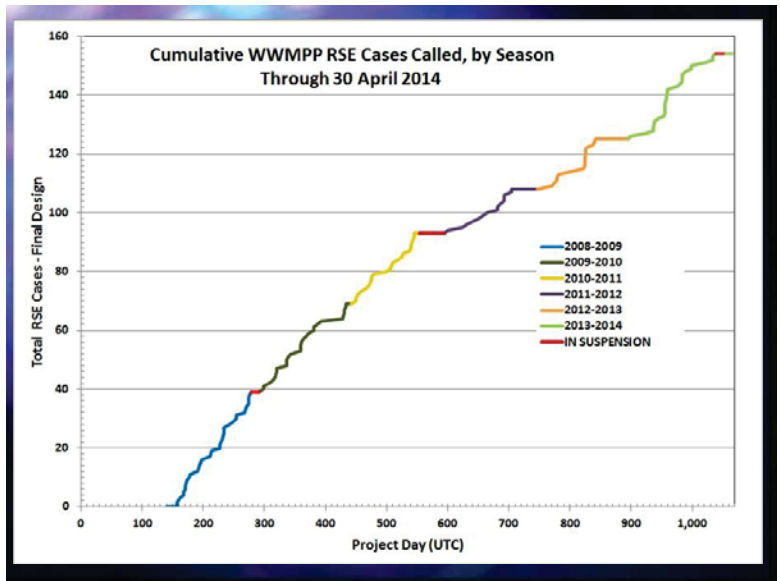
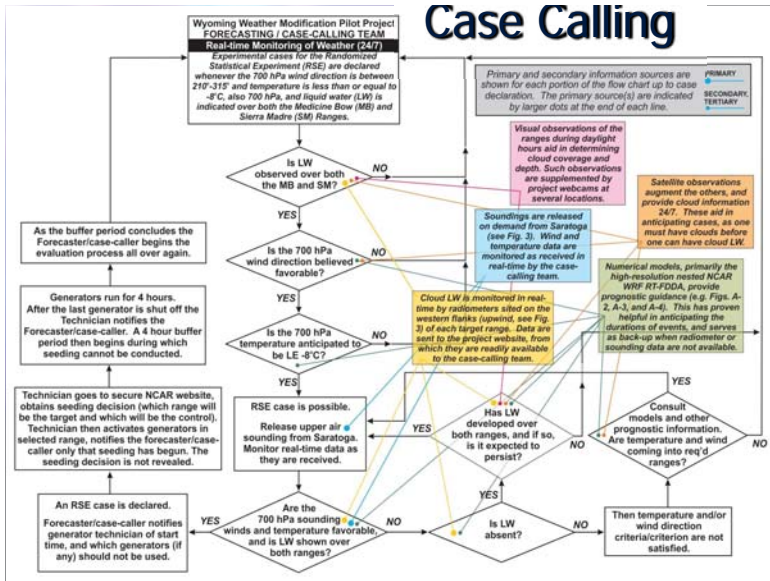
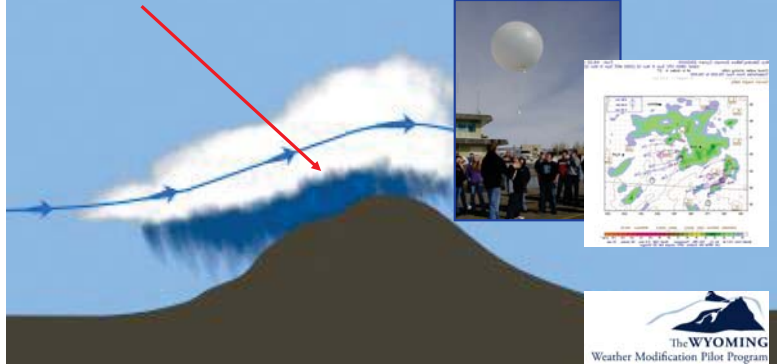
“Proof of Concept” Study Area

Randomized Crossover Experimental Design



Similarity in storm conditions affecting both ranges allow for the possibility of a "cross-over" design resulting in paired data (seeded and control cases), and statistically is the most efficient design to conduct and evaluate.

- Criteria for "case calling" (seedable conditions):**
1. Temperature (~10,000') colder than -8 C (+17 F).
 2. Supercooled liquid water evident within cloud.
 3. Wind direction supports precipitation development at the target from envelope of AgI generators.



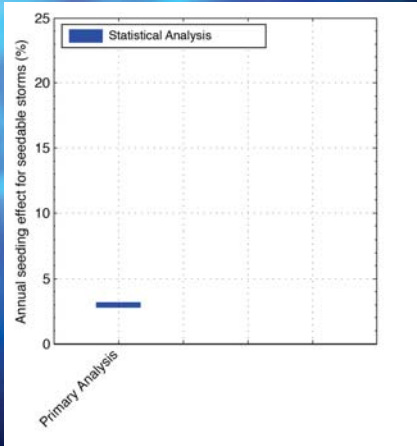
Primary Statistical Results

The primary statistical results (confirmatory analysis) using the snowgauge data with a randomized cross-over statistical design are:

RRR = 1.03 (3% increase in precipitation)
 P-value = 0.28 (28% chance that occurs by chance)

Since the p-value is greater than 0.05, the statistical test does not reject the null hypothesis that there is no effect of cloud seeding.

Primary statistical analysis



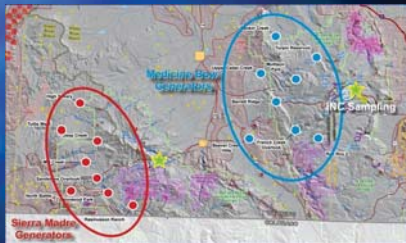
Further Exploratory Statistical Analysis

Further analysis of the data suggested two primary physical effects impacting the statistical analysis of the 4-hr precipitation data:

1. Down-wind seeding of the Med Bow Range by the Sierra Madre generators
2. Minimum number of generator hours per case (or coverage of the cloud with silver iodide).

Downwind Seeding of Med Bows by Sierra Madre

Examination of the potential of downwind seeding of the Medicine Bows by Sierra Madre



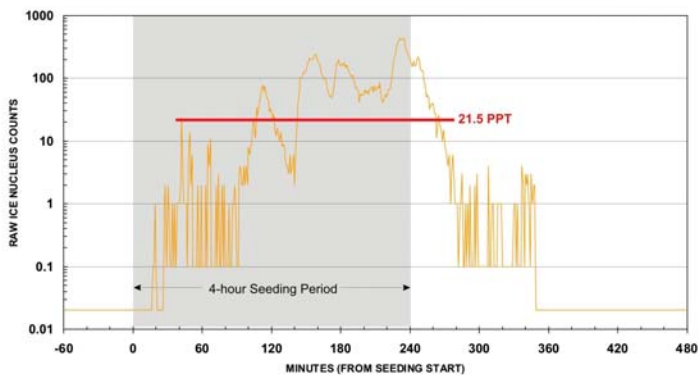
Downwind Impacts

Ice Nuclei Plume Detection and Snow Sampling

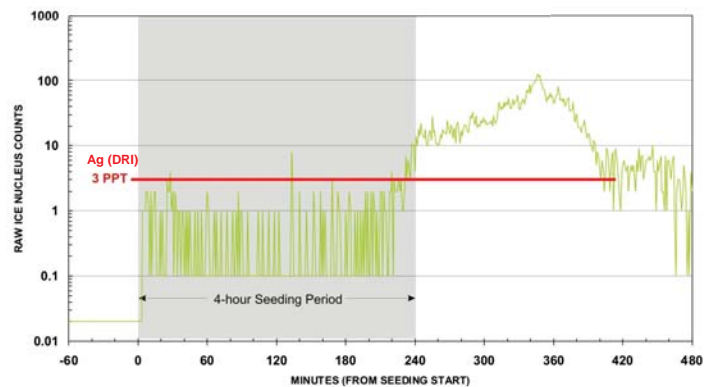


Mountain Meadows Cabins, Medicine Bow Range, December 2008

MB seeding, with Ag Signal



SM seeding, with plume



Downwind Impacts

- The ground-based AINC measurements indicated that silver iodide reached the Medicine Bow target in 21 Sierra Madre seeding cases.
- Eliminating these 21 cases from the 118 snow gauge cases increased the RRR from 1.03 to 1.04.

Downwind Seeding of the Medicine Bow by the Sierra Madre

An AgI cloud seeding parameterization implemented into the Weather Research and Forecast NCAR model

Xue et al., 2013: Implementation of a silver iodide cloud seeding parameterization in WRF. Part I: Model description and idealized 2D sensitivity tests. *JAMC*.

Xue et al., 2013: Implementation of a silver iodide cloud seeding parameterization in WRF. Part II: 3D simulations of actual seeding events and sensitivity tests. *JAMC*.

AgI plume from ground generators

Date/Time: 2010-02-01_00:00:00

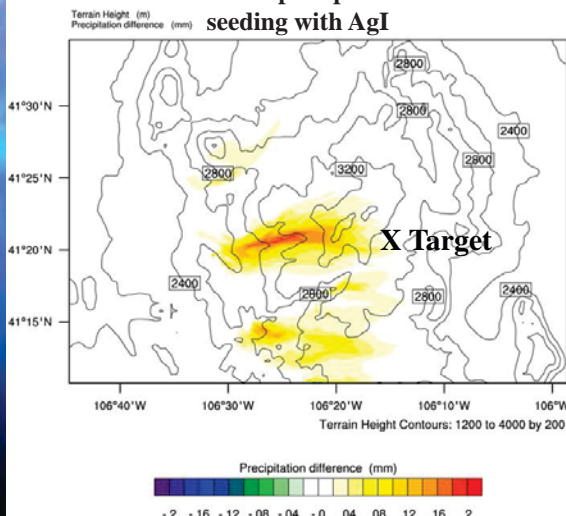


Simulated precipitation from nucleation of AgI

Date/Time: 2010-02-01_00:00:00



WWMP Simulations Simulated increase in precipitation due to cloud seeding with AgI

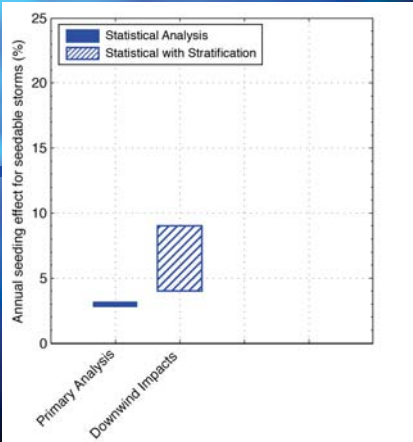


Downwind Seeding of the Medicine Bow by the Sierra Madre

The model estimated 18 cases of enhanced precipitation in the Medicine Bow target during Sierra Madre seeding cases (for 2009/2010, 2011/2012, 2013/2014).

Eliminating these 18 cases from the 118 snow gauge cases increased the RRR from 1.03 to 1.09.

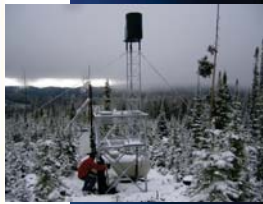
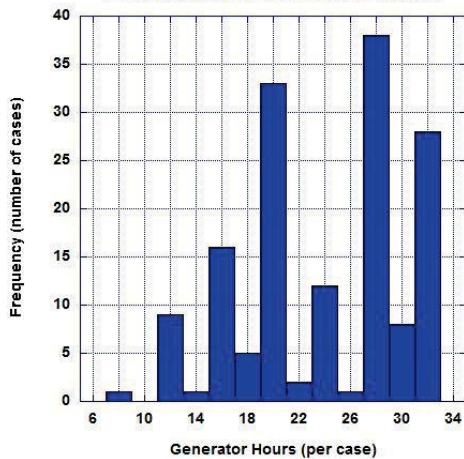
Eliminating cases of **downwind** seeding of the Med Bows by Sierra Madre seeding from silver iodide ground based measurements and model estimates of seeding precipitation and applying the statistical analysis results in values of RRR from 1.04 to 1.09.



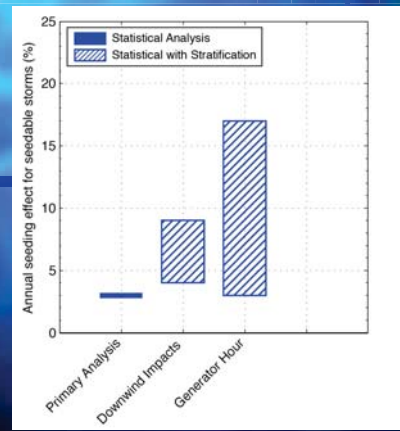
Impact of the number of generators active per case

Impact of the number of generators active per case on the snowguage statistics

Distribution of Generator Hours



Eliminating cases with generator hours per case of less than 27 hours and applying the statistical analysis results in values of RRR from 1.03 to 1.17.



Procedure: Simulate three years of the RSE using the exact seeding timing and conditions (57 cases)

Seasons

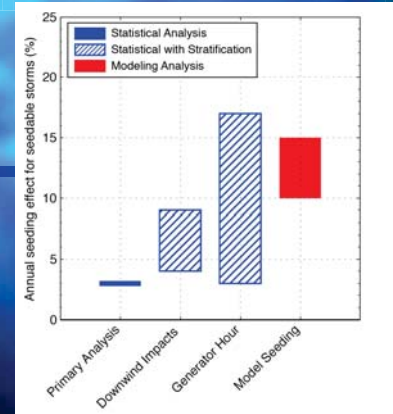
- 2009/2010
- 2011/2012
- 2013/2014

Summary of Cases and Seeding Decisions



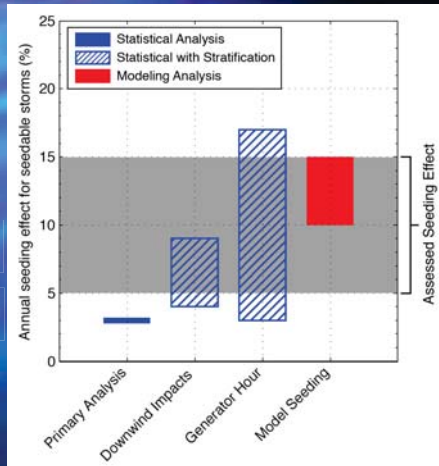
Simulation of the impact of AgI seeding with the WRF model shows 10-15% increase in precipitation

Model estimate of seeding effect by direct simulation of seeding and natural cloud for 1/2 of the RSE cases shows 10-15% increase over a season



Conclusion:

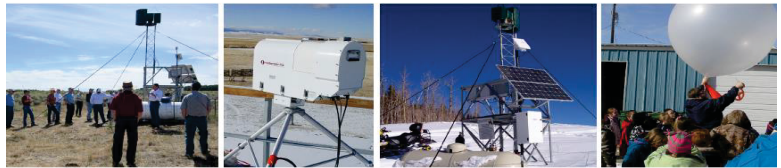
The accumulated evidence from the statistical, modeling, and physical studies suggests a positive orographic seeding effect, over a winter season, between 5 and 15% in the Medicine Bow and Sierra Madre Ranges, for seedable cases based on the RSE criteria and for which sufficient ground-based silver iodide seeding was achieved



DRAFT EXECUTIVE SUMMARY



The WYOMING Weather Modification Pilot Program • LEVEL II STUDY

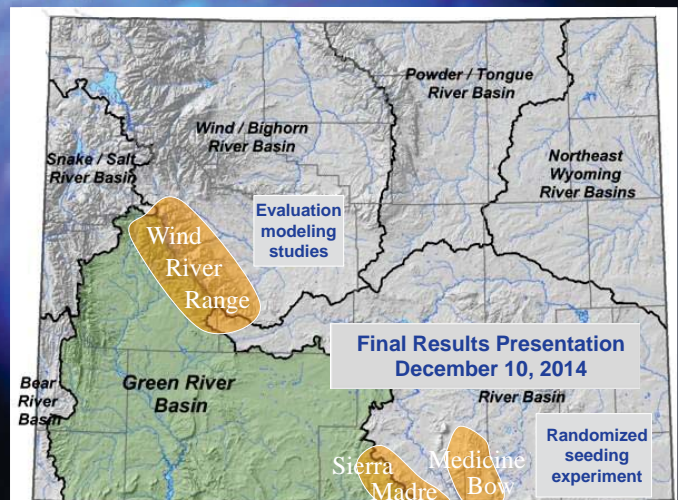


<http://wwdc.state.wy.us>

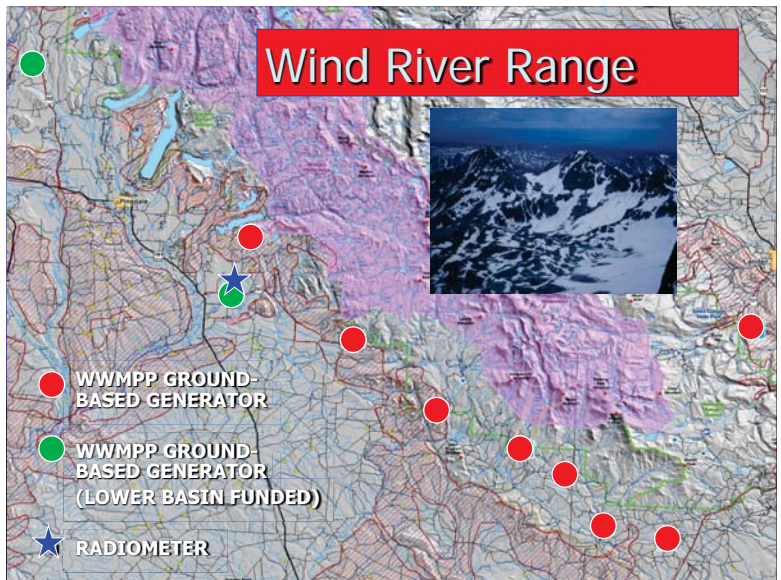
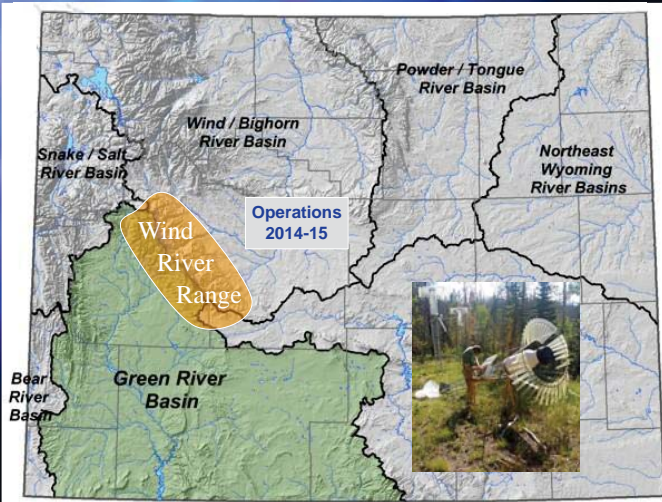
**Next Steps:
Collaborative Weather
Modification**



Wyoming Weather Modification Project



Wyoming Weather Modification Project



Wind River Range Winter 2014-15 Funding Partners

Operations:

- Southern Nevada Water Authority
- Central Arizona Project
- Colorado Water Board of California – Six-Agency Committee
- Arizona Dept. of Water Resources
- Utah Division of Water Resources

Modeling and Evaluation:

- US Bureau of Reclamation

(State of Wyoming's participation capped at 25%)



Wyoming Weather Modification Project



2015 Wyoming Legislative Session

HB70 Omnibus Water Bill - Construction

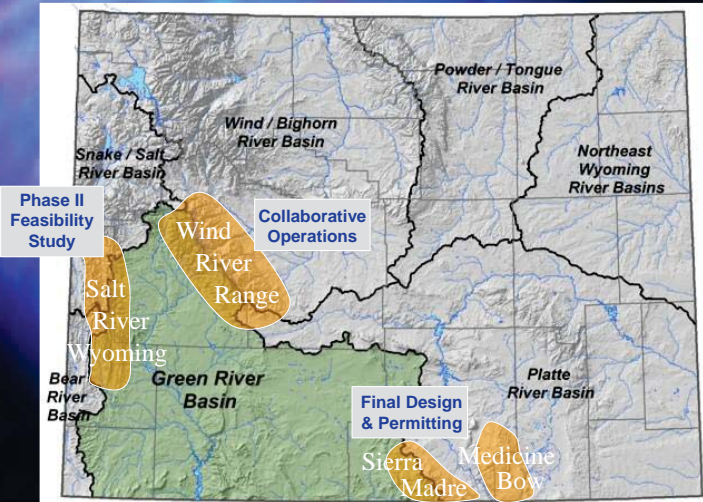
- Legislative Select Water Committee amended the Omnibus Water Bill – Construction to add in \$1,447,500 to "jump start" cloud seeding activities across the State of Wyoming based on the preliminary findings of the Wyoming Weather Modification Pilot Program.

(C) Prior to commencing project operations, the Wyoming water development office shall seek funding commitments from other in-basin water users that may benefit from winter snowpack augmentation;

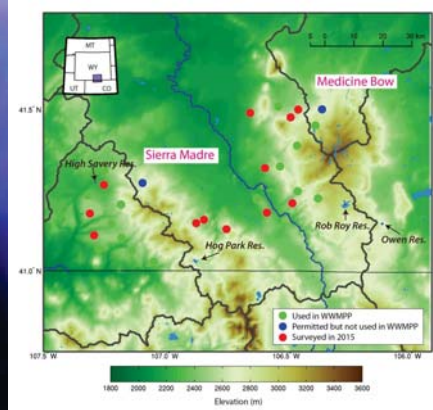
Wyoming Weather Modification Project



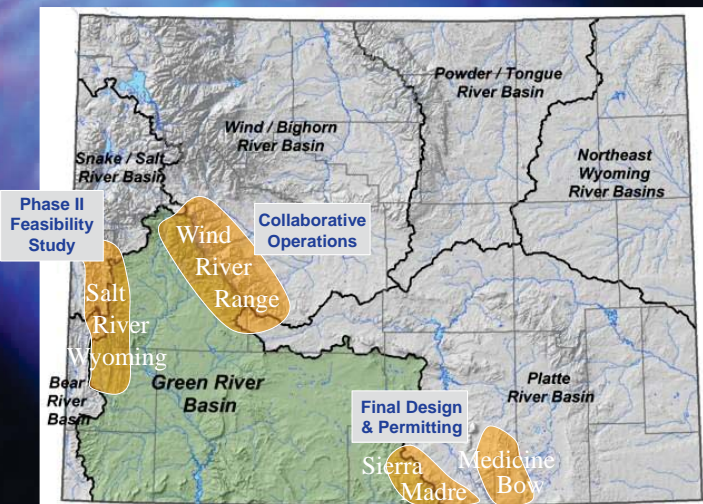
Wyoming Weather Modification Project



Medicine Bow & Sierra Madres Final Design and Permitting Project



Wyoming Weather Modification Project



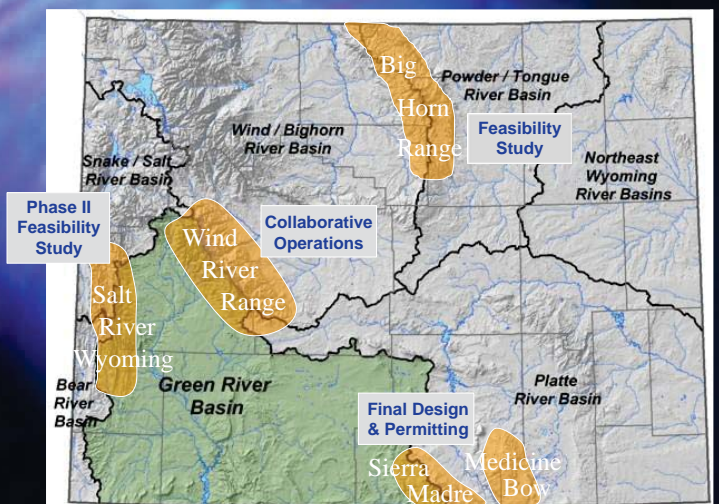
Wyoming Weather Modification Project



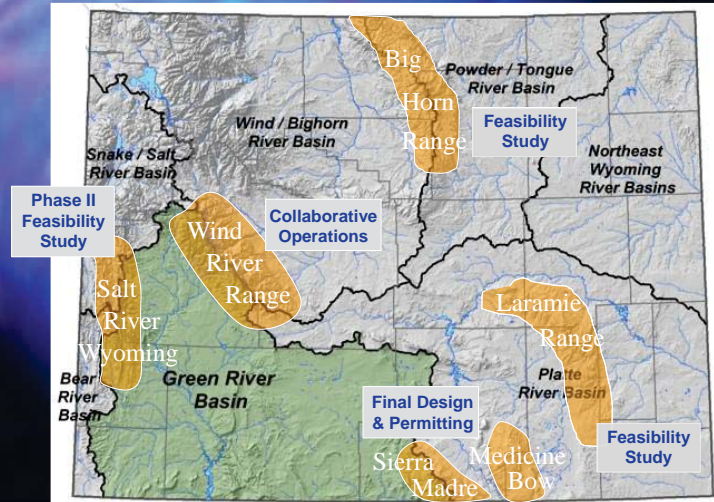
Big Horn Range Weather Modification Feasibility Study



Wyoming Weather Modification Project



Wyoming Weather Modification Project



Laramie Range Weather Modification Feasibility Study



Summary

- Transitioning from Research to Operations
- Pursuing Collaborative Opportunities
- Continuing Education & Outreach Activities



Outer Drive, Casper, WY ~ Jan. 18, 2014

Questions?



Barry B. Lawrence
 Wyoming Water
 Development Office
barry.lawrence@wyo.gov
<http://wwdc.state.wy.us/>



Update of the Paris Hills Phosphate Mine Project for the
Bear River Commission

November 17, 2015



Paris Hills Project

- Proposed phosphate mine
- Underground mining only, room and pillar mining method
- Small surface facility footprint
- Direct ship rock, no processing or tailings facilities on site
- Mostly ore (economic) rock mined; limited waste (uneconomic) rock mined
- Ore rock will be transported by highway truck to local markets or by rail to distant markets
- Small waste rock storage facility



Project Location

- Situated in the foothills of the Bear River Range, Bear Lake County
- Located 45 miles south of the Soda Springs phosphate mining area

Property comprised of: Idaho Department of State Lands (40%), private land (40%) and BLM (10%), ~2,500 acres





Project Highlights

- Acquired property in 2009
- Exploration drilling from 2010 to 2012
- Feasibility Study completed in Dec. 2012 with positive economic results
- Baseline surface water monitoring since 2010 from 20 stations
- Baseline groundwater monitoring since 2013 from 8 wells
- Initiated project permitting with Idaho in 2013
- Three-day aquifer pump test in Jan. 2014 (inconclusive dewatering estimate)
- Thirty-day aquifer pump test in July 2015

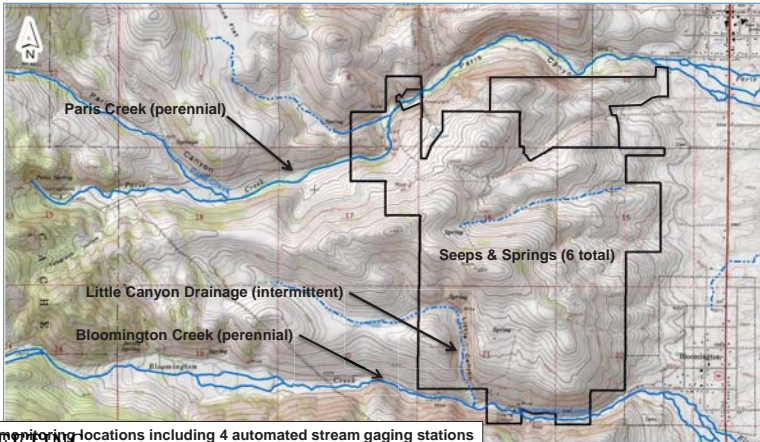


Feasibility Study Highlights

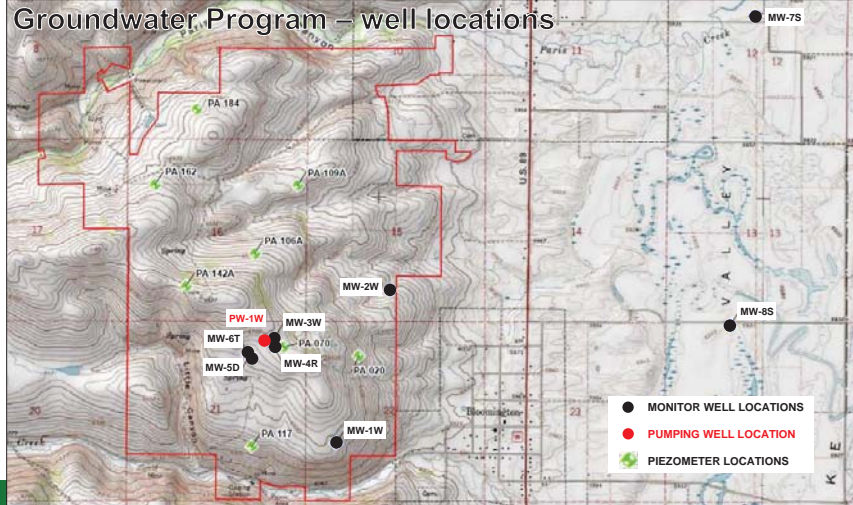
- Study targeted the Lower Phosphate Zone only
- Future studies may add Upper Zone
- Dewatering (displacement of groundwater) ahead of mining will be required
- Eighteen (18) million tons of minable reserve at a grade of 29.5% P₂O₅
- Nineteen (19) year mine life
- Estimated 300 employees during peak years



Surface Water Monitoring – Creek/Spring Locations



20 monitoring locations including 4 automated stream gaging stations
 Sampling since September 2010; samples taken 4 times annually



Groundwater Program

- Eight pairs of piezometers installed during the exploration program (2010 – 2012)
- Eight monitor wells completed in late-2012 and early-2013
- Plan to inject groundwater back into the aquifer in the valley east of the mine area. Some groundwater anticipated to be released to surface outlets.
- Baseline water quality samples were taken every six weeks for two years; currently samples taken quarterly.
- Samples meet Idaho water quality standards with few exceptions:
 - Exceptions:
 - secondary Idaho standards for Iron & Manganese in the mine area
 - primary federal standard for Arsenic in the valley (injection area)



Groundwater Program

- Drilling of a pumping well completed in late-2013
- Three-day aquifer pump test completed in Jan. 2014 (inconclusive dewatering estimate)
- Regional groundwater study initiated in June 2014
- Thirty-day aquifer pump test completed in July 2015
 - Drawdown and recovery water levels encouraging for dewatering of the mine
 - Latest dewatering estimates anticipated to be similar to Feasibility Study estimates



Next Steps

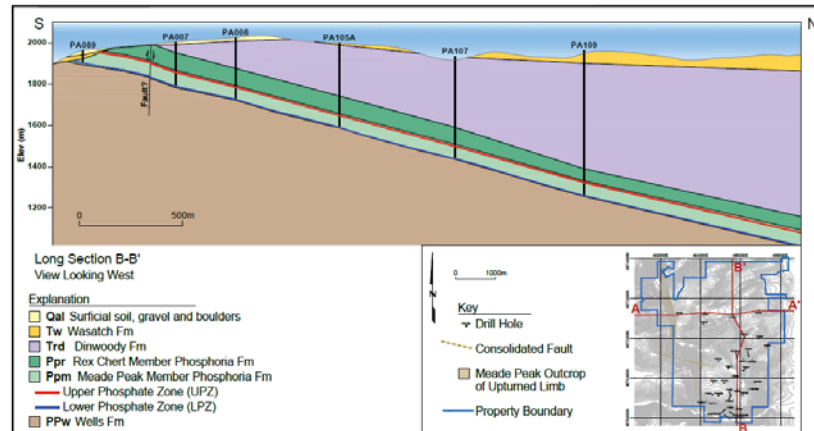
- Complete final groundwater model and dewatering estimate by mid-Nov. 2015
- Submit permit applications in early 2016
- Finish regional groundwater study in early 2016
- Update Feasibility Study by mid-2016
 - Add latest hydrology information and dewatering flow estimates
 - Optimize mine plan timing to reduce peak dewatering flows
 - Add Upper Phosphate Zone



END

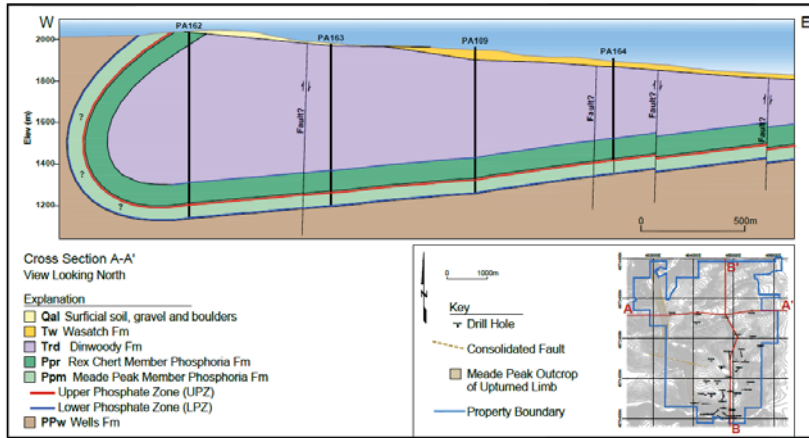


North-South Cross Section – looking west





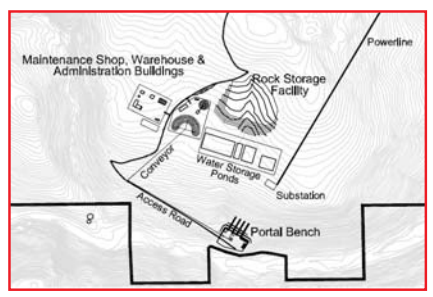
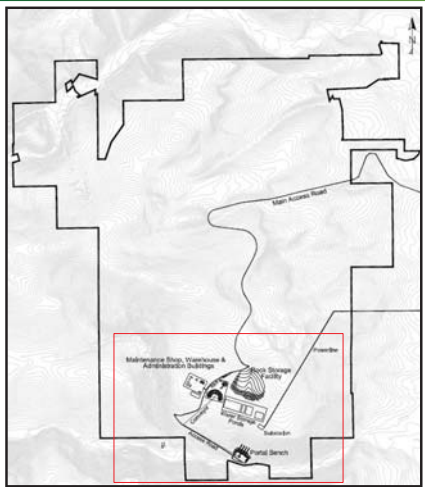
East-West Cross Section – looking north



13



Surface Facilities Layout



14

Status/Process

Twin Lakes (Bear River Narrows Project) FERC Permit

November 17, 2015

- Permit filing more than a decade ago, license application in process for at least the past 8 years
- Entered Pre-Application Document (PAD) process in December 2006, this allows for the filing of a more informed license application. Required the submittal of studies (maybe \$3M). FERC has not seen a new license of an unconstructed project of this “size” in about 30 years.
- November, 2013 filed the formal application
- Accepted application in October, 2014
- Sought comments from agencies and public
- September 30, 2015 issued a draft EIS. EIS recommends that FERC take the “No Action” alternative (denial of application).
- Draft EIS was somewhat unusual in that though its preferred alternative is no action, it did have a staff created alternative of what would be required if a permit were to be granted.
- The issuing of the draft EIS commenced a 60-day comment period which expires on November 30, 2015.

-
- Based on comments, staff will create a final EIS. Staff could revised EIS, could revise recommendation or stick with prior recommendation. Final EIS to be completed maybe April, 2016. Will have an appendix with responses to all meaningful comments.
 - Staff will also draft an Order consistent with the recommendations in the EIS
 - Order will be issued by Commission probably 3-6 months after the issuance of the Final EIS. Commission could go with the recommendation found in the FEIS or override the recommendation and go another way.
 - Within 30 days of the issuance of the Order, applicant can file a request for re-hearing.
 - Once final, there are options for judicial review in federal court

SUMMARY OF WATER YEAR 2015 BEAR LAKE OPERATIONS AND IRRIGATION ALLOCATION FOR 2016

Date	Hydrologic Information/Event	Contents (% of Full) Discharge (% of Normal)
10-01-14	Bear Lake Beginning Elevation - 5,912.32 ft.	642,778 af (45%)
09-27-14	Bear Lake Low Elevation - 5,912.10 ft. (see note 1)	628,365 af (44%)
	Rainbow Inlet Canal Discharge	164,000 af (62%)
	Bear River Discharge Below Stewart Dam	1,849 af
	Bear Lake Net Runoff (Computed Total Inflow less Lake Evaporation)	137,000 af (42%)
06-23-15	Bear Lake High Elevation - 5,914.44 ft.	783,421 af (55%)
	Outlet Canal Releases; 5/1/15-5/8/15, 6/13/15-9/18/15, 9/26/15-9/30/15	167,000 af
07-01-15	Outlet Canal Maximum Release - 1,600 cfs	
	Bear Lake Storage Release (see note 2)	117,000 af
09-30-15	Bear Lake Ending Elevation - 5,911.55 ft.	592,476 af (42%)
	Bear Lake Settlement Agreement "System Loss" Volume (see note 3)	22,100 af

Notes:

1 - Low contents prior to start of storage.

2 - Net irrigation storage release from Bear Lake, subtracting Rainbow inflow and the decreed adjustment for the natural yield of Bear Lake and Mud Lake area. **Includes system loss volume.**

3 - Due to uncontrolled flow from (welcome) rain events. Whenever water flows below Cutler during the irrigation season any storage water in the system at Cutler is the first water out. Natural flow goes to irrigators.

Current Status

Bear Lake elevation as of November 16, 2015 was 5,911.28 feet. The recent seasonal low elevation has not yet occurred. The Bear Lake Outlet Canal is open and passing irrigation exchange water to refill Alexander Reservoir as the spill-gate replacement project is completed. The flow in the Rainbow Inlet is 157 cfs and would typically be used to fill Bear Lake this time of year, but is currently supplementing Outlet Canal releases.

Summary of Water Year 2015

The Bear Lake Irrigation Water Allocation for 2015 was 224,000 acre-feet based on the estimated spring maximum lake elevation of 5,913.8 feet. Despite relatively low snowpack amounts, well-timed rain and runoff reduced the need for irrigation releases. Timely rains in May allowed the Bear Lake Outlet Canal to be shut a week after its May 1st opening date until the June 13th, a typical opening date for normal years. Bear Lake Irrigation water use was 117,000 acre-feet and a balance of 107,000 acre-feet was retained for Bear Lake recovery, also typical for years with similar Bear Lake Net Runoff, about 42% of normal annual runoff.

Scenario for Water Year 2016

In 2016, the Bear Lake Irrigation Water Allocation assuming the historical median elevation increase of 3.1 feet would be 230,000 acre-feet. Under a more pessimistic scenario, assuming only a one-foot increase from the present elevation, the Bear Lake Irrigation Water Allocation for 2016 would be 217,000 acre-feet.

Operational Notes

- *2015 Alexander Reservoir Drawdown* – Alexander Reservoir was drawn down during the irrigation season to replace the spill gates. The water released from storage was delivered for irrigation purposes in place of Bear Lake storage. The reservoir is in the process of being refilled with exchange water from Bear Lake.
- *Bear River Black Canyon Recreational Water Releases* – occurred in 2015 and planned for 2016.
- No other planned drawdowns for 2016.