

Governor's Upper Yellowstone River Task Force
Meeting Summary
September 19, 2002
Yellowstone Inn
Meeting began at 7:00 pm

I. Introduction

Members Present:

John Bailey, Chair	Doug Ensign	Rod Siring
Roy Aserlind	Jerry O'Hair	Ellen Woodbury
Andy Dana	Brant Oswald	Jim Woodhull
Ken Britton, USFS Ex-Officio	Allan Steinle, Corps Ex-Officio	
Robert Ray, DEQ Ex-Officio	Stan Sternberg, MDT Ex-Officio	
Laurence Siroky, DNRC Ex-Officio	Joel Tohtz, FWP Ex-Officio	

Others Present:

Liz Galli-Noble, Coordinator	Lionel Dicharry	Tom Potter
Duncan Patten, TAC Chair	Peter Ismert	Tom Pick
Bethany Rivard, Secretary	Bill Moser	Rodney Schwartz
Tom Hallin, TAC	Karl Biastoch	George Mathieus
Mike Gilbert	Hanna Gosnell Schneider	Denine Schmitz
Ed Harvey	Danielle Gryskiewicz	Jim Barrett
Andy Hansen	Monica Brelsford	Kay Blehm
George Jordan	Burt Williams	Tom Arrandale
Andy Fritsch	Jim Berkley	

II. Prior Meeting Minutes

Rod Siring moved to approve the August 20, 2002 minutes. Jim Woodhull seconded the motion. The motion passed unanimously.

John Bailey: I just want to make a comment on the meeting minutes, since they're so long and detailed. If any of you see anything wrong when you get them, get directly to Liz. Sometimes tapes are split and many things can go wrong. I don't think we necessarily want to wait to hear if there is something wrong at the next meeting; corrections should be made immediately through Liz. At the next meeting we're going to talk about the minutes, because I got told the cost the other day and I want to at least make sure you're aware of the costs.

III. Financial Updates

1. Grant Spending Report:

Liz Galli-Noble reported the following financial updates to the Task Force:

EXPENDED GRANTS			
Grant Name	Completed	Amount	Study Component
DNRC Watershed Planning Assistance Grant	6/30/99	2,100.00	Physical Features Inventory
DNRC HB223 Grant	7/30/99	10,000.00	Aerial photography
DNRC Riparian/Wetlands Educational Grant	6/30/00	960.99	<i>Hydrologic Response to the 1988 Fires Workshop</i>
DEQ 319 Grant (1 st)	9/30/00	40,000.00	Coordinator position
DNRC Watershed Planning Assistance Grant	1/31/01	10,000.00	Watershed Land Use Study
DEQ Start-Up Grant	6/26/01	49,138.00	Coordinator position, Admin secretary, cross-sections, operating expenses
DNRC HB223	10/1/01	6,500.00	Riparian Trend Analysis
BLM Funding	10/26/01	10,000.00	Wildlife Study
DEQ 319 Grant – 2 nd	3/21/02	58,000.00	Coordinator position
CURRENT GRANTS			
Grant Name	Amount	Spent	Remaining Balance
DNRC RDGP Grant (expires 12/31/02)	299,940.00	271,931.88	28,008.12
DEQ 319 Grant (3 rd) (expires 6/20/03)	44,000.00	44,000.00	0
DEQ 319 Grant (4 th) (expires 3/30/04)	122,200.00	2,195.90	120,004.10
EPA RGI Grant (expires 9/30/02)	30,000.00	27,000.00	3,000.00

IV. Summary Report on 2nd Socio-Economic Assessment

Ed Harvey (Socio-Economic Study research leader from BBC, Denver) was asked to give a brief summary of the second public meeting for the Socio-Economic Assessment that was held on September 18, 2002. He reported that 38 people attended the meeting, which lasted from 7:00 to 9:00 pm. The purpose of the meeting was to:

1. Review preliminary results of the Socio-Economic study,
2. Solicit public feedback on the results of the study,
3. Generate issues from the public for further review.

Ed Harvey: The meeting started with a summary I gave about the history of the area as it related to the socio-economic conditions. We discussed the stakeholder interviews that we had done and the three additional surveys that we had done about the household, the business, and the visitors. Following that, we had a very good discussion that lasted almost an hour; it was lively as you might imagine. We learned a lot from it, I thought it was very helpful and considering the topic—people's values and perceptions—I think it went pretty well and all of us got a lot out of it.

John Bailey: Thank you, any questions of Ed?

No questions were asked.

John Bailey: Moving along, Liz I think you want to make a couple of administration-type comments.

V. Administration Notes

Liz Galli-Noble: Yes, thank you John. As was requested at the last Task Force meeting, I purchased binders for each of the Task Force members. I started out by including information on items/issues that generate commonly asked questions. For example, I have included the executive order, some of the formal processes that you have approved, the TAC protocol, and those types of things. If you look in your binders, you will also see a green piece of paper, and right behind it is a form to help you stay organized during research presentations; it was suggested by a Task Force member. You certainly do not have to use it; it was simply a suggestion. I just point this out, because I'd like to discuss how this worked out at the next Task Force in October. The red binder is just an informational packet for your review.

May I make one additional comment. We are going to videotape the presentation and the questions session tonight. We will not be videotaping the general discussion session. We'll cut the tape off at that point. Four Task Force members are missing the presentation tonight, and it was suggested that they might appreciate having a videotape of the presentation to help them keep up with what has been reported. I would request that the Task Force please think about the usefulness of these videotapes, so that we may discuss it at the October meeting.

VI. Research Presentation #1 Watershed Land Use Assessment: Current & Historic

1. Introductions

John Bailey: For those of you who've been to Task Force meetings before, the format we're using for presentations is quite different than what we've used at our standard meetings. At standard meetings, audience and Task Force members typically ask questions at will. The presentation format that we have approved dictates that there will be no questions asked until the presenter is done. When the presentation is done, then there will be a question session. During the questions session only questions about the research may be asked; that is, only ask researchers about how the research was done or specific questions about the research. The format for asking questions is: the Task Force will ask questions first, and when the Task Force is done, we'll allow the public to ask questions.

One of the reasons for this added structure is that the Task Force's ultimate responsibility is to come up with recommendations. We need a presentation format that is effective, time efficient, and helps us start understanding each other and working with consensus. We certainly don't want to keep the public out, and I think if the public doesn't like how it's working, they need to tell Task Force members, and if we agree, we'll change the format.

After that question session is done, then we will go to a general discussion session. Again, it will be the Task Force speaking first, then we'll bat around recommendations. You need to understand there are two sections here. First we'll be asking questions of whoever is making the presentation. At that point, they may leave, because then it's moved into the Task Force trying to discuss our interpretation. Before we make introductions tonight, I want everyone to understand that

the Task Force adopted different rules for this process. Our first research team is coming in tonight and Duncan Patten is going to introduce them and give you the background of their study.

Duncan Patten: We have two presentations to do tonight. Do we want to do questions after both presentations are over or after each one? They are quite different presentations.

John Bailey: Liz and I had a discussion about this. We will hold questions until the end of both presentations. The reason we thought we should do it this way is that if we ask questions after each presentation it may take too long and the second presentation may be cut off due to time constraints. We may be wrong, but for now, let's try it our way.

Duncan Patten: Tonight we're looking at land use assessment and part of the watershed. There are two different presentations, current land use by the NRCS and historic land use by MSU.

I'd like to give a little history on this topic, because if you go back (those of you who have been sitting in this room for three and a half years) you realize that much of the original interest for this project was right with the channel, the immediate area right along the river. As we progressed, we began to realize that some of the things that are going on in the watershed—beyond the immediate channel—are also important. For those of you who might remember, I nearly got thrown out of this room once about three years ago, when I proposed that we really ought to look at the historic use of the uplands, and everybody thought that was the worst thing they had ever heard; and now we're doing it. It's great because it does tell us something about the whole system.

So, today we have two presentations. Many of you saw a preview of the first one in the fall of last year. This is the land use study that Tom Pick and his NRCS colleagues have put together looking at the overall watershed of the Yellowstone. I won't steal too much of his thunder, but at one point we hoped we could make a comparison between now and approximately 15 years ago in terms of land use, using satellite imagery, but it just didn't work out. So the compromise of that was to look at the present day land use using satellite imagery. We then asked Dr. Hansen's team to look at the historic aspect of land use and to build on the work that the NRCS produced.

This is one of many Task Force studies, one where we are looking at mountain edge to mountain edge. This is the big picture view of the area. It is providing the base (a more detailed picture) and eventually we will begin to put on that map and those diagrams the activities that are going on within the stream and the riparian areas, in addition to the birds, wildlife, fish, and all the other aspects. The socio-economic study is a third dimension to this whole picture because it influences everything.

So with no further adieu, the first presentation deals with the water picture, basically the watershed of the Upper Yellowstone River. After Tom Pick and NRCS finish, Dr. Andy Hansen and his graduate student Monica Brelsford will go over their historic land use study.

2. Research Presentations

Current Watershed Land Use Presentation

Presenter: Tom Pick, Water Quality Specialist, and Tom Potter, GIS Specialist, Natural Resources and Conservation Service

Note: This session was videotaped.

Outline:

Slide 1: Report: *Upper Yellowstone Watershed Land Cover/Use Assessment* due September 2002

Slide 2: Land Cover Significance

Hydrology, Water Quality, Habitat, Social, Economic

UNDERSTANDING

Slide 3: Hydro Significance

Land Cover, Soil, Topography, Climate

Slide 4: Role of Land Cover change in Altering Hydrologic Response

Slide 5: Soil

Infiltration, H₂O Storage, Cohesiveness, Chemistry, Productivity

Slide 6: Topography

Slope, Slope Length, Aspect

Slide 7: Study Objectives

1. Depict area and amount of present land cover/use
 2. Depict area and amount of past land cover/use
 3. Determine change over time
 4. Interpret and provide comments as appropriate
 5. Incorporate into Cumulative Effects Study
- Slide 8: Methods: 1999 versus 1985 satellite imagery
- Slide 9: Change Model
Scale, Imagery, Clouds, Technique
- Slide 10: Study Results
1999 Land Cover Report (done)
1999 Land Cover Analysis +
Interpretation (indicators of watershed integrity)
Hydrology, Water Quality, Upland Wildlife Habitat
- Slide 11: Produced 1999 Land Cover Map
- Slide 12: 15 Cover Classes
- Slide 13: Land Cover Assessment
Accuracy 72.2%
Watershed = 2.474 million acres
55% of watershed in Wyoming
49% of watershed in Yellowstone National Park
- Slide 14: Percent of land cover by Subbasin (Yellowstone Headwaters v. Upper Yellowstone)
- Slide 15: Hydrology Analyses
Runoff, Elevation, Precipitation, Aspect
- Slide 16: RUNOFF
- | | | |
|----------------|-----------------|------------------------------------|
| High Elevation | 40 to 60 inches | 45-50% Runoff (18 inches +) |
| Mid Elevations | 20 to 40 inches | |
| | Grass | 40 to 80% Runoff (10 to 12 inches) |
| | Forested | 20 to 45% Runoff (12 to 18 inches) |
| Low Elevations | <20 inches | 10 to 25 % Runoff (9 inches) |
- Slide 17: Watershed Elevation Zones
- | | |
|-----|-------------------|
| 14% | Under 6000 feet |
| 37% | 6000 to 8000 feet |
| 49% | Over 8000 feet |
- Slide 18: RUNOFF
Corwin Springs to Livingston
Gain of 928 square miles (+35% in area)
Average gain in base flow = 15%
- Slide 19: Hydrology/Water Quality Analysis
Erosion Potential
Models-Limitations (snow melt, forested)
- 20: Hydrology/Water Quality Analysis
Sediment Potential Index: Land Cover (precip - % bare ground weighted by precip zone) x slope group
- Slide 21: Potential Erosion Rating; ratings: low, medium, high
- Slide 22: Water Quality Analysis
Land Cover, Population, Soil, Proximity
- Slide 23: Hydrology / Water Quality Analysis
Septic Limitations / Channel Proximity (¼ mile buffer)
Channel / Hydric Soil / Flood Frequency Proximity (¼ mile)
Land Cover (urban) / Channel Proximity (2%)
Land Cover / Physical Features Proximity
Land Cover (riparian classes) / Channel Adjacency (length) (66%)
- Slide 24: Upland Wildlife Habitat
Ecological Site / Soil Depiction & Change
Land Cover / Elk Winter Range overlay
Land Cover / Sage Grouse Overlay
Population / Winter Range Overlay
Population / Channel Proximity (¼ mile buffer)
- Slide 25: Elk Winter Range Map
- Slide 26: Upper Yellowstone River Watershed Population Density, Census 2000

Slide 27: Products: Report & GIS Project Files

Slide 28: Maps, Tables, and Charts

Soil Attributes, Slope Groups, Important Farmland, Hydric Soil, Flood Frequency, Slope Groups, Etc.

Historic Watershed Land Use Presentation

Presenters: Dr. Andrew Hansen and Monica Brelsford, Department of Land Resources and Environmental Sciences, Montana State University

Note: This presentation was videotaped.

The team also explained that they have only recently gotten started on this project, and would show incomplete/preliminary project data as examples of their overall effort. Their final product is scheduled for completion in February 2003.

Outline:

Slide 1: Historic Watershed Land Use Assessment

Slide 2: Project funding provided by EPA, Future Research in Socio-Economics

Slide 3: Goals

To map historical land use from 1948 to 1998

To map historical house locations from 1948 to 1998

Slide 4: First Set of Objectives

To map land use for three historical years (1948/49, 1976, 1998)

To characterize historical land use change by identifying areas where change has occurred, what change has occurred, and how that change is related to geographical features

Slide 5: Located 4 sample areas where the most overlap occurred between all Task Force research groups

2 braided reaches, 1 constrained reach, 1 Incised reach

Slide 6: Pine/Suce Creek Sample Area

Slide 7: Mission Creek Sample Area

Slide 8: Mission Creek Land Use 1998

Slide 9: 1998 Pine/Suce Creek Sample Area

Slide 10: 1998 Emigrant Sample Area

Slide 11: 1998 Corwin Springs Sample Area

Slide 12: Mission Creek Land Use 1948

Slide 13: Mission Creek and Pine Creek Land Use Change: 1948 v. 1998

Slide 14: Land Use Summary (preliminary data)

We were able to compare 1948 with 1998 for a portion of 2 of the 4 sample areas.

Dry grassland is in decline, while juniper/pine is increasing.

Riparian pasture land is declining, while irrigated lands are increasing, which includes irrigated hay, crop and pasture.

Slide 15: Second Set of Objectives

To map historical house locations from 1948 to 1998

To characterize house locations in relation to land use type

Slide 16: 1948/49 Mission Creek Sample Area—12 residential sites located within the subsample area

Slide 17: 1998 Mission Creek Sample Area—54 residential sites located within the subsample area

Slide 18: Summary of Number of Homes in Mission Creek Sample Area

Of the 12 homes in 1948/49, 10 are still residences in 1998

2 of the 12 homes are gone, and the freeway is in the location

There are 44 additional homes present in 1998

Slide 19: Locations of Houses in 1948 and in 1998 for Mission Creek Area: Land use type v. Number of houses

Slide 20: Summary of Home Locations for Mission Creek Area

In 1948/49 the 12 homes were located as follows: 42% riparian tree, 58% dry grassland

In 1998 the 54 homes were located as follows: 24% riparian tree, 41% dry grassland, 28% juniper/pine, 7% riparian pasture

Slide 21: Preliminary Project Summary

We have briefly looked at 14 square miles, the final project will make comparisons for 175 square miles

Within our subsample

Grassland, and riparian pasture land use types are decreasing, while juniper/pine and irrigated lands are increasing

In a subsample of the Mission Creek Area, number of homes have increased 450% in last 50 years.
69% of the home locations are in dry grasslands and juniper/pine land use types
31% of the home locations are in riparian land use types

Slide 22: Project Goals

- Characterize what land use change is occurring
 - Characterize where land use change is occurring
 - Identify relationships between land use change and geographic features
 - Identify home locations in relationship to land use types and geographic features
-

3. Questions Session

This session was recorded on videotape.

4. General Discussion Session

Liz Galli-Noble recorded comments, issues, ideas, and recommendations as they came up during this discussion.

Jerry O'Hair: I guess I have a concern in looking at what Tom Pick presented. We're looking at 50 percent of an area landmass is in Yellowstone Park. That's the largest area, and that's the area we're not studying. The point I'm trying to make is that on the Yellowstone there's a lot of information that we're not studying. My concern is that we're trying to manage something or look at something that we have no control over.

John Bailey: If 49 percent of the runoff is from over 8,000 feet, it's out of our hands.

Jerry O'Hair: As a person living here and in the valley, we can't manage it, but we have to deal with it.

Andy Dana: My response was the same as Jerry's. If the river is driven by the upper watershed, it seems like anything we do in the lower watershed is going to have a pretty marginal effect from a land use perspective.

Tom Pick: All I would say in response to that is in terms of the runoff (peak volume and duration of the flow), it is driven by what is up there. Of course, there are other things that relate to this area in terms of how the river responds to the flows. Basically, you're the funnel of what comes out.

Rod Siring: Do the figures change between the Upper Yellowstone and Yellowstone Lake as to what's down here in the lower? Seems to me that Yellowstone Lake would have a lot of influence as to what we see down here. So the figure you gave us, we couldn't use as dead certain to the amount of water we'll see. Is that right or not?

Laurence Siroky: Well what I heard is that 85 percent of the runoff comes from 65 percent of the basin. What can you do to affect the runoff? If you're going to change the cover on the lower basin, that's not going to have much effect on the runoff. If you're going to affect runoff, you're going to have to affect it on that upper part of the basin. That means modifying the temperature, topography, and vegetation.

Tom Pick: It's not just elevation, it's also aspect.

John Bailey: There are a lot of heavy metals in the runoff. Are we going to get soils data from the Park?

Tom Pick: Yes, we have soil data from the Park.

John Bailey: Maybe we have to be concerned about erosion issues that might affect water quality. We understand that that's where the water is coming from. There are a lot of heavy metals that run down the river all the time. I know that Silvergate carries metals that will affect the river.

Tom Pick: I would be surprised if they say how much arsenic is in it.

John Bailey: Maybe we should recommend in the end that one of the threats to the Yellowstone would be water quality coming from heavy metals.

Brant Oswald: It seems like the figures we're talking about are volume, duration, and peak, in respect to runoff. To demonize the upper watershed doesn't seem right. It seems like what we're saying is that most of the water comes from the top of the drainage. I think the point that really needs to be made is how do we deal with what comes downstream.

Tom Pick: The channel represents the history of the runoff, the hydrograph. The way water comes out of there perpetuates groundwater flow and return flow.

Robert Ray: I guess I'd like to make an observation. I heard it mentioned that we can't really manage it; we just have to deal with it. Managing it is dealing with it. How are we going to deal with that situation? That's what I think we're trying to ascertain sitting around this table. We have a certain situation that we find ourselves in, how are we going to deal with it, how are we going to manage?

Duncan Patten: I'm just going to give a quick lecture. I'm drawing a little picture here; I have everything above Gardiner and Corwin Springs in what I call the "Yellowstone National Park black box". Basically what comes out of YNP is something we have to deal with to some degree. We don't have any control over it. There are also the stressors. There are external stressors, things that are out of our control like the fires, and there are internal stressors, all the things we and nature are doing from Gardiner to Springdale. Those are the things we may need to manage, those are the things we need to make recommendations about.

John Bailey: I believe that if this Task Force wants to make a recommendation about Yellowstone Park, we can.

Duncan Patten: I think in terms of Gardiner downstream yes; Gardiner upstream is a black box.

John Bailey: This YNP subject has been present all the way along, especially when we were discussing wildlife and other issues.

Andy Dana: I guess, thinking about this more, and listening to what Laurence said, I think what's becoming clear is that we do have to deal with what the upper river gives us. What Tom Pick's figures suggest is that the land uses near the river have to take that into account. And as we go through listening to the other researchers I think that's important to remember. What we do around the river needs to recognize that we're dealing with that "end of the funnel" scenario. I don't have a recommendation concerning this, I'm just making a statement.

Bill Moser: I want to respond to what was presented tonight on a planetary scale is you build a dam.

John Bailey: We're not building a dam. Other discussion?

Laurence Siroky: I was born and raised in Montana, and I have observed that as subdivisions come in, the cropping doesn't occur, the irrigation doesn't occur, but also the grazing doesn't occur and that causes encroachments of pine trees. So that has an effect on runoff and infiltration. So whether it's green or not green, that's too simplified. A lot of this area had cattle on it in the 1880s. It seems like that knowledge was missing on the cropping identification part of the watershed land use study.

John Bailey: I want to ask you a question, Laurence. Are you saying that as we build houses, we now don't irrigate? It seems to be that everybody who owns a house has a huge green yard where usually, it was dry before. It seems to me we're irrigating more and if we aren't grazing it, are we better for runoff or worse? You're saying that because we're subdividing it's getting worse. But I'm not sure more vegetation isn't better for runoff. I just want to be clear on what you're saying.

Laurence Siroky: What I said is that some land is no longer grazed. That has an impact on the land and it's susceptibility for fire.

John Bailey: But what about sediment?

Laurence Siroky: It's probably better for sediment until you get a fire. Then you get more sediment.

Ellen Woodbury: It's my experience that typically when a twenty-acre parcel is built on, it gets grazed.

Laurence Siroky: The fact that it's grazed or not grazed means it's cropped or not cropped.

Ellen Woodbury: Another issue is that when some of these ranches are sold, a lot of the grazing doesn't take place because the cows are gone.

Laurence Siroky: I think long-term grazing has beneficial effects. It balances the sediment.

Liz Galli-Noble: Laurence, my I get a little clarification? Is what you were trying to say is that it is unfortunate that the watershed land use studies were unable to show that particular land conversion or its possible effect with the data they've already collected?

Laurence Siroky: Yes.

John Bailey: I want to ask the audience, is there anything that surprised you in these presentations?

Bill Moser: I was surprised that the elevation that was in the Mill Creek area, the effect that had on the drainage.

Ed Harvey: I don't know if I was surprised, but I thought it was interesting that in the lower elevations, ground cover is not a controlling influence regarding runoff.

Ken Britton: I think that's an important point to note because it implies there may be other ways to deal with water quality.

Ed Harvey: I was surprised at how small the change was over 50 years time. I was amazed that in 50 years, there were only 44 houses built in one sample area and almost no change in any of the land use perimeters.

Bill Moser: I was surprised by the physical volume of water in the river we're looking at didn't change over 50 years.

John Bailey: We haven't seen that study yet. When you see some of the geomorphology data, you're going to be quite surprised at the change. Any other discussion?

Ken Britton: John, I thought you brought up a possible recommendation that didn't get written up there and that was to recommend treating the heavy metal sources.

John Bailey: We can't do anything about the amount of water, so maybe we should stress worrying about the quality of that water. We certainly heard that last night at the Socio-Economic public meeting. We certainly could recommend that someone in the future should pay attention to whether the water quality is changing, and not much has been done. Yellowstone Park is full of heavy metals and their coming down, but if we have an earthquake it can radically change. I don't know if there's much monitoring going on to detect that.

Ken Britton: We're outside the Park when we get to Silvergate.

John Bailey: I don't think we have any studies looking at that; maybe we have to get some information about that and make some recommendations.

Duncan Patten: There is a USGS NAWQA study on the Yellowstone; this is a series of water quality studies that have been going on recently.

John Bailey: Are the tailings at Silvergate a concern of ours, and do we want some information to make recommendations?

Duncan Patten: If you're concerned about heavy metal, then you might want to look at that.

Jerry O'Hair: Is the heavy metals thing in the scope of the study?

John Bailey: If we want to put it in, why not? People think the quality of the river is extremely important, wasn't it number one or two in importance at last night's public meeting?

Ed Harvey: It was right up there.

John Bailey: Maybe we should at least get some information about what's up there, because it is a threat to the system.

Robert Ray: DEQ is doing a TMDL for the Cooke City area; we can provide information.

Jerry O'Hair: I'm going to jump off the deep end. I have some concerns about the "let it burn" policy in Yellowstone Park. I don't think I'm too off base because President Bush a couple weeks ago criticized the management of Yellowstone. In spite of what people say—that the forest fires of 1988 didn't have any effect on the runoff—I'm having a hard time correlating it. I'm having a problem with the management of the Park, and I think it can be changed.

John Bailey: Are you making a recommendation?

Jerry O'Hair: No, I'm just throwing it out as an idea. I'm hesitant to tell someone how to manage their property and their lands because then someone's going to tell me how to operate mine.

John Bailey: We've been talking about this since we started. I think it should be up there since it comes up almost every meeting that we have.

Jim Barrett: With regard to the tailings, the Corps of Engineers didn't authorize money to clean that up. There would be nothing better than to have the Task Force weigh in on that situation. If somehow there's activity from the Task Force that could stimulate the DEQ, that would be good.

Flags went up for me when I heard a couple things tonight on preliminary studies that people are already questioning the accuracy and the validity, so it's just a warning. As Duncan always says, science only reduces our level of uncertainty. At some point there has to be some general acceptance by this group that you're never going to get 100 percent accuracy. I anticipate that a group of citizens are going to be challenging this information. If it's not dealt with it will be a boondoggle. This is just an observation.

Andy Dana: My comment on that is we have to make the recommendations based on how we evaluate the utility of the science, and that's the best we can do.

Laurence Siroky: I think it's good to talk about the limitations of the study, where the possible errors are and where they're not. Whether the errors have a substantial effect on the recommendations.

John Bailey: I see results, and I never quite know how they came about. At least there's discussion so people know the limitations of the study so hopefully people aren't suspicious of what the data may or may not be.

Bill Moser: There ought to be some way to relate productivity in 1950 to productivity in 2000. You're getting so much more out of a piece of ground.

John Bailey: The study is not looking at productivity; there's no way to look at that. I understand your point. We're looking at a fairly macro viewpoint. Is the Task Force ready to close this out?

VII **Schedule Next Task Force Meetings**

October 7, 2002, Monday—Regular Task Force meeting

Location: Yellowstone Inn

November 5, 2002, Tuesday—Presentation #2. *Socio-Economic Assessment*

Location: **TO BE ANNOUNCED**

November 19, 2002, Tuesday—Presentation #3. *Hydrology/Hydraulics Study*

Location: City/County Courthouse, Community Room (basement)

December 12, 2002, Thursday—Presentation #4. *Geomorphology Study*

Location: Yellowstone Inn

VIII **The meeting was adjourned at 9:30 pm.**