

**GROUNDWATER QUALITY PROTECTION POLICIES
FOR THE ROCKY MOUNTAIN REGION
AND THE NATION**

Transcript of Conference Cosponsored by

**Environmental and Energy Study Institute
Colorado Water Resources Research Institute
Keystone Institute
Colorado Department of Health**

April 1986

COLORADO WATER RESOURCES



RESEARCH INSTITUTE

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**The Environmental and Energy Study Institute
Colorado Water Resources Research Institute
The Keystone Institute
The Colorado Department of Health**

April 1986

**Colorado Water Resources Research Institute
Colorado State University
Fort Collins, Colorado 80523
Norman A. Evans, Director**

FOREWORD

This is a transcript of the **Conference on Groundwater Quality Protection Policies for the Rocky Mountain Region and the Nation** held in Denver Colorado on January 18, 1986. The conference, and five others like it in other regions of the country, were held to provide input for a groundwater protection agenda for the U.S. Congress as it begins debate on new groundwater quality protection initiatives.

The conference featured roundtable discussions among officials from the sponsoring organizations, local and state officials, environmentalists, corporate representatives, farm groups and others on groundwater protection needs and current programs in the region. Also considered were federal policy options, legislation and mechanisms to implement groundwater policies through what are necessarily local and individual decisions.

The conference covered a variety of groundwater contamination issues, but it specifically highlighted the implications of agricultural and mining activities on groundwater quality.

The conference drew approximately 150 participants from the Rocky Mountain region. Cosponsors of the conference were the Environmental and Energy Study Institute (Washington, D.C.), the Colorado Water Resources Research Institute, the Keystone Institute and the Colorado Department of Health.

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CONFERENCE PROCEEDINGS

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GROUND WATER QUALITY PROTECTION)
POLICIES FOR THE ROCKY MOUNTAIN)
REGION AND THE NATION)
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Saturday, January 18, 1986
9:00 A.M. to 3:30 P.M.
Paladium Room
Regency Hotel
3900 Elati Street
Denver, Colorado

APPEARANCES:

- KEN MURPHY, Environmental and Energy Study
Institute
- CONGRESS WOMAN PAT SCHRO EDER
- JOHN EHRMANN
- JUDY CAMPBELL BIRD
- DR. NORM EVANS
- DR. HENRY CAULFIELD
- GARY BROETZMAN
- TAD FOSTER
- CHRIS SHUEY

1 APPEARANCES continued:

2 WILLIAM RALEY

3 DON GOOLSBY

4 RICK AUSTERMANN

5 MAX DOTSON

6 CRAIG BELL

7 GERALD DAHL

8 PAUL FROHARDT

9 RAY CHRISTIANSON

10 DAN LUECKE

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P R O C E E D I N G S

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4 MR. KEN MURPHY: Good Morning. My name is
5 Ken Murphy and I am the Executive Director of the
6 Environmental and Energy Study Institute, one of the
7 sponsoring organizations today, and I have the pleasure this
8 morning of introducing Congresswoman Pat Schroeder to give
9 the opening remarks.

10 We appreciate you taking your time on a Saturday to
11 to come and we hope to listen and learn and hope to bring
12 the benefit of your ideas and advice and experience back to
13 Washington, D. C, and in the hopes of informing the ground
14 water debate.

15 One of our other hosts who had planned to be here,
16 Congressman Mike Strang, unfortunately could not at the last
17 minute, and he sent a letter for me to read, and it reads:

18 "Dear Conference: I am truly sorry I am not going
19 to be able to join you today, but I had a death in the
20 family and I am attending the funeral out of state. I
21 particularly regret not being present today, because the
22 subject matter, from 1964 to 1971, I was on the Colorado
23 Commission on Ground Water and in 1970, served as the
24 Commission Chairman. I am very familiar then with the area
25 and the issue and look forward to hearing your findings. With

1 the fine set of hosts and co-sponsors with you as
2 participants, I know you will have an excellent meeting.
3 With best wishes, Mike Strang, Congressman.

4 Congresswoman Schroeder represents the First
5 Congressional District of the State of Colorado. She is
6 the dean of the Colorado delegation and senior woman member
7 of Congress, and doesn't have much gray hair yet.

8 She serves on the Judicial committee and the Armed
9 Services Committee, and is on the Post Office and Civil
10 Service Committees, and Chairs its Civil Service Subcommittee,
11 and also is on the Select committee on Children and
12 Family and Youth. She is also a member in good standing
13 of the forerunner of the Environmental and Energy Institute.

14 Without further ado, Congresswoman Schroeder.

15 CONGRESSWOMAN PAT SCHROEDER: Thank you all
16 very very much. I come here to bring greetings from the
17 many members of Congress that are backing these bills.

18 As you know, this is the sixth in a series. My
19 understanding is, it is the last, and you will then
20 start trying to compile the data and the things that you
21 learn from this. I think this is a very very important
22 process. We all know that we have learned an awful lot
23 about ground water.

24 In the Fifties in the Denver region, we had some
25 farmers who lived north of Denver, who started to notice

1 strange things happening to their crops and animals and
2 to their own health. They begin to suspect something
3 had happened to the ground water, and then they began
4 to suspect that something had come from the Rocky
5 Mountain Arsenal, where they were making nerve gas. Well,
6 at that time, there was a different kind of relationship.
7 The Army said absolutely not, we wouldn't do anything like
8 that, and spent their time stonewalling and trying to
9 prove, of course, they didn't do any such things.

10 After very very aggressive proof had been brought
11 forth by different state health agencies, we learned
12 indeed that it had happened, that the groundwater had been
13 contaminated by some of the actions of the Arsenal and by
14 the pesticide plant nearby.

15 So, consequently, as we learned more and more about
16 aquifers, about all the different things that happened,
17 we have seen that the ground water quality issue has
18 gotten bigger and bigger.

19 We in the Rocky Mountain area obviously have a lot of
20 things that are peculiar to our area. The different kinds
21 of aquifers, the present mining tailings that are around
22 in different areas, The agricultural pesticide problem,
23 wetland preservation and what is going on there, and,
24 of course, just recently in Denver, we have had the problem
25 of finding industrial pollution very close to Denver's own

1 water table and water supply, and that obviously made us all
2 terribly nervous.

3 As you know, in Congress the congressional agenda
4 has not been moving very fast in this area. There has been
5 a lot of concern, but we have not been able to move into
6 really doing anything. There are some amendments in the
7 new Safe Drinking Water Act and Clean Water Act extensions
8 that would affect a little bit of ground water, but those
9 are all languishing in a Congressional conference committee
10 and we don't know if they will ever see the light of day,
11 and basically, there has not been a lot of new ground
12 broken in this area.

13 It is going to be difficult to do much of anything
14 at the federal level in the next few years because of
15 the Gramm Rudman debate, and the fact that the last thing
16 we need are probably new problems. Everybody is trying to
17 figure out which program we already have that should be
18 thrown out or pared down or what our new priorities should
19 be, so anything that we look at, they are looking more
20 and more at how you find a new mechanism for raising the
21 money to achieve it.

22 I think everybody understands something will have to
23 be done about ground water quality and then the question is
24 going to be how are we going to pay for it, because dipping
25 into general revenues isn't going to work anymore. There are

1 no general revenues left to dip into, as we know--there is
2 only general debt to dip into.

3 So the whole new debate has been the polluter pays,
4 and nobody is quite sure how the Congress is going to go,
5 but you being here and you having input is very very
6 helpful to us, because it is at a time when people are not
7 set in cement, when there still is all sorts of openness
8 to a lot of different suggestions, and you can help craft
9 the way it goes. These kinds of conferences are so terribly
10 important, because you can go two ways with these things.
11 You can either have local experts in government and local
12 people in business getting together and agreeing on what
13 might work, or if you don't have that happen, which is
14 what you are trying to do today, if you don't have that
15 happen, then you end up seeing what we have seen happen
16 before we in Washington decide what will work and come back
17 and tell you what it is and what you will do and you are
18 now forced to do this, and very often we don't know what
19 will work and we make mistakes and so forth and so on.

20 So this is terribly critical, because you are coming
21 out at this time, and it is critical problem to the future,
22 and obviously has always been a problem for the west where
23 water is so very precious. We can't lose any of it.

24 So how do we address this problem so that we get
25 progress on it rather than just spin our wheels, and have

1 people really delaying and stalling and spending all our
2 energy in the wrong way. We want to direct the energy
3 to dealing with ground water quality and not all the other
4 things.

5 So thank you for coming and thank you for being
6 here to brain storm. I won't be able to spend the whole
7 day, because there are a thousand things going on in the
8 city today, but I have people here from my office taking
9 notes, and we will be constantly in touch to find out what
10 comes out of this meeting and the six others or five others
11 so that we will know. Obviously in the next couple of
12 years, Congress will be trying to put together some
13 comprehensive legislation in this area, and it is very
14 important that we all stay in touch. So thank you very
15 much for doing this and I want to thank all of you for
16 being here.

17 MR. MURPHY: I wanted to say a couple of other
18 things about the sponsors of this conference. It is being
19 co-sponsored by our Institute, the Colorado Water Resources
20 Research Institute, the Keystone Center and the Colorado
21 Department of Health.

22 The Environmental and Energy Study Institute is a
23 non-partisan public policy organization based in
24 Washington, D. C. It was joined a year ago by a number
25 of members of Congress. The Institute's goals are to meet

1 critical needs for better informed, thoughtful debate for
2 renewed bipartisan consensus on these issues, and
3 innovative solutions. The Colorado Resources Research
4 Institute is Colorado's designated management center for
5 all all types of water research; their activities are
6 directed towards solving and mitigating urgent and critical
7 water related problems in Colorado.

8 The Keystone Center is an independent, non-profit
9 organization, whose goals are to facilitate and formulate
10 national policy and decisions in environmental and national
11 resources issues through negotiations and to expand the
12 understanding of environment and our natural resources
13 through education.

14 The Department of Health of Colorado is the state
15 agency with chief responsibility for ground water protection
16 as well as other environmental health issues. As
17 Congresswoman Schroeder noted, this is the last of a series
18 of six regional ground water conferences. Others have been
19 held in Ohio, Florida, Kansas City last week, Tennessee
20 and California. These conferences are designed to get
21 input from people in the real world out here, and your
22 advice as experts in development of national recommendations
23 for action.

24 The conference is generating important innovative
25 projection of ideas and increasing public awareness.

1 Following these conferences we are going to have a
2 policy development workshop in Washington, where we are
3 going to try to glean the best of what we learned from these
4 six conferences, to test out promising ideas and come up
5 with our best judgment about what we can do with this
6 important resource.

7 We are here today to discuss current activities to
8 prevent ground water contamination in the Rocky Mountain
9 West, particularly focusing on agriculture and mining
10 problems as well as discuss the goals and strategies.

11 The panelists we have here today are very distinguished.
12 We will give short five minute presentations on their
13 perspective, and then have informal round table discussions
14 with representatives from the sponsoring organizations and
15 the panel, and finally, we are going to open it up to
16 questions from you people.

17 I would like to introduce the representatives of
18 the sponsoring organizations. I will start with Dr. Norman
19 Evans, who is Director of the Colorado Research Institute.
20 Sitting to his left is Judy Campbell Bird, who is the
21 Ground Water Program Director at the Environmental and
22 Energy Study Institute, and sitting to her left is John
23 Ehrmann, who is the Director of Science and Public Policy
24 at Keystone Center. John will be the moderator of this
25 morning's session.

1 MR. JOHN EHRMANN: We would like to get
2 started with the morning session and we are very pleased
3 as our opening speaker for this session to have Alexandra
4 Smith, who is deputy Administrator to this region of EPA,
5 Region VIII. I have had the please of working with
6 Alexandra on a couple of Keystone efforts. She always
7 brings good spirit right to the process as well as good ideas.
8 Alexandra has a undergraduate degree in government and MBA
9 from Washington University and previously was director
10 of Air and Waste Division of Region 10 out to the northwest
11 of us here.

12 MS. ALEXANDRA SMITH: Good morning. I thought
13 from all the cars going up the hill as I drove down
14 from Evergreen this morning everyone was meeting in Keystone
15 this morning, John, but I am glad to see so many people are
16 here.

17 With growing public concern on what is going on in
18 ground water and drinking water, it is very timely topic.
19 I wasn't completely aware this was the end of a series
20 of six sessions, and I would have been interested in
21 reviewing some of the previous comments, but I am sure this
22 region has a great deal of expertise and opinion input and
23 concern as well from what is going on.

24 My perceptions this morning-- I am not a hydrologist
25 and I don't have elaborate expertise in ground water, but

1 I thought it might be useful if I gave you some sort of
2 history on what I have perceived over the past 10 or 11 years
3 that I have worked for the EPA, some thoughts on what is
4 involved with hazardous waste and Super Fund programs, and
5 a similarity that you find in what we have discovered in
6 agricultural contamination and also mining waste.

7 A little bit on the degree of public concern that
8 I have seen generated and we continue to assess what the
9 problems are and the risks, and how this awareness has
10 driven EPA programs on this.

11 There are a number of EPA staff here as well this
12 morning, and you come from various, either academic,
13 industry or local state agencies with expertise, but I
14 just thought it might be useful if I gave you as part of
15 the overview what I see happening within EPA.

16 As part of this, I wanted to remind you a little bit
17 of what EPA does. When I started out with EPA, it was
18 primarily a water quality agency, and also an air quality
19 and water quality agency. We were concentrating on
20 a lot of water quality permits, NPDES permits, construction
21 grant programs, and I had no idea that the main mission at
22 that time was pouring concrete and building sewage
23 treatment plants. Somehow, I thought it was more blue sky
24 and green trees, but soon learned that our main
25 appropriation was in construction grant programs.

1 Another element that we learned a great deal about
2 from our scientists was on monitoring stream segments,
3 how were we doing on cleaning up different parts of the
4 country, how was the Willamette River, and what was going
5 on in Niagara Falls. I am sure many of you followed that
6 as well.

7 We also thought more of the risk associated with these
8 in terms of fishable and swimmable, and EPA has gradually
9 evolved from that, having a philosophy oriented towards
10 more of a public health concern as well, and I think the
11 public now has developed expectations of the Agency in all
12 the EPA areas of moving from the fishable and swimmable
13 kind of philosophy into more of the public health concern.
14 I have learned a lot more personally about what goes into
15 ground water and pay attention to what Jefferson County
16 Health Department people tell me that nitrite levels are,
17 and so I think that we are all having an increasing concern
18 there.

19 An important element of what is happening with EPA
20 has been the advent of hazardous waste programs. They help
21 us address the problems, given the different regulatory
22 authority, and help us bring to the fore front a host
23 of risk evaluations, which is becoming very important in
24 this area, and also have provided the need and direction for
25

1 retaining a lot of our people in hydrology and just a
2 common thing, it is administrating the agency that we did
3 have a lot of engineers and lot of chemcial engineers
4 and biologists and whatever, but we just over the past
5 years have not had a lot of regions, a lot of hydrology
6 expertise, and this has really delayed us, and we now have
7 the ability to reshape our staff in that area.

8 But with the hazardous waste program it brought a
9 lot more public attention, as you are aware of, a lot of
10 emotional response often generated by the general lack
11 of understanding of what the risks are and how can we
12 protect our resources, and how can we turn our resources
13 to a useable resource. Because of the hazardous waste
14 program we have begun to discover what the ground water
15 concerns are as well.

16 Now, many of you have been working on ground water for
17 a number of years, but it has been my perception, and based
18 on with the air and hazardous materials Director in
19 REgion 10 for about five years, so as the program emerged,
20 and as we began to discover more of the problems associated
21 with what we are seeing in ground water, I am going to
22 define a couple of things as I talk.

23 We discovered a lot of industrial chemicals and
24 commercial products which you have read a great deal about
25 in the press, and these are the products that are

1 either disposed of or become problems through the
2 manufacturing process. By pesticides in agricultural
3 chemicals, I mean those that were really applied legally
4 and with good intentions by agricultural communities, and
5 this included pesticides and fertilizers. By mining
6 waste water, part of the topic this morning, I mean
7 the waste from mining smelters and oil shale production.
8 And once again I just wanted to state these are my
9 personal perceptions, and some of the things that have been
10 going on at the agency as being a branch chief in the
11 water division earlier in my career.

12 One thing this region does is that we are the leading
13 region nationally for the office of pesticide and toxic
14 substances, so my role has been a great deal of time with
15 the Assistant Administrator to toxic and pesticides talking
16 about what the problems are across the country. When we
17 start addressing contamination concerns, I want to give
18 you a few examples of what we found in agricultural
19 chemicals.

20 Many of you have suspected there was contamination
21 at various facilities, and I think there was an awareness
22 that somehow putting all those chemicals on the ground are
23 going to show up somewhere, but we didn't know a lot about
24 it, but we started finding through the hazardous waste
25 program traditional things that had gone on at the facility.

1 Then other things begin to crop up. It was my experience
2 with commercial land disposal facilities, and the ranchers
3 in the surrounding areas were getting increasingly concerned
4 because they were afraid that chemicals from land disposal
5 sites were migrating off the site and affecting their ground
6 water, and when we looked at where they were concerned there
7 had been some pesticides that also were in the surface
8 water and through the water and migrated over to their area.
9 So I had our staff go out and monitor wells in the
10 surrounding areas. We really wanted to make sure that we
11 did not think that there was migration off that site, but
12 wanted to make sure that was true, and unfortunately,
13 we found good news and bad news. The good news was, that
14 it hadn't migrated off those sites, and they were at low
15 levels, and we were concerned, but nevertheless they were
16 there.

17 So this growing awareness and then through the
18 cancellation process, I am sure you knew was always a
19 topic of hot concern, when the pesticide use on grains
20 and fruits was going through a reregistration and
21 cancellation process, and what happened was, with
22 that action, some of the people in this one area realized
23 that, gee, before they bought a hole, they had their wells
24 tested for EDB. This also brought attention, and we
25 designed a survey to try to locate what was going on there.

1 It was through the various direct programs that we were
2 looking at, and from the ground water concerns it just
3 kept popping up in a number of areas, and we discovered
4 these similar tests. Everyone began to be aware there were
5 truly problems with the ground water contamination, even
6 in places like Hawaii, as you are probably aware, that even
7 paradise was threatened, and they decided to monitor, after
8 California did some monitoring, and decided that DBC, PNB,
9 and they also found EDP and DCPB and the State of Hawaii
10 had to do a lot in the area of ground water protection.
11 Pesticides have been found in ground water in at least 23
12 states; contamination by 16 different pesticides can be
13 attributed to normal agricultural practices, and 50 differ
14 pesticides have been found in ground water from all sources.

15 Another thing that the Agency is working on that many
16 of you are aware of is nitrates. The health risks are
17 associated with blue babies, and agricultural activities
18 are the greatest source of elevated nitrate concentrations.

19 In the South Dakota aquifer study, it showed 30
20 percent of the domestic wells samples exceeded drinking
21 water standards.

22 Well, the problems with agricultural practices, I
23 hope, are going to be discussed later today.

24 I have been encouraged the past year that the Office
25 of Pesticides and toxic Substances is concerned with the

1 leachers, and these chemicals have been looked at in a
2 bigger effort in trying to identify the pesticides which
3 are likely to leach and move through the soil quick and
4 don't biodegrade quickly enough, and hopefully putting
5 additional controls on those which are found to be
6 presenting a significant risk as well as relooking at
7 some of them through this process.

8 In late '84 OPTS also issued an order requiring
9 manufacturers to provide information on whether their
10 products were leachers on an accelerated basis in order to
11 have a completed data base. They started new ground water
12 teams in the Office of Pesticides and Toxic Substances to
13 evaluate impacts of these products, and they are looking at
14 reregistration of a number of chemicals and asking for that
15 data. They are starting a national pesticide ground water
16 survey, and I believe North Dakota has already done their
17 survey. I am not sure of their results, but I know the
18 states are getting underway in this area. The ground water
19 survey for pesticides in the ground water program is
20 designing and exploring surveys to provide a national
21 picture of the extent of the pesticide problem. We
22 still aren't sure to what extent and what areas this is
23 really concentrated in.

24 Once we find out regions are worried what is happening,
25 that we found various pesticides in aquifers and ground

1 water, what do you tell people. So we are looking at what
2 is there and have been assigned work to develop better
3 prevention techniques as well along with this, the public
4 water supply program, drinking water program at the
5 national level has been brought along.

6 As you all remember they monitored fecal coliform,
7 turbidity, and now with the hazardous waste program and the
8 pesticide program we are working on intermediate efforts.
9 In pesticides alone they are going to accelerate the
10 program. We found it --What does it mean-- How much can
11 we tolerate-- and they are doing these RMCLs -- Such things
12 as chlordane, DCP, REDB, 24D and a lot of contaminants---

13 11 of us that have been active in the pesticide area, and
14 many of the proposals are to have zero or no levels. It will
15 be interesting to see what comes from the comment period on
16 those things.

17 Part of this overview is to include mining waste as
18 well, and mining waste in this region has been a source
19 of great attention at the regional level and they are
20 working with headquarters as well.

21 Mining wastes and ground water, from our people in the
22 office in speaking with them, they also evolve like
23 pesticides with us gaining greater knowledge through it.
24 We have been dealing with surveys on water and air in mining
25 problem areas.

1 Actually with Super Fund we have been able to look
2 at more of the concerns, and generally the Agency concerns
3 have been with older operations in the mining areas. New
4 operations can often be designed and operated to preclude
5 the suspected and known problems in the older or abandoned
6 facilities that we find.

7 Now, mining waste problems with ground water contami-
8 nation depend on a few things, the type of mining wastes,
9 the hydrological setting, the management of the waste, and
10 the waters associated with the mining that may or
11 may not contribute to a known or potential ground water
12 problem. Each mining site has a specific set of conditions
13 that require independent evaluation to qualify and to
14 quantify the ground water contamination potential. Our
15 knowledge base is rapidly expanding in this area through
16 what goes on in Super Fund. Currently, there are 39 mining
17 sites across the country related -- that are related to
18 mining waste facilities, that are listed or proposed under
19 Super Fund-- the National priorities list, and 18 of those
20 facilities are in Region 8. Now, they don't all correspond
21 to ground water contamination, but that part of the scoring
22 that goes on with the model that is used to rank a site on
23 the national priority list, ground water is a primary part
24 of that component. And because of the contamination of the
25 local water supplies that are sometimes hydrologically

1 connected to some of these sites. Super Fund has paid for
2 temporary replacement of drinking water for citizens
3 where there has been a situation like up in Milton in
4 Montana, where that happened, and once again, I want to
5 tell you not all mining sites ground water aspects too.
6 The kind of pollutants we are seeing from mining
7 there are cyanide contamination, leaching arsenic, copper,
8 lead, mercury, cadmium and acid drainage problems, and
9 interestingly enough, total dissolved solids make some
10 drinking water unuseable because it didn't look good or
11 taste good. So that is also a problem.

12 The contamination at mining sites is just a real
13 general overview, and I am sure some of you are truly
14 expert in this area of release of heavy metals into the
15 hydrological lense and hence to the ground water. Sometimes
16 just surface water seepage goes immediately from the tailings
17 or processing ponds, run off from the sites or direct
18 discharge of acid mine drainage to the surface or subsurface
19 waters. In most cases, these metals have been shown to be
20 acutely toxic to live organisms. Sometimes we don't see
21 them at high doses, but because mining wastes are
22 associated with enormous amounts of wastes, so it may be
23 you have to have a higher concentration. The information
24 on long term chronic toxicity is currently limited. In some
25 cases like arsenic, they may contribute to cancer in humans.

1 Another complication is understanding the implications
2 of mining wastes from ground water to underground, the unique
3 geochemistry of a particular waste, what is called metals
4 mobilization potential or long term potential. Our mining
5 experts tell me we sometimes aren't aware what the problem
6 will be for almost a hundred years, because it changes as
7 it moves through the geochemistry.

8 Another unique aspect of mining waste which is another
9 problem is, that as we all know, the water in the mines is
10 pumped out and when the mines were abandoned, the water
11 goes back in again, and often times the ground water regime
12 reestablishes itself; that is contaminated ground water as
13 well. So what are we doing as a result of this mining.
14 We are continuing to look at the regulatory aspects of
15 CERCLA or Super Fund. We are looking at regulating mining
16 wastes. There has been a recent report to Congress that is
17 available through our regional office, if you haven't seen
18 that. It is a continuing evaluation of the problems and
19 monitoring; and another thing we are very hopeful about is
20 recently, just in the past month, between the Region 8 and
21 Headquarters in Washington, D. C. we have established a
22 national mine waste task force that will be hoping to
23 promote an understanding in both dialogue on the issues and
24 problems and getting our facts together, not only hopefully
25 with states and local agencies, but also with mining

1 companies themselves.

2 In conclusion, what are the implications of pesticides
3 and mine waste problems. First of all, I think it really
4 has been encouraging to me over the years to see the
5 difference in how many aspects are different, how EPA looks
6 at things. Those of you, and maybe some of you worked for
7 the Agency before in the past, it has been my observation
8 that many things have been very immediate; specifically the
9 water people only talked to the water people, and the air
10 people only talked to the air people, and the pesticide
11 people only talked to the pesticide people. Really in
12 ground water and through some of the things we have been
13 finding, they have developed an intermediate approach. The
14 hazardous waste people now talk to the toxic people and
15 use their expertise, and the water people program and
16 drinking water people are setting standards so they can
17 help the hazardous waste people in the ground water situation.

18 The Office of Research and Development has done a
19 great deal on risk assessment recently, and are teaching
20 all across the Agency how do you do risk assessments. If
21 you do risk assessments, how then do you manage your decision
22 in the risk area. We have been doing a much better job at
23 identifying data gaps, describing the problems, getting
24 monitoring surveys up and running. Just a tremendous amount
25 of effort has come through. There has been a great deal of

1 work done on how do you define, how do you explain to the
2 public what the risks are? What concerns do you have?
3 What does that .02 mean? And so the Agency has really come
4 a long way in that area specifically, not that we don't have
5 a ways to go, but over the past years it really has been
6 encouraging.

7 We are doing a much better job in health advisory
8 and the establishment of a ground water office in April of
9 1984. They put together this protection of ground water
10 strategies in August that year, and it has put us in a lot
11 better shape to address the problems and hopefully solve
12 some of them. The states are getting involved with us,
13 and they have been involved for a long time, but it is a
14 much more coordinated effort. There has been some funding
15 available for the states. They are participating in the
16 surveys that we are doing in the ground water and
17 agricultural chemicals area. We are just building a better
18 dialogue. Companies are doing a lot better job of addressing
19 the problem and looking at the ground water problems them-
20 selves and putting money into surveys to see what is going
21 on in there. Just even accelerating drinking water programs
22 and getting those maximum contaminant level numbers out, so
23 we can tell people and explain to them and define what the
24 problems are. This is a real indication of what has been
25 going on in ground water. The changes in regulations,

1 the pesticide regulations, looking for leachers, and having
2 that as a factor in our regulatory area has been an
3 important factor that not only do we learn to clean it up,
4 but how do you prevent things from happening in the future.
5 Ground water development under RCRA has been a big help.

6 I think this overview will give you a little bit
7 of the information, a little bit of the history of
8 the Agency and how we have been evolving with several
9 programs and the programs are getting a lot more together.
10 The pesticide and mining wastes are an important component
11 of that, along with industrial chemicals. Interest is very
12 high and you can tell that by the size of this audience.
13 So I hope this leads into what the panels are going to tell
14 you more about specifically today on more ideas for controls
15 and what our current processes are going to be. If we can
16 answer any questions, or some of the other EPA people
17 that are here, I would be delighted to do so.

18 MR. EHRMANN: Thanks, Alexandra. I think that
19 was an excellent overview and thanks to Congresswoman
20 Schroeder. Max Dotson will be on the panel this afternoon,
21 so if you have specific questions of Alexandra's comments,
22 or anything she has said wrong, you can get Max in trouble.

23 I want to say a few words about the panel and the
24 way we organized the session as a whole. Even though the
25 ground water quality issue is a broad one, we have arranged

1 the panels today to focus particularly on the agricultural
2 and mining issues related to ground water quality. That
3 doesn't mean we aren't or won't have some discussion on
4 other sub-topics under the ground water quality rubric,
5 but we have got panelists up here who are particularly skilled
6 and knowledgeable in the area of agriculture and mining
7 activities as it relates to ground water quality. Other
8 regional workshops have focused on other aspects of the
9 problem. We have asked each panelist to keep their
10 remarks to no more than five or ten minutes. I am going to
11 be fairly strict about that because we want to make sure that
12 the folks on this side of the room have a chance to ask
13 some qualifying questions and clarifying questions, and I
14 do want to provide ample opportunity for the audience,
15 those of you in the audience to ask questions and make
16 comments. We want this to be as much of an interchange
17 and discussion format as possible. So we will try, and
18 we want our panelists to impart a lot of information, but I
19 want them to do it as quickly as possible.

20 After we have the panel this morning and round
21 table discussion we will break for lunch, and then the
22 afternoon panel will commence at 11:45. In the spirit
23 of keeping things brief, I am going to make short introductory
24 remarks for each of the panelists. The first panelist is
25 Gary Broetzman who is Director of the Water Quality Control

1 Division of the Colorado Department of Health.

2 MR. GARY BROETZMAN: Thank you. We are pleased
3 to be a part of these sessions this morning. Today, I will
4 be talking from my role as Director of the Water Quality
5 Control Division. We have responsibility both for water
6 pollution and safe drinking water and also as Chairman of
7 the Water Quality Committee of the Western States Water
8 Council. It is an organization made of water interests in
9 the 14 western states of the country. I will be talking
10 in general about the processes under way in the western
11 states for dealing with ground water and problems in
12 general.

13 Groundwater is the large unseen water reserve in many
14 areas of the Rocky Mountain region and the West. It is
15 especially important to this arid region of the country
16 because of the physical and economical limits to the
17 availability of surface waters. Although considerable
18 groundwater has already been withdrawn, great volumes still
19 remain in generally good quality.

20 Today, groundwater meets the needs of 50% to 80% of
21 the public water supplies within the western states. Muni-
22 cipalities rely upon groundwater not only because of its
23 relatively dependable availability, but also because of
24 the lower cost of development and treatment. Most
25 groundwater can be made suitable for safe use with only

1 disinfection.

2 Beyond its importance for municipal purposes, irrigated
3 agriculture uses large volumes of groundwater in the West.
4 An obvious example of this is the High Plains overlying
5 the Ogallala aquifer extending from Nebraska and eastern
6 Colorado to Texas. Groundwater is also very important for
7 industrial purposes. For example, groundwater has supported
8 much of the economic development of southern Arizona and the
9 energy rich areas of Colorado, Utah, and Wyoming.

10 From a state management perspective, the western states
11 have recognized the need for managing and regulating
12 groundwater use for many years. Historically, groundwater
13 management has been directed primarily at controlling
14 depletions.

15 All western states use some type of permit system
16 to regulate depletion of groundwater. These permit systems
17 vary from state to state and depend upon the regulatory
18 approach deemed most appropriate to that state.
19 Characteristically, the approach being used in each state
20 takes into account the nature and seriousness of the
21 problem, the established legal doctrines for that state, and
22 the state capabilities and resources that have been and can
23 be dedicated to groundwater management. Colorado initiated
24 its state management system in 1957 under the State Engineer's
25 office. Other states also started at about that time.

1 Programs in New Mexico and Utah originated even earlier
2 with the New Mexico program dating back to 1927.

3 Over the past approximately 15 years or so, contamina-
4 tion of groundwater has become an increasingly serious
5 problem in a number of the Western States. This is
6 especially the case where high demands exerted on the
7 resource have preceded adequate regulatory controls to
8 identify and prevent water quality problems from occurring.
9 But a number of states have taken early action. For example,
10 Arizona and New Mexico developed regulatory measures to
11 control groundwater quality in advance of pending serious
12 problems. In most other states, Colorado and Utah among
13 them, groundwater control programs are in their infancy.

14 As with state programs for the control of groundwater
15 depletion, proposals of control programs for groundwater
16 quality have led to a variety of approaches and methods across
17 the western states. Some of the states use a broad classifi-
18 cation of aquifers; others use a more site specific approach
19 of protecting uses of groundwater in the vicinity of sources
20 of pollution. Some rely on control regulations for estab-
21 lishing limits by general rule; others have a permitting process
22 that allows for more site specific requirements. The
23 differences in approach aside, the programs of these states
24 generally have a common theme; that is, protection of the
25 uses of the resource with particular emphasis on drinking

1 water and related public health.

2 In developing their groundwater quality control programs,
3 the Western States have had to cope with two major problems;
4 program fragmentation and quality/quantity interrelationships.
5 Fragmentation of program activities has occurred in a number
6 of the states because of state efforts to control a variety
7 of independent activities that have evolved over a number of
8 years. Some of these activities relate to several fragmented
9 federal programs such as control of mine reclamation, uranium
10 and other radiological mining and milling, and oil and gas
11 development. Still others were initiated to address state
12 and local needs, such as septic tank controls and the
13 management of solid waste disposal sites. Some states have
14 resolved this fragmentation problem with formal or informal
15 interagency working arrangements aimed at achieving common
16 program goals and emphasis. Colorado is one of those in that
17 we have 14 different agencies with groundwater responsibilities
18 involving 18 different laws. Others, such as Arizona, have
19 these various functions incorporated into only a few agencies,
20 thereby avoiding some of the coordinating challenges.

21 The quality/quantity relationship in the context of
22 overall groundwater management is becoming increasingly
23 important as we experience quality degradation due to
24 increasing depletions of the groundwater. We recognize that
25 as groundwater volumes are reduced, the remaining supplies

1 tend to become more concentrated with natural and man-made
2 chemicals and contaminates. We are also seeing increased
3 attention being given to the prospect of injections of
4 treated wastewater not only for disposal purposes, but also
5 for replenishing the aquifers. It is becoming apparent that
6 if we hope to preserve and protect groundwater quality for
7 the long term and over broad geographic areas, close working
8 relations between the states' water resources and water
9 quality agencies are essential.

10 Over the past three years, the State of Colorado
11 through my agency the Water Quality Control Division, and
12 our regulatory Commission, the Water Quality Control
13 Commission, has been developing a comprehensive approach for
14 groundwater quality protection statewide. This effort was
15 initiated by a series of public meetings across the state in
16 which the public showed much interest and concern over
17 the protection of groundwater for drinking water purposes,
18 and the fragmentation of on going programs and approaches at
19 the local, state, and federal levels that protect groundwater
20 quality to varying degrees, and the number of activities
21 and facilities that are not being regulated adequately.

22 Some of the more significant problems identified are,
23 industrial wastewater facilities that are exempt from RCRA
24 requirements, such as lagoons that store industrial process
25 waters, septic systems that are inadequately designed or

1 operated, and several large facilities along the front
2 range, many of which are under Federal control, and agricultural
3 chemigation practices associated with center pivot irrigation
4 rigs whereby fertilizers and pesticides or herbicides
5 attachments to these rigs have the potential to convey these
6 chemicals directly to the groundwater.

7 WE are addressing these and other concerns through a
8 coordinated groundwater and quality program based on the
9 following three components.

10 1. An overall management goal, what are we trying
11 to accomplish.

12 2. A basic overall framework for defining the quality
13 of groundwater that must be protected consistent with the goal
14 and the methodology for defining specific performance require-
15 ments of pollution sources such that the groundwater quality
16 is protected. We call this the basic regulations similar to
17 the basic regulations that we have in place for classifying
18 and setting standards for surface water streams.

19 3. Setting minimum design standards for regulating
20 a given category of activities or facilities currently
21 unregulated. These are control regulations and are
22 comparable to the technology-based requirements set for
23 categories of dischargers to surface waters.

24 The Water Quality Control Commission adopted the overall
25 program goal in 1984. That goal is to protect uses of

1 groundwater and the public health associated with those uses
2 The Commission is expected to adopt the basic regulations
3 this spring following completion of a public hearing on them
4 in March. Once that regulation is in place, we anticipate
5 that it will be used by all on going programs that affect
6 the protection of groundwater to bring about the consistency
7 needed in those programs. Further, over the next year we
8 expect to direct our attention towards the promulgation of
9 control regulations directed at currently unregulated
10 activities. Industrial ponds not covered under RCRA and
11 chemigation are leading candidates.

12 Over the past few years we have seen the growing
13 emergence of federal interest and responsibilities in
14 groundwater. This occurred first in the Safe Drinking Water
15 Act in 1974 with special consideration given to sole
16 source aquifers and a control program for underground
17 injection control. The EPA groundwater protection strategy
18 developed over the past two years further heightened the
19 federal presence. Ultimately, the RCRA amendments last fall
20 added a number of groundwater quality control requirements
21 related to treatment, storage, disposal, and neutralization
22 of toxic and hazardous wastes.

23 State water managers are watching with interest this
24 growing federal involvement in groundwater management and
25 quality control. We generally see the need for a national

1 framework of groundwater quality control. We welcome the
2 technical support and funding assistance. But, we are
3 apprehensive over whether Congress and EPA have an under-
4 standing of, and an appreciation for, the unique set of prob-
5 lems that confront the Western States. We are concerned over
6 whether the federal mandates, if they are imposed, will have
7 the institutional, legal, and regulatory flexibility to be
8 compatible with the overall existing state groundwater
9 management efforts.

10 Beyond that broader issue, we in Colorado have two
11 specific groundwater concerns involving the Federal govern-
12 ment. One involves the re-authorization of the CERCLA Bill.
13 We and other states have strongly urged Congress to eliminate
14 a proposed provision which would exempt Superfund projects
15 from state requirements for protecting groundwater quality.
16 So far, Congress has not seemed to recognize this need,
17 thus, Superfund projects could well be implemented such that
18 they would undercut state groundwater quality management
19 efforts. The other concern pertains to the need for federal
20 facilities to protect groundwater. In Colorado, perhaps our
21 most serious contamination of groundwater is caused by the
22 Rocky Mountain Arsenal and Rocky Flats. Military bases are
23 also likely problem areas, as are large federal contractors
24 such as Martin Marietta, just outside Denver. Thus, we
25 believe that Congress and federal agencies need an increased

1 commitment to correct those problems under their direct
2 control.

3 In summary, the western states have had a long history
4 of groundwater management. Those efforts vary significantly
5 from state to state, depending on a number of factors. State
6 efforts have been expanded in recent years to regulate
7 groundwater pollution. More recently, federal program require-
8 ments have emerged in controlling groundwater quality. Those
9 federal efforts need to recognize the state role in water
10 management, the state regulatory groundwater efforts
11 already in place, and the need to build upon and improve the
12 effectiveness of those state programs. Further, an increased
13 federal effort is needed to correct groundwater quality
14 problems associated with federal facilities or under direct
15 federal control.

16 Thank you very much.

17 MR. EHRMANN: Thank you, Gary. As I said
18 earlier, we will hold questions until the panel has completed
19 all of their comments. I should repeat that what we are
20 trying to focus on this morning as Gary did very well, what
21 are some of the key issues and concerns related to
22 groundwater as it relates to agricultural and mining
23 activities. This afternoon's panel will focus on initiatives
24 to deal with those issues, so as you formulate your questions,
25 that would be important to bear in mind in terms of the

1 split in topical focus for the two sessions.

2 Our next speaker is Tad Foster, who is Assistant
3 City Attorney with the City of Colorado Springs.

4 MR. TAD FOSTER: John, thanks for the
5 opportunity to share with you and others perspectives as a
6 city employ ee of a major municipality in the State of
7 Colorado.

8 I had originally anticipated about 15 minutes in
9 which to express my ideas; now that I am trying to curtail
10 them into five minutes, they may be somewhat disjunctive.

11 As an employee of a major municipality, it is always
12 difficult to represent any municipality in terms of either its
13 use of ground water or its impact on ground water. It is
14 particularly difficult because perspectives vary with the
15 size of your city, geographical location or historical
16 experience. It is also difficult for me since, as a member
17 of the Water Quality Control Commission of the State of
18 Colorado, we are presently in a hearing on groundwater
19 regulations, and it is necessary for me to avoid the
20 appearance that I have already made up my mind, so please
21 excuse my biases if they come through too clearly.

22 In this presentation, I want to hit basically three
23 points: the municipal viewpoint on relative importance of
24 groundwater, at least in the State of Colorado as a supplier
25 of drinking water; the plethora of present regulations

1 which protect groundwater, as seen from a regulated entity
2 viewpoint; and perhaps some refinement that can be made
3 to existing regulations. First, how important are ground
4 water supplies for municipalities. In the case of Colorado
5 Springs, groundwater accounts for only two percent of our
6 total water supply system. Groundwater has never been
7 found to be a reliable source of water for our municipality
8 Our experience is that areas on the eastern edge of
9 Colorado Springs have frequently annexed, because they
10 have determined that their groundwater supply is becoming
11 increasingly unreliable. When wells sand in, they look to
12 surface water supply sources.

13 We have observed that municipalities downstream from
14 Colorado Springs who are dependent upon groundwater supplies
15 are searching out surface water supplies in order to expand.

16 I have observed the area north of Colorado Springs
17 in the Black Forest and Monument areas using central systems
18 as well as individual wells for ground water supplies
19 despite the fact of grave concerns that the groundwater
20 supply is being mined more quickly than it is being
21 replenished.

22 I have observed areas east of Colorado Springs, and in
23 areas that we never thought were going to be developed
24 people are now looking at the groundwater supply as a
25 means for beginning a population and a tax base, so they can

1 develop the financing mechanism to purchase surface water
2 elsewhere.

3 If I were to generalize about urban use of ground
4 water, it is that major municipalities have not relied upon
5 ground water for drinking water supplies, that developing
6 areas use groundwater as a way of starting an urbanized
7 area and developing a tax base so they can finance more
8 expensive surface water supply systems.

9 What does this mean for protecting groundwater? It
10 does mean that it must be protected for at least drinking
11 water use purposes wherever it is either presently being
12 used, or is likely or could be used for drinking water
13 supply purposes. It must be protected for not only the
14 short term which, thinking in terms of water supply
15 for municipality short term, may mean 40 or 50 years. It
16 certainly should be protected for the long term, which
17 probably means in excess of a hundred years.

18 What is the quality of the drinking water -- the
19 ground water in our particular portion of the state? I
20 can't tell you very well, because we don't have much in the
21 way of data. If there is anyone major failing when you
22 start looking at groundwater quality, there is very little
23 data as compared to immense amounts of data that has been
24 collected by the U.S.G.S. on surface water streams. We do
25 know in Colorado Springs area we are still suffering the

1 impact of a mine tailings pile that was developed in the
2 late 1800s during the Cripple Creek gold rush period. I can-
3 not say whether that tailing pile is impacting the
4 downstream groundwater users along Fountain Creek. Much of
5 the communities of Security, Fountain and Widefield all
6 withdraw from Fountain Creek, but we have very little
7 groundwater data on the quality of this water, and the impacts
8 of any tailings piles several miles upstream. We have very
9 little data on the agricultural impacts on wells in the
10 surrounding area around Colorado Springs.

11 The U.S.G.S. is doing a special study now on ground
12 water quality downstream of Colorado Springs, and we are
13 beginning to find significant pieces of information, but it
14 is going to take more time to determine its real true
15 significance. I think we can accept the fact that ground
16 water for an urbanizing area should not become polluted,
17 but the question is whether there is a need for federal
18 legislation, state legislation or simply county or local
19 legislation.

20 At this time, I would conclude that there is no need
21 for sweeping federal or state legislation. How do I reach
22 this conclusion? I do not look at the problems we have had
23 so much in the past, as I look at how the regulations and
24 the legislation that we presently have are presently being
25 implemented. Looking at it from a regulated industry

1 viewpoint, as the operator of a wastewater treatment plant,
2 as the operator of a power plant, as the operator of a
3 solid waste landfill, as the operator of a variety of
4 activities within any municipality, we find ourselves
5 burdened and responsive to a plethora of regulations which
6 all protect not only the surface water quality, but
7 indirectly ground water quality.

8 Let me give you an example. Our wastewater treatment
9 discharges to Fountain Creek. Our NPDES permit as issued
10 by the State of Colorado directly protects the ground
11 water quality of the alluvium underneath and beside Fountain
12 Creek. That is because Fountain Creek was classified as
13 a drinking water source in 1981, which the Water Quality
14 Control Commission did, because it was found in the course
15 of a hearing by testimony presented by Colorado Springs
16 that Fountain Creek recharges the Widefield aquifer. The
17 Widefield aquifer is a source of supply for Fountain, Security
18 and Widefield, as well as a source of water for the City of
19 Colorado Springs.

20 We also have a permit. Let me skip over a few things
21 to try to catch up on time.

22 Turning to solid waste. We have the designation for
23 a solid waste landfill for the disposal of our sewage sludge
24 as well as fly ash from our power plants. That certificate
25 of designation was received after expensive testing and

1 engineering. No groundwater was located beneath the site.
2 Dams were constructed upstream and downstream of the
3 valley within which the landfill was located. The
4 regulation providing for certificates of designation,
5 specifically required examination of groundwater and
6 the protection of aquifers that are nearby and protection
7 of domestic wells that are nearby.

8 Looking at some of the other regulations that are
9 being applied to a municipality, snow can no longer be
10 dumped into creeks or along the banks of creeks. Willows
11 and Cottonwoods adjacent to any creek, whether it is
12 flowing or intermittent, can no longer be removed for the
13 purposes of installing flood control structures. Storm
14 drainage must now be permitted to protect against flood
15 events having adverse impacts upon downstream water quality.
16 Of course, everybody now has oil spill control plans,
17 which apply to transformers, oil tanks, fuel tanks.
18 Containment barriers are now around every electrical
19 transformer, hospital, airports, public works department,
20 parks department; all now have procedures for proper
21 disposal of the used chemicals, pesticides, oil and solvents;
22 even the fire department hazardous response teams now contain
23 spills sop up equipment, and never flush them away.

24 It is clear there is a high degree of regulatory
25 control already existing, which is to protect groundwater

1 quality.

2 I sense that what we now need are refinements in our
3 regulations and legislation, not new legislation.

4 The Colorado Water Quality Control Act applies not only
5 to surface, but also subsurface water. The Colorado Water
6 Control Commission is considering a regulation which would
7 allow for the classification of aquifers according to their
8 use. I sense there is no need to specifically classify the
9 alluvium and aquifers which are adjacent to our streams,
10 because they have already been classified by the nature
11 of the classification of the stream. Other aquifers may
12 need to be defined, if we can do so, and identified as to
13 their uses.

14 Perhaps the most expedient way to identify the use of
15 any aquifer is if there are presently ground water wells
16 permitted by the state engineer's office, which permitting
17 defines the use as whether it is industrial or domestic or
18 agricultural use. Perhaps it is appropriate to develop a
19 rebuttable presumption that all subsurface water is drinking
20 water as a starting point, and then allow those who have
21 other uses to come in and show their other uses.

22 The problem is regulatory overkill to the extent we
23 may be imposing restrictive effluent limitations upon anyone
24 who is to discharge to an aquifer or above an aquifer. Are
25 we going to cause those who would otherwise discharge to

1 go to an evaporative system rather than discharge from
2 wastewater? Do we want to encourage evaporative systems
3 in a water short state? Should we have flexibility in our
4 regulatory process that allows a wastewater system, whether
5 it be industrial or domestic, to clean up their water to a
6 certain level that may not necessarily be drinking water
7 quality levels before it recharges the aquifer from which
8 it has been withdrawn, realizing that it may have to pay the
9 price of cleaning up the water for other users within the
10 aquifer? Should we have the flexibility of saying it may be
11 a less expensive thing to clean the water up at the source
12 where it is used, than it is to clean it up at its point of
13 discharge?

14 Do we need to be more aggressive in determining sole
15 source aquifers within the State of Colorado and then adopting
16 through the Water Quality Control Commission control
17 regulations that address specific pollution problems within
18 a particular sole source aquifer?

19 I have one area of concern where there may be an
20 opportunity for federal regulation. As we look in Colorado
21 Springs at the organics such as benzene, toluene and other
22 organics that may be discharged into our wastewater
23 plant, we ask ourselves, will the existing pre-treatment
24 ordinance, which is relatively restrictive and stringent,
25 be sufficient for removing those solvents that are being

1 discharged from our wastewater plant? We are fearful if
2 a more restrictive pre-treatment ordinance, which is imposed
3 upon industrial dischargers discharging to our system, will
4 not be sufficient, because so many of these solvents, these
5 organics solvents are already in household cleaning
6 detergents. Is it appropriate for the federal government
7 to have a labeling requirement on any container, whether it
8 be used for industrial or commercial or residential purposes,
9 to have a labeling requirement prohibiting the discharge of
10 any of the residue or the contents of the solvent? Perhaps
11 what we should be recognizing is control of the solvents
12 is not at the point of the wastewater discharge or the
13 wastewater treatment plant, but is at the point of use.

14 In conclusion, in an era of scarce tax dollars where
15 the federal government is now imposing more and more costs
16 on the municipalities while refusing to restrain the
17 requirements that are used, continues to impose upon the
18 municipalities that burden, is it more important that
19 we spend our dollars not on drafting more regulations, but
20 spend those dollars in enforcing existing regulations and
21 improving the existing regulations through enforcement and
22 data collection and not concrete in the ground. Thank you.

23 MR. EHRMANN: Our next speaker is Chris
24 Shuey. Chris is the Coordinator of the Ground Water Project
25 for the Southwest Research and Information Center, New Mexico.

1 MR. CHRIS SHUEY: Thank you.

2 Southwest Research and Information Center is a
3 non-profit education scientific environmental group from
4 Albuquerque, New Mexico. We have been involved in various
5 concerns about water quality and specifically groundwater
6 for many years, since dating back from the mid-Seventies.
7 We are not scientists in the sense that we have PhDs in
8 hydrology, but we have had a considerable amount of study and
9 personal involvement in site specific ground water
10 contamination cases.

11 I wanted to briefly give an overview of how we look
12 at groundwater in New Mexico from the standpoint of the
13 citizens or persons who work on these things, as from an
14 environmental standpoint.

15 I think the relationships in New Mexico in terms of
16 groundwater quality are not that much different from many
17 areas of the arid west. I want to review some of the major
18 sources of pollutants that we have, and talk about some
19 trends and some policy implications that we have become
20 familiar with over the last several years.

21 In New Mexico, it is arid. Because of that, we have
22 very little surface flow. The surface flows we have are
23 primarily agricultural or irrigation uses. Some 95% of the
24 drinking water in New Mexico comes from the ground. It is
25 very different from what Mr. Foster just described. One

1 of the very important things to remember about rural areas
2 in the West with the inadequate surface flows is that
3 people, especially folks of middle to lower incomes cannot
4 afford to develop deep underground aquifers. The water will
5 be used wherever it is. If it is an arroyo or an
6 intermittent stream, it is going to be used for livestock.
7 If it is in the alluvium, it is going to be used by people
8 for drinking water supplies. Often we find the quality of
9 water, either for one reason or another, natural causes or
10 industrial, municipal causes, is slightly polluted, but
11 people still will use it and I think that is probably a
12 situation that is very well known in many rural areas of
13 the west.

14 In New Mexico, I want to talk about three of the
15 major categories, inasmuch as we are talking about mining
16 wastes here and some agricultural wastes. Mining wastes from
17 the standpoint of polluting large areas of underground
18 water supplies is by far one of our biggest problems. We
19 have five uranium mill tailing piles with 85 million tons
20 total. We have a huge square mile copper tailing pile,
21 other hardrock facilities and mine wastes that dot the
22 state from one corner to the next.

23 These facilities in terms of the uranium wastes have
24 contributed radioactive materials from the uranium decay
25 chain, heavy metals and some process chemicals

1 to the ground water. We are beginning to see a trend in
2 some of the copper processing facilities in which leaching
3 facilities are coming into being the state of the art and
4 using large amounts of very toxic heavy metals and process
5 fluids, and groundwater is slowly being affected beyond what
6 it was many years ago. Unfortunately, these large volumes
7 of waste are difficult to clean up; they are not necessarily
8 amenable to recycling and recovery, which is talked about
9 quite frequently of the classifical hazardous chemical wastes.
10 I have had a chance to work on oil fields production wastes.
11 This is from the front end of the oil and gas production
12 network, unrefined problems. We have more than 20,000
13 unlined, so called produced water disposal pits which
14 are in alluvium areas, where depths to groundwater can
15 be 10 feet or even less. We find that those wastes are
16 characterized like the classic hydrocarbons, the very
17 toxic benzenes for which we have human carcinogenic data.
18 We have had incidents of municipal water well supplies
19 being polluted from leaking diesel fuel facilities from
20 crude oil pipeline breaks. We have also had an increase
21 in leaking underground storage tanks, especially for gas
22 lines.

23 Again, a problem not only characterized throughout the
24 west, but throughout the country.

25 The third category is what we call nitrogenous wastes,

1 which we have been talking a little bit from animal feed
2 lots and dairies, municipal sewage facilities and backyard
3 septic tanks. Unfortunately we found, especially in one
4 of the areas of Albuquerque, that there are many shallow
5 alluvium water supply wells and next door to septic tanks.
6 The data is not quite about whether or not the degree of
7 nitrate contamination is directly related to those kinds
8 of wastes, but it is a cause of concern.

9 In terms of the mining wastes, that is very important
10 concept to remember and it was mentioned earlier this
11 morning, either though we are talking about in some cases
12 radioactive materials, heavy metals which in high
13 concentrations can be toxic, certainly over long periods
14 of time, constant exposure produces health effects for
15 people who are exposed, but when you have high concentrations
16 of total disposed solids, either on the acid side of the
17 scale, or the alkaline side of the scale, sulfates, chlorides
18 these so called aesthetics contaminant make ground water
19 and water just as unuseable as if it had been polluted by
20 the TCEs and the EDPs and EDBs. It tastes bad. It is
21 just not useable.

22 In terms of, and I want to say something real
23 quickly about how we do things in New Mexico in terms of
24 protecting groundwater, and there are other people here in
25 the audience who are by far more knowledgeable about these

1 things than I am. It was stated that New Mexico's
2 groundwater protection system has a long history, and in
3 fact, we have a water quality act that goes back to 1967.
4 Our regulations for protecting water quality and regulating
5 and permitting discharges to the ground began in 1977. The
6 basic standard of the statute is what we call reasonable
7 degradation. There is a certain amount of pollution that
8 we will tolerate if it means an economic advantage to
9 the dischargers. I won't enter into an editorial comment
10 about that, you can ask me later. I will say a couple of
11 things. One is that since 1977 the state has been able
12 to generally have a good handle on what we call new
13 dischargers. The dischargers are from industrial facilities
14 and municipal facilities that have come along and been
15 constructed since the effective date of the regulation.
16 Even though we had this concept of reasonable degradation
17 I think in all respects the state has tried to adopt
18 this view that prevention is very important. It is an
19 economic issue. When groundwaters are contaminated, it is
20 too expensive to clean up. We have very large sites of
21 contamination in the state dating back many years in which
22 the pollution may never be cleaned up, because it is too
23 expensive.

24 This is a point that I may disagree with Mr. Foster
25 on. Putting it on the user of the water is an onerous

1 concept. The problem with the regulations in the state
2 though are in terms of these large facilities that were in
3 operation at the time the regulations came into effect.
4 We have had a slow progress of bringing them under
5 compliance. But in many cases, we have had to put up with a
6 certain amount of pollution that existed at the time that
7 the facilities came under permit. That water will,
8 therefore, never be cleaned up to its natural condition.

9 We have heard some talk about the EPA groundwater
10 strategy. New Mexico has not necessarily a classification
11 system, but we do protect all waters of 10,000 parts per
12 million TDS or less. In that respect, it gives us a wide
13 latitude for protecting what we call waters of current or
14 reasonable foreseeable future use.

15 One of the other difficulties I have with our regulation
16 is in the area of the idea that if you own a piece of
17 property, and you have property boundaries, you can put the
18 pollutant into the ground and into the groundwater as long
19 as they don't reach the property boundary. Well, as we all
20 know, groundwater in the right direction doesn't observe
21 property lines or political boundaries. I am told by the
22 state that we are now getting close to having a compromise
23 between no degradation and some degradation, and that is
24 to give the state and the state agencies clear latitude and
25 authority to stop or threaten actions that may pollute the

1 groundwater; we may go to a system of zones of
2 temporary degradation, in which the facility would be
3 allowed to put a little bit of pollutant into the ground
4 water, but in no circumstances would those be allowed to
5 go beyond a property boundary.

6 We are also, I am told, developing additions to
7 our regulations that would allow the state to enter into a
8 remedial action, negotiate an action with facilities that
9 have caused groundwater to be contaminated as opposed to
10 taking large expensive legal enforcement action.

11 On the federal level in terms of how we are looking
12 at it in New Mexico, I have a couple of real quick points.
13 We need relief from the Superfund petroleum exclusion, and
14 I have been told by staff members of Congress that if we
15 in the national governors association continue to push that,
16 we will lose Superfund. Well, we have a couple of refineries,
17 one abandoned and several others, that have polluted
18 groundwater. One in particular, an abandoned refinery has
19 hazardous ranking, higher than any of our other four
20 Superfund sites in New Mexico, but we can't get on the
21 Superfund list. But the threat of Superfund has caused
22 the former operator to come in and propose new remedial
23 schemes.

24 I have been involved on the state level in hearings
25 to adopt regulations to protect shallow ground water in

1 alluvial areas from these unlined produced disposal pits.
2 We didn't get everything we wanted. We are going to go
3 back and do some additional study. I think that is probably
4 a problem in other oil and gas producing states in the west.
5 We haven't heard much about it. I tend to think there is a
6 lot of data nationally and locally on groundwater resources
7 itself, on pollution especially in areas where ground
8 water is used, but in the area of oil and gas wastes we have
9 very little information.

10 I have seen Governor Babbit of Arizona suggest that if
11 the states do not have groundwater protection programs and
12 do not adopt such programs, we have to have some penalty
13 involved, such as withholding Superfund monies. I think we
14 need to reassess that.

15 We have a number of sites that are affecting or have
16 the potential to affect people's health through their
17 wells. Simply penalizing the victims of the pollution
18 by withholding monies, because a state has failed to act,
19 I think is not a wise approach.

20 I tend to agree with the idea that the west as an
21 arid climate has a net evaporation climate, and little bit
22 different from the parts of the east. People in the east
23 have to be cognizant of the variability of the ground
24 water resources here, of how they are used, and I used to think
25 that well, maybe there was a national approach to this

1 problem. I am not quite convinced that there is now. I
2 don't know. I am willing to continue to talk about it, but
3 on a site specific basis when we go out and look at ground
4 water contamination problems, we have to know the characteristics
5 of the site. It is hard for me to understand how a national
6 program could recognize all the variables from one end of
7 the continent to the other. Certainly, there is a need for
8 some national policy.

9 I think, if I have to repeat myself, the thing that
10 needs attention is prevention. It is just too damned
11 expensive to clean up messes once they are made.

12 I would conclude by saying that one of the things we
13 desperately need are the agencies that are responsible for
14 protecting water quality to begin to develop a constituency,
15 a public constituency of people that can lobby and support
16 programs and strong programs for preventing water pollution,
17 surface water pollution and groundwater pollution. Our
18 agencies tend to operate without understanding there is
19 a public out there. They are very concerned about the
20 reaction of a budget type legislature. It is a problem,
21 but until the agencies begin to get out the information
22 about the extent of the hazard they will not be able to
23 elicit the support of the people who are affected by these
24 pollutants.

25 Southwest Research has developed a lot of information

1 on various aspects of the problem. We will be happy to
2 share those bits and pieces of information on a whole
3 range of things that I have been talking about and many
4 others if anybody wants them; please give me your name and
5 I will send you some stuff. Thank you.

6 MR. EHRMANN: Our next speaker is William
7 Raley, who is from the Colorado Water Resources Research
8 Institute.

9 MR. WILLIAM RALEY: I think I will start out
10 by asking how many farmers are in this group? We got any
11 farmers here? Good. I am glad to see that, because I think
12 at least you can help me. I am going to try to address some
13 of the agricultural aspects of groundwater contamination
14 on groundwater pollution.

15 I think it was noted earlier by Alexandra that 22
16 states had shown up with pesticides in the groundwater.
17 I am not familiar with her particular statistic, but I
18 think that it is possibly a potential problem in
19 agriculture.

20 I think one of the problems in the past is that I
21 think groundwater is a neglected resource, in that it wasn't
22 there, we couldn't see it easily, we didn't know what was
23 happening many times when we applied fertilizer or
24 pesticides and I think it is something that I will pick
25 up on a little bit.

1 I will say right off to begin with, I don't think
2 we need any new programs as far as agriculture is concerned
3 for groundwater protection. I think we have a lot of
4 programs that we can fine tune and put into place a little
5 better, that are already on the books and we are already
6 doing some of this. We just need to fine tune them and
7 direct them to groundwater protection.

8 A case in point, I think that most land grant
9 universities in the whole nation, especially in the west,
10 since we are talking about this region, have soil testing
11 laboratories, to where farmers take soil tests and send in
12 their tests and they are sent back out with recommendations
13 for fertilizers. I think that is a good place.

14 Now, we have talked about it for years and a lot of
15 farmers have used this service, and, of course, there are
16 some private soil testing labs also. It has been mainly
17 used for addressing economics of applying fertilizers and
18 getting the most yield. I think all we need to do is take
19 that program and address it to groundwater protection also.
20 I think that could be done fairly easy. It might take some
21 effort from our geologists to tell us what the aquifers
22 are underneath our farms and how we could contaminate them
23 by this, and I was very interested in what Alexandra said
24 about the leachers and the pesticides. I think there is a
25 simple program right there available to us, that we could

1 utilize in passing information on to the farmers to help
2 them prevent leaching into the aquifers. It might take
3 sometime, and it will take some more information.

4 Also, I think most land grant universities have an
5 irrigation water management program of some kind. I know
6 we do at CSU. One of the courses, the newest I guess, is
7 not real new, but irrigation scheduling. It is one
8 program that is catching on, I think, especially on
9 the high plains with the center pivot program, and, of
10 course, we are not the only agency doing this. I think we
11 are cooperating with the Soil Conservation Service, especially
12 in the Colorado high plains in developing irrigation scheduling
13 programs.

14 Now, this program was initially started out to help
15 the farmer economically, and, of course, as you all know,
16 we can't save some of those farmers. Some of them are
17 already gone down the drain, but when it comes to ground
18 water pollution, I think that we can incorporate, you know,
19 that program, and in helping farmers apply the appropriate
20 amount of water to raise the desired crop yield without
21 contaminating the groundwater. I think it is a whole new
22 era. It helps the farmers economically and he doesn't
23 have to pump the maximum amount of water necessary to get
24 the maximum yield or the optimum yield that he wants. I
25 think the irrigation scheduling program has a very real

1 potential for that.

2 In Colorado and in some of the neighboring states
3 here, I have been involved in the chemigation education
4 program. Gary Broetzman mentioned this. This is a real
5 concern. As I said, I don't believe most farmers, and there
6 has been no conspiracy to go out and contaminate the
7 ground water. I think there are a few out there, as some
8 of us all know, that have dealt with farmers, they are no
9 different than any other person or population, there are a
10 few that are negligent. They will do anything to try to
11 get away with anything they can, but by and large, farmers
12 are very conscious of the natural resources around them,
13 probably more so than a lot of them that don't deal in the
14 natural resources area.

15 So, I believe that if they are given the tools, the
16 information needed, and they understand the situation, that
17 by and large, they will try to prevent contaminating our
18 environment and especially the ground water.

19 Recently, in the last two years, the chemigation
20 and those of you that do not know or understand what that
21 term means, farmers can apply pesticides and even
22 fertilizers through their center pivot systems. Of course,
23 it lends itself to some real problems if it is
24 not done properly, and, of course, we being a member of
25 the extension service staff, we are very conscious of the

1 the need to provide the educational materials and
2 information to farmers to help them cope with this problem
3 and we, through the help of the Environmental Protection
4 Agency, gave us a little grant, we developed a slide show
5 and a bunch of information sheets that we give to the farmers
6 the information as to how to prevent chemigation contamina-
7 tion. Of course, the primary point is the possibility of
8 flowing chemicals back down into the well. Of course, we
9 have delved into and instructed the engineering department
10 on campus at CSU to help us develop some. We are in the
11 process of helping develop standards for back flow devices
12 that might prevent that. This program is in place and it is
13 using these slide shows and have been using them all
14 winter, not only in Colorado, but they have been dispersed
15 to most of the neighboring states that share the Ogallala
16 aquifer. I think there again, the idea that if we educate
17 farmers, I think they will do a much better job if they
18 understand what the needs are.

19 By nature farmers are suspicious of regulators and I
20 think Gary Broetzman is already aware of that. I think in
21 Colorado we have tried to support this by not supporting
22 the suspicion, but helping out in educating the farmers the
23 best we can to prevent contamination that might occur in
24 the meantime. Notwithstanding that, I think there probably
25 needs to be some regulation. I think everybody agrees with

1 that, even some farmers. I think it just needs to be flexible
2 enough where it doesn't threaten a resource with some
3 nitpicking regulations that cuts a farmer out of the
4 possibility of using the tools to grow a good crop.

5 I think another program that is already in place, and
6 that is our experimental station, and our USDA research
7 program. I think there again, historically, we have been
8 involved in helping farmers produce more. In fact, we have
9 helped them produce themselves out of business, some of
10 them, but we can, I think from now on, we are going to have
11 to fine tune some of our research programs and also look
12 at how, especially in our irrigation and crop research,
13 and that is, how to prevent ground water leaching chemicals
14 and fertilizers, pesticides, whatever, into the aquifers.

15 I think the whole area of the pesticides is some thing
16 that really struck me very clearly this morning when Alexandra
17 mentioned the word leachers. For years, and I have worked
18 with farmers most of my working life, we were very
19 conscious at least as an extension agency, I was very
20 conscious of what the label said, how to apply and how much
21 to apply. Of course, I think this is one area that all of
22 us were ignorant on. Let's face it. We did not understand
23 how pesticide was leached into the groundwater. Now,
24 maybe we are beginning to realize that there is a possibility.

25 I believe in all honesty that most of the people,

1 including the industry people representing the chemical
2 people, do a very conscientious job in working with farmers
3 in helping them to determine the proper chemical to use and
4 at the proper rate according to the label. But all of
5 a sudden, we are realizing maybe that our labels on our
6 chemicals really don't cover the leachers, so to speak, as
7 she said, and how they are carried, you know, and what the
8 potential for ground water contamination is. There is a
9 whole other area as far as pesticides is concerned. You
10 can't blame it all on the the farmers in the use of
11 pesticides. I don't have the exact statistics, but the
12 urban people use a great deal of pesticides on their yards
13 and on their gardens. I am especially aware of that, because
14 I supervise the extension agent in the metro area here. Our
15 horticultural agent has developed educational programs with
16 the urban people, the home owners, in helping them understand
17 just like we do with farmers in how to properly apply
18 pesticides. Up to now we have been limited, because those
19 labels don't always carry a guidance as to how they might
20 affect the groundwater, so I think that is a -- I would pass
21 the buck back to EPA and the industry people who are
22 developing those chemicals, that they be more conscious
23 first of all of the ground potential for ground water
24 contamination, and then tell us on that label so that we can
25 help people understanding and that the individuals that

1 buy those pesticides can understand how much to apply and how
2 to apply it and how it might affect our groundwater.

3 So I think with that, I have tried to give you what
4 is being done in Colorado. I think there are some things
5 being done that we can do better. We have got programs in
6 place that all we need to do is tie them more closely
7 to groundwater. I think the key issue in Colorado is, do
8 we have a policy. I guess you hear people from other states
9 saying the same thing. Do we have a groundwater protection
10 policy? Are going to enforce that? Of course, what can we
11 do through education to support the prevention of ground
12 water contamination. I think the question is, how effective
13 the current programs are. I don't know how effective they
14 are. I think by and large, the farmers basically are doing
15 a pretty good job, not because we have educated them so well
16 but because of economics, if nothing else.

17 A farmer cannot afford to over apply fertilizers or
18 pesticides. The general trend is to apply just the least
19 you can possibly get by with and get the job done. Now,
20 of course, that is not the historical perspective, because
21 years ago I can remember when farmers thought a little was
22 good, a lot was better. I think that has changed. I think
23 the economics has changed. I think by and large though we
24 can do a lot through education.

25 I think the extension service and the experiment

1 station and the USDA and, of course, the Soil Conservation
2 people that are working with farmers are in place, and we
3 got the programs there, all we need to do is fine tune them
4 and associate them with agriculture.

5 I guess when we get to the questions, what more is
6 needed, you know, picking up on what Congresswoman
7 Schroeder said, in this day of cut back in funding, you know,
8 it would be awful easy to say up here, especially as a public
9 servant, I said, all I need is more funds, but I think I
10 would say in all honesty what we need to do is use more
11 effectively what we have. Everybody in this day and age is
12 going to have to do more with less, and that includes our
13 research people. I think they will have to do more with
14 less. We will have to zero in on these particular problems,
15 and if ground water is a high enough priority, ground water
16 protection, which I believe it is, then I think we can
17 whip the problem, and we probably can't do it over night,
18 because I think it will take time, but I think we are
19 headed in the right direction. Thank you.

20 MR. EHRMANN: Our next speaker is Don Goolsby,
21 who is Water Quality Specialist with the U. S. Geological
22 Survey central region. Don has got a few slides he is going
23 to show.

24 MR. DON GOOLSBY: I would like to make a few
25 brief comments from the perspective of an agency who has a

1 scientific fact finding mission, but no regulatory mission.
2 We are not a regulatory agency. The Geological Survey, as
3 you know, has been involved in groundwater resources for
4 many decades. Many of these studies have included studies
5 of groundwater quality and at least sometimes we are doing
6 quite a bit with regards to groundwater contamination.

7 In my brief remarks here I would like to try to
8 address two of the questions this panel was asked to
9 address, that is, what are the major sources of the
10 groundwater quality degradation and what more is needed.
11 I am trying to condense my remarks here so my presentation
12 doesn't come across a little disjointed.

13 I would like to start by showing and discussing a few
14 slides, which will help illustrate some of the non-point
15 sources of water quality problems in the region. The
16 information and data that were used to prepare these slides
17 have been obtained largely through cooperative programs,
18 cooperative efforts that we have had with state and local
19 and federal agencies.

20 I would like to restate a statement made by the
21 gentleman from Colorado Springs regarding the lack of data
22 on ground water quality. I think with regard to
23 such things as salinity, dissolved solids, we have a fairly
24 large handle on groundwater quality, but with regard to the
25 things we are really concerned about today, toxic substances

1 organic chemicals, pesticides, trace metals, this type of
2 thing, there is not a lot of information. That information
3 is very scarce except in a few areas.

4 Through some of the work done in areas where we do
5 have a fair amount of information on the groundwater
6 quality is the State of Nebraska. The slide that is shown
7 up here highlights some of the past, present and potential
8 ground water problem areas in Nebraska. I am not
9 going to dwell on the slide, but the brown areas highlighted
10 are nitrate, nitrogen concentrations greater than 10
11 milligrams per liter, which is the drinking water standard.
12 The red areas highlight areas where there are potential
13 problems. There are elevated nitrate levels and evidence
14 of pesticides in groundwater, but as of yet, we don't have
15 data to indicate that the nitrate concentrations are
16 exceeding the drinking water standards.

17 In this next slide which focuses on probably the most
18 impacted area in Nebraska, Buffalo and Hall Counties, you can
19 see in the center part of this area some of the nitrate and
20 nitrogen concentrations are greater than 20 milligrams per
21 liter. This is an area that is extensively irrigated along
22 the Platte river.

23 The next slide you will see a couple of areas where
24 we did some ground water quality reconnaissance in 1984 and
25 1985. The colored boxes are counties where this reconnaissance

1 focused on.

2 In the next slide you can see the nitrogen fertilizers
3 and pesticides used in Nebraska. As you will note, the
4 nitrate and nitrogen fertilizer amounts used were great,
5 in the amount of 100,000 tons of nitrogen. This was up in
6 the early 1980s, and appears to have declined since then.
7 This may be the result of change in agricultural practices
8 or the resulting change in the economy. I am not real sure.
9 Also, you will see the pesticide uses for two years, 1978,
10 1982, the total pounds of pesticides used in those areas was
11 between 25 and 30 million pounds. This was active
12 pesticide ingredients.

13 The next slide just simply gives a few of the
14 pesticides compounds that are used. These are herbicides
15 and pesticides. I am not going to dwell on the slide. It
16 shows the numbers as well as types of compounds. The major
17 pesticide used in Nebraska and throughout much of the west
18 is herbicide.

19 As on some of the work we did in 1984 and 1985 studies
20 the next study shows the result of some of our pesticide
21 analysis. Out of about 57 samples -- ground water samples,
22 that were collected in those areas, 19 of them contained
23 detectable concentrations of pesticides and 18 samples
24 contained the pesticide atrazine. These are low concen-
25 trations, low levels. There are not criteria for these

1 pesticides, and I think it is still reason for concern;
2 what we don't know is what the impact of these low levels
3 area. We have done some similar work in Nebraska in 1985,
4 and in about 57 samples collected, 29 contained detectable
5 concentrations of pesticides.

6 Moving on to another type of agricultural problem in
7 this next slide, it illustrates that is probably salinity.
8 The salinity problem is caused by several factors, includ-
9 ing evaporative concentrations of water that is applied to
10 the soil.

11 Water may be used several or many times in an area,
12 percolating down through the groundwater table and is pumped
13 back to the surface where it can undergo further evaporative
14 concentrations. An example that I would like to point to is
15 some work that we did on the Arkansas River between Pueblo
16 and the Colorado/Kansas state line. This slide just shows
17 the increase in irrigated acreage as you go down that reach
18 of the river for about 160 miles, and the depletion of
19 groundwater. The average flow of the water, you can see
20 how water is diverted to agricultural uses.

21 The next slide shows the impact on both the surface
22 water and the groundwater. You can see the increase and
23 concentration of the unit measured here is specifically
24 an inductance, but it can relate that to dissolved solids in
25 this reach. The dissolved solids in groundwater increases

1 to 1,200 per liter to greater than 2,000 milligrams per liter
2 in the lower reach. I am certain similar problems like this
3 exist throughout the area. I am going to skip the next
4 slide, but go on to the one after that, which highlights
5 another problem that has been touched on a little bit, but
6 hasn't been much said about it.

7 The red in this slide in Montana shows areas of oil
8 and gas production. In parts of Montana and also in parts
9 of Kansas, and I am sure other areas throughout this area,
10 the groundwater is being impacted by brines, oil field
11 brines resulting from leaking mud pits and improperly
12 constructed injection wells. In Kansas, for instance, there
13 were more than 16,000 injection wells. There is a large
14 area of Kansas that has been impacted and large parts of
15 Montana have been impacted by brine contamination. Much of
16 the current regulations is aimed at cleaning up present
17 contamination and protecting against future contamination.

18 I think one of the big questions this panel was
19 asked to address is how effective are current measures to
20 protect groundwater. As has been said by the gentleman on
21 my right here, we really don't know how effective some of
22 these things are, and I don't think some of the current
23 programs are really providing for this. I don't think there
24 are ways to judge how effective the groundwater injection
25 programs are. Further, I don't believe there are programs

1 currently in existence that determine how extensive and how
2 widespread groundwater contamination is or to quantify
3 the severity of the problem. In my opinion, some type of
4 program or some orientation of programs that are in the
5 agencies currently is needed to be implemented to try to
6 address these things; that is, if we want to determine the
7 ground water protection strategies that are being implemented
8 are really working.

9 I would like to end my remarks by briefly mentioning
10 two of the programs that the Geological Survey has. The
11 first one is the federal/state cooperative program. This
12 is a program by which the Geological Survey conducts water
13 resource studies and maybe studies of groundwater
14 contamination. We provide 50% of the funding for these
15 studies and 50% of the funding is provided by the state or
16 local agencies who are cooperating with us. Over the years,
17 we have done a lot of work through this program in
18 groundwater resources but these studies have included some
19 things on groundwater quality. But the program has been
20 primarily an agency focus, whose responsibility deals with
21 groundwater management and groundwater quantity, and most
22 of these agencies have no groundwater quality responsibility.
23 consequently a lot of the work we have done through this
24 program has not focused on the ground water contamination,
25 especially with regard to toxic substances that we are

1 talking about here today. Groundwater protection, I would
2 like to emphasize, is a high priority issue with the
3 Geological Survey, and the Department of Interior. We are
4 interested and willing to cooperate with other agencies
5 within the extent of our resources and manpower.

6 One last program I would just briefly mention is a
7 new program that we started this year. Believe it or not,
8 we started a new program this year, even with the budget
9 reductions; this program is known as National Water Quality
10 Assessment Program. We have received a small amount of
11 funding to do some planning for this program and to start a
12 couple of pilot studies. It will address water and
13 surface water with regards to groundwater. The program will
14 be a national perennial program of data acquisition,
15 interpretation and assessment of the groundwater. The
16 emphasis will be on trace contaminations, the chemistry
17 of groundwater and the relation to the system hydraulics
18 and land use. We plan to make every effort through this
19 program to work to seek active participation and involvement
20 of all state and local agencies that have groundwater
21 responsibility. The program is being closely coordinated
22 with EPA's ground protection program. I think I will end
23 that with my comments. Thank you.

24 MR. EHRMANN: Our next speaker is Rick
25 Austermann.

1 MR. RICK AUSTERMANN: I would like to begin
2 with a disclaimer. I am listed on the agenda as a
3 representative of the energy industry. I do work for an
4 industry, not necessarily the energy industry, but I don't
5 purport in my comments today to reflect the views of any
6 particular industry group or any particular company. I think
7 in one respect industry is a lot like the Democratic Party,
8 that it exists more in an abstract concept than as a real
9 organized industry.

10 I would suppose, as the industry representative on
11 this panel, and I suppose I will try to fill that role to
12 the best of my ability.

13 To begin with, I think everyone or almost everyone
14 can agree to a few things about groundwater. I think one
15 of these is that the groundwater resources of the nation
16 and in particular, the Rocky Mountain Region, are important
17 and valuable resources-- that these resources do need to be
18 protected from the degradation so they do remain available
19 for use in the future.

20 I think most of the people would also agree that this
21 goal is not being met in all instances. I am sure we are
22 all aware of the examples of the unacceptable level of the
23 groundwater contamination that has occurred. However, as
24 soon as we move beyond some of these general statements,
25 agreement becomes ever more difficult. In large part, this

1 is because different interest groups have different
2 perceptions of the problem that is being addressed and
3 what it is that society should be defining as its goals. As
4 with most problems of this sort, I think this disagreement
5 accurately reflects some of the complexities of the real
6 world. In my opinion, I think this is supported by much of
7 what you heard today. Really, it is not anyone single
8 groundwater pollution problem. I doubt if there is any one
9 single solution that would be appropriate for the resolution
10 of these various problems. The precise nature of any ground
11 water problem, or indeed the question of whether there is
12 a problem at all, inevitably varies from time to time and
13 place to place, depending upon a number of different number
14 of different variables, some of which, you have heard about
15 already today, and a few of which I will address later on.

16 Now, by making this somewhat gloomy introduction I
17 don't mean to imply that the problems associated with
18 groundwater contamination are necessarily unique, nor do I
19 mean to imply that they are incapable of the solution. I
20 think our political and governmental bodies somewhat
21 surprising are somewhat quite good at solving complex
22 problems like this. What I am saying is, that the policy
23 makers need to keep some of these variables in mind, so that
24 whatever solutions they do come up with fits the problem.

25 One of the things that has distressed me most about the

1 groundwater debate, and I have been involved with it for
2 quite sometime, is I keep seeing 1980 solutions still
3 being proposed for what I perceive as 1980 problems. It is
4 a little bit of beating the dead horse. It seems to me a
5 lot of the proposals I have seen for dealing with the
6 proposed problems really address problems that either are
7 already under control, or for which a regulatory context
8 already exists. The problem being enforcement or money.
9 It seems to me that a lot of the proposals ignore the real
10 problems that we face today and in fact, would not deal very
11 well with the types of problems that we see cropping up
12 every day in the newspapers.

13 Now, since the focus today is on agricultural and
14 mining problems, I will try to commit what I say to problems
15 unique to those industries. I do think it is appropriate
16 that the two industries are grouped together, because I
17 think in at least one very fundamental way they differ
18 from a lot of the other potential pollution causing
19 activities. If you go back to the 1960s and 1970s when
20 a lot of our fundamental environmental statutes were first
21 adopted, the overriding idea was that pollution causing
22 activities are something that are distinct and apart from
23 the natural environment. They are something that is
24 imposed on top of the environment that ultimately are
25 subject to complete utilization either through containment

1 of the pollution source or in the absence of an ability to
2 contain it, elimination of the pollution source. I think
3 this is expressed very clearly in the Clean Water Act, which
4 has as its goal the elimination of the discharge of
5 pollutants. I think as a practical matter you see many
6 embodied in the hazardous waste program under RICA, in
7 which the preferred control technology is total containment
8 where you totally isolate the pollution source from the
9 environment.

10 What is different from farming and agriculture and
11 mining is that the activities themselves represent an
12 intentional disruption and interference with the natural
13 environment. You go out and plant your crops. You dig the
14 soil up, so that things will grow in it, and you add
15 fertilizers and you add pesticides to intentionally alter
16 the natural environment.

17 When you mine, you go in and you dig holes in the
18 ground to remove minerals and you crush that rock for the
19 purpose of extracting it. This intentional act is
20 interference with the natural environment, and the only
21 way to avoid that interference in a pure sense is to
22 prohibit the activities, which I suppose some people have
23 proposed in the long run.

24 The reason I think this distinction was important
25 bears very heavily on the type of practical control

1 techniques, and the types of regulatory strategies that the
2 agencies should be adopting. I think one of the issues that
3 we have been asked to address is, what is being done and
4 what progress is being made in the agricultural and mining
5 fields to control pollution. I personally feel that in the
6 past 20 or 30 years great steps have been made to control
7 pollution. In the area of agriculture, we just heard
8 testimony as to how people are more sensitive about the
9 application of pesticides, fertilizers.

10 In the areas of mining, a lot more thought is being
11 given to the design of the facilities, such as tailing
12 ponds that everyone loves to talk about are no longer
13 just leachers of dirt. They are engineered structures,
14 which are very carefully designed. The significant point
15 here is that the control techniques that are being
16 developed for both mining and agriculture are management
17 techniques. They are not designed to isolate the activities
18 from the environment and there is always going to be a
19 certain interaction between existing and closed activities
20 of this sort. No matter how carefully you control the
21 application of irrigation water or the application of
22 pesticides or fertilizers, some of it is going to get into
23 the groundwater no matter how carefully you design a tailing
24 impoundment, and I include here something with a double
25 liner and a leachate collection system interceptor well

1 and everything else, some things are going to get into the
2 environment. That is the approach that has been taken by
3 the industry and I think that needs to be recognized by
4 the regulators.

5 If I got a couple of minutes left, I would also like
6 to address two issues which I think are particularly of
7 importance to us in the context of these industries. First
8 of all, everybody talks about ground water protection, and
9 this still seems to be a great deal of confusion about what
10 the ultimate goals of a ground water protection program
11 should be. Some people characterize it as a program to
12 protect resources. Other people characterize it as a program
13 to protect drinking water. Other people characterize it as a
14 program to promote more general environmental protection.
15 I would submit to you, that each of those three goals has very
16 different consequences once you get into details of a
17 regulatory program, and people need to do a better job of
18 defining what it is they want to accomplish.

19 I think one very good example of some of the problems
20 that arise, that one good example is the current hearings
21 that are going on in Colorado to adopt ground water
22 classifications and standards. One of the very basic issues
23 that has come up is what exactly is it that you are trying
24 to classify, and what is it you are trying to adopt
25 standards for. Is it everything that is under the ground.

1 Is it any water that happens to be in a saturated zone. Is
2 it water in a saturated zone plus economically available
3 for recovery. Until you know these things, you really
4 don't know what it is that you are trying to protect.

5 Another problem that the agency is learning to deal
6 with is the nature of the regulated community in this type
7 of program is substantially different from the regulated
8 community of 10 or 20 years ago. Back in the early '70's
9 there was a very clear them vs. us type of mentality;
10 get the polluters and protect the rest of the inhabitants
11 from the planet. I think once we review the nature of
12 the ground water problems we are facing today, the distinction
13 between water users and water polluters begins to vanish.
14 The ground water protection programs are going to affect
15 a lot of the very small water users, who are also the water
16 polluters. I think the type of extensive permitting programs
17 that have become popular in the past may not be appropriate
18 for this type of problem and may well collapse under their
19 own weight.

20 Because of some of these problems, I would close by
21 saying that I tend to agree with the panelists who have
22 recommended that sweeping federal initiatives not be taken
23 at the present time. I am not sure that they would do much
24 good. They may in fact do more harm than they do good,
25 and certainly cost a lot of money. I think there are a lot

1 of programs in place that are designed to protect ground
2 water and they may not be working properly, but that
3 doesn't call for adoption of sweeping new programs. I
4 think there are also programs or problems that aren't being
5 addressed by a system program, but I question whether they
6 would be addressed by sweeping new initiatives. Thank you.

7 MR. EHRMANN: Thank you, Rick.

8 I first want to give some of the folks to my right,
9 Norman, Judy to ask any questions they have of our panelist
10 and then we will open it up for general questions and
11 comments. When we get to that point, we have a microphone
12 over here on my left and we will be able to move this
13 mike off the podium. The reason for the mikes is so
14 everyone else and the reporter can get everybody's comments.
15 Also, please identify yourself when you go about asking
16 your questions, and also identify the person up here you
17 would like to respond to your question if you have one
18 particular individual in mind. I will start off and give
19 Judy Bird the first opportunity.

20 MS. JUDY BIRD: First of all, to Mr. Raley,
21 I just want you to know that your comments are very similar
22 to the ones we heard last Saturday in Kansas City for the
23 entire session. I have a couple of questions. Specifically,
24 you were talking about the irrigation scheduling programs
25 and the chemigation education programs. Are those programs

1 that you all do with the U.S. Extension Service, or are
2 those ones the institute has taken on its own?

3 MR. RALEY: Those programs are primarily
4 conducted with the cooperation of several agencies, namely,
5 the Extension Service and soil Conservation Service in the
6 field, and, of course, backed up by research from the
7 experimental station and ARS on the campus.

8 MS. BIRD: Do you think that the land grant
9 universities you mentioned are receptive to changing the
10 way that they have directed their soil testing programs?

11 MR. RALEY: I don't know. I really haven't
12 explored that very much in detail, but I would say that if
13 there is a technical way of doing it, that they would be
14 receptive. I really do.

15 MS. BIRD: Thank you.

16 MR. EHRMANN: Do you have any questions?

17 DR. EVANS: Several of the speakers have talked
18 about data and I wanted to raise a question among them, not
19 to anyone in particular, but the need for a data base is
20 clear enough and the apparent shortage of data is clear
21 enough. There is some conflict, I would say, in effect
22 of water quality regulations versus water rights. I am
23 wondering how you feel about how the data base ought to be
24 put together, whether it ought to be done at the state
25 level or at the federal level as Don Goolsby talked about,

1 as an example of the Geological Survey data base development.

2 MR. EHRMANN: Somebody want to take a whack as
3 that?

4 MR. RALEY: Let an attorney do it.

5 MR. FOSTER: Having had the pleasure of
6 working with the U.S.G.S. data insofar as surface streams
7 and water quality classifications, writing permits for
8 waste permits, like any data collected from ground water
9 wells by the U.S.G.S. it is generally recognized and
10 generally accepted in any kind of dispute. One way that we
11 probably could encourage additional data collection in my
12 mind is, that while we now require permits or some sort of
13 permit for those who have septic tanks and while the state
14 engineer will provide a form of an approval for domestic
15 wells, we have no permitting process or requirement for data
16 collection after the wells are installed and after the
17 septic tanks are installed. That is kind of a state law
18 change that we could implement that would develop a data
19 base such that a home owner on a drinking water well with
20 the septic tank would be paying a fee, which would help
21 support our impoverished county health departments to
22 collect that kind of data, so that over time we would be
23 getting a data base for regional areas where people are
24 dependent upon ground water for drinking water purposes.

25 We know we have got a problem in data collection. It

1 is a matter of one developing financing so we can collect
2 the data.

3 MR. EHRMANN: Any other panel member wish to
4 add to that?

5 MR. RALEY: I would like to resond. I think
6 Tad there is a requirement on Senate Bill 213 for requiring
7 the amount of water pumped, but I don't think it has ever
8 been enforced.

9 MR. FOSTER: Well, our total orientation is
10 towards the quantity and not towards the quality, and again,
11 we can create laws that we don't have the financing
12 vehicle for enforcement. There is no reason for creating
13 the law.

14 MR. SHUEY: I think the Office of Technology
15 Assessments in October of 1984 looked into the national
16 ground water concerns and had a couple of conclusions, and
17 one was there is a lot of data out there about ground
18 water and ground water quality, but it hasn't been brought
19 together in a large cohesive fashion. My experience has
20 been there is a lot of data in state agency files and local
21 agency files. We need to get the best minds together to
22 pull that together, but there is a class of data that is
23 lacking and I don't know whether it happens in other states,
24 but we don't have any way in New Mexico of collecting data
25 on private water wells. Maybe Mr. Foster's idea of charging

1 fees for the local health agency to collect water samples
2 from private wells, maybe that is a way to do it.

3 MR. GOOLSBY: I would like to make one brief
4 comment. The Geological Survey, as some people alluded
5 to, does have a national water quality storage base. EPA
6 has a data base, which is known as STORET. I think in our
7 data base we would want to restrict that to data pertaining
8 to the resource itself and probably exclude our regulatory
9 data and won't include that in our data base.

10 MR. BROETZMAN: I would just like to reiterate,
11 I think there is a lot of data on ground water. I don't
12 believe it is anywhere near extensive as surface water. I
13 think the fragmentation is a problem in Colorado. I believe
14 there is data in many different state agencies. We haven't
15 done a good job, in my opinion, of pulling that together and
16 making the best of it.

17 DR. EVANS: I would like to add a note to that.
18 Beginning in 1978, we had a task force created by the
19 Water Quality Control Division here in Colorado which I
20 chaired to start developing a strategy, and one of the things
21 we quickly saw was the fragmentation of data, just as has
22 been pointed out.

23 One of the suggestions we made, and I will pass it
24 along, was that we have an interagency task force formed of
25 the several state agencies who do collect data, the Geological

1 Survey, the Water Conservation Board and the State Engineer
2 and the State Health Department and others, and I think
3 even the Mined Land Reclamation Board and so on, that we
4 do an interagency task force and assign them the job of
5 collecting the data and going further into the job of
6 classifying ground water bodies, and that looked like an
7 approach to that problem.

8 MS. BIRD: I am eager to hear what happened.
9 I am waiting.

10 DR. EVANS: What happened is it is still
11 happening; in the development of the strategy Gary has
12 referred to they are coming down to the wire now and in
13 hearings on a proposed strategy and standard.

14 MS. BIRD: I have a couple more questions.
15 First of all, Mr. Goolsby, you have some pretty good
16 information on Nebraska it looks like, and I wonder how
17 do you think that information, if you are to assist them
18 in Nebraska in making decisions about pesticides and
19 fertilizer uses?

20 MR. GOOLSBY: The information that we have
21 collected in Nebraska, the reason we do have such good
22 information, is the result of another federal program
23 that we had under way that I didn't talk about, a program
24 concerning ground water contamination. About two years ago,
25 through this program, we selected a few states to go into

1 and try to pull together all the existing
2 information that was available from state agencies, wherever
3 the information was available, and try to synthesize that
4 and put together a picture just to see what we could do with
5 the existing water quality information on a ground water
6 amount. The information I was showing here from Nebraska
7 came from a published report that came out of that study.
8 This has been very closely coordinated with state agencies
9 in Nebraska and the information there is available to them,
10 and in fact, they contributed much of the information that
11 was used in that study.

12 MS. BIRD: You don't actually go the next step
13 and offer any advice to them in making a decision based on
14 all of this information?

15 MR. GOOLSBY: We have an office in Nebraska, of
16 course, and the personnel in our office are our own
17 various task forces and coordinating committees
18 with other officials in Nebraska. Through those committees
19 advice, information, suggestions and so forth are given
20 at the request of those other agencies. That is the mode
21 in which we generally operate.

22 MS. BIRD: Chris, you mentioned you felt that
23 there are problems in the west that are significantly
24 different from the problems in the east, and therefore, a
25 national program is perhaps not appropriate. Do you mean

1 by that that you feel that the resources in the west would
2 be more protective of the resources in the west or less
3 protective or different? Could you just elaborate on that?

4 MR. SHUEY: I think one problem is the political
5 problem. As much as I would like to think we could have a
6 national concensus on how to protect ground water, I have a
7 feeling that is going to be pretty difficult. My experience
8 and what I was trying to say, my experience in talking with
9 people from the east is, that they aren't necessarily
10 sensitive to what goes on in an arid climate out here in the
11 west. I am not suggesting that there should be uneven
12 levels of protection between the east and the west, because,
13 wherever groundwater may be, either in South Carolina or
14 in New Mexico, it has similar characteristics. I was just
15 trying to get across the point that the physical and
16 geographical conditions and characteristics are different
17 to the extent that a national technical way of protecting
18 ground water may not apply at all sites. We have come to
19 learn that ground water protection is rather site specific.
20 What I was trying to get across, there may be a need for a
21 national goal or national standard by which everyone could
22 abide and I tried to define that as some way of
23 preventing pollution or taking action to prevent pollution,
24 recognizing variability and limitations of doing so.

25 MR. EHRMANN: I would now like to open it up for

1 questions or comments from those of you out there. As I
2 said, there is a mike over here and we have an assistant
3 that is going to help get you a mike on this side. Again,
4 if you have a question, please identify yourself before you
5 ask the question and then direct it to the appropriate person
6 up front here. Does anyone have any questions or comments
7 on anything you have heard this morning? If not, I will
8 let the panelists whack away at each other for a few minutes,
9 but I would hope some one out there may have a query or fol-
10 low up comment or complaint or something of that nature.

11 MR. DON BEAKEY: I am Don Beakey, City of
12 Burlington in eastern rural Colorado.

13 I would like to direct a question to Gary. Our question
14 is what would the Department of Health recommend in monitoring
15 in rural domestic water wells, and could the department
16 handle a sampling process that they do for rural Colorado
17 cities?

18 MR. BROETZMAN: Are you referring to monitoring
19 of the drinking water systems for a rural community?

20 MR. BEAKEY: Well, the rural domestic wells
21 themselves. We send samples to you every week.

22 MR. BROETZMAN: You are talking about private
23 wells?

24 MR. BEAKEY: Yes.

25 MR. BROETZMAN: We have no jurisdiction from a

1 regulatory perspective of a private well, as you know. We
2 do provide advice and try to explain the limits in public
3 water systems, which has the same applicability in private
4 wells as well. We do offer a charged sampling support. It
5 is that advice that we can provide and our general advice is
6 to try to stay within the limits established by the federal
7 government.

8 Nitrates are a problem in many of those areas out there.
9 We know that, and to the extent that nitrates are preventative,
10 action can be taken. There are alternatives that you can
11 look for, other sources, but generally we try to advise them
12 to stay within the limits as defined in our regulations for
13 public water systems.

14 MR. BEAKEY: In other words, our rural folks
15 have a question; should they wait until it tastes bad
16 before they have it checked?

17 MR. BROETZMAN: If I had a private water well,
18 I would try to check it periodically. I would want to
19 know what I am drinking, and certainly, we advise along
20 those lines. Sometimes when you wait for odors, you do
21 have more problems than you really want.

22 MR. BEAKEY: Then your department could handle
23 that on an individual sample test?

24 MR. BROETZMAN: I believe we do sampling at
25 cost in our laboratory, yes.

1 MR. RALEY: I might add to that; CSU does
2 test water at our soils laboratory, for individuals, and
3 we get thousands of them every year, and they test for
4 just about everything you would want to test for in the
5 soils lab at a very minimal charge. It is about \$12 a
6 sample; something like that.

7 MR. EHRMANN: Any other questions from the
8 audience or comments?

9 MR. GREG LYONS: I am Greg Lyons, State
10 Senator from Arizona. Let me share with you briefly my
11 perspective, so that the questions might be put in more
12 appropriate context. I represent a district in Tucson,
13 Arizona. Tucson is a city that is one-hundred percent
14 dependent upon ground water for drinking water. There are
15 no surface water supplies that are economically accessible.
16 Additionally, Tucson has a Superfund site located in the
17 southern part of the city consisting primarily of TCE
18 contamination by the Hughes Aircraft Company, the
19 Department of Defense, and other industries of a similar
20 nature located within the area. Consequently, there is
21 strong concern in my city as there is throughout the state
22 about the problem. We do have, as a couple of gentlemen
23 mentioned, a ground water protection program, not
24 for quantity only, but also for quality. It is currently
25 in dispute and under court challenge, and there is a

1 citizens initiative being circulated, that if successful
2 in gaining the number of appropriate signatures, and no one
3 really doubts that it won't be successful, will appear on the
4 fall ballot in November and represents an extraordinary
5 stringent approach to the problem, but one in the absence
6 of the legislature acting will come to pass. I have a
7 million questions, but I will just ask one and save the
8 rest for more informative discussion. This is a question
9 that I would like some perspective on, maybe starting with
10 Mr. Foster as a member of the Colorado Water Quality
11 Control Commission. One of the debates we get in Arizona is
12 who is it that does the regulating. I think that is
13 probably an important consideration in terms of apprehension
14 about a future federal role, and that is that the role of
15 the industry, the regulated industry in particular, states
16 it would be less if it was at the federal level than it is
17 at the state level. A number of states in the west, and I
18 think it is the rule rather than the exception, have some
19 kind of commission approach to it, and
20 representatives of industry are on it in many cases. Indeed
21 the State of arizona is dominated, and I guess I would be
22 interested in any one's perspective, starting with Mr.
23 Fosters and on that kind of approach, the politics of it,
24 and the substance of it, a nd whether that is something that
25 ought to be perpetuated or decreased as times goes on?

1 MR. FOSTER: Let me restate the question in
2 a very simple form. Do I have a conflict of interest?
3 I think I might say, yes, I do. Colorado's Water Quality
4 Control Commission consists of nine members. The members are
5 appointed by the Governor with the approval of the state
6 senate, so it is really in the hands of the governor and the
7 senate and various lobbyists and organizations. It is going
8 to be a mixture of that kind of organization. In our case,
9 I think many of us feel there is a good mixture of
10 municipal perspective, industrial perspective, environmental
11 perspective and public citizen type of perspective. We have
12 had times where there are those who believe the Commission
13 was dominated by environmental perspective and I suspect
14 there may be those that believe we may be dominated by
15 municipal perspectives. What is interesting is that
16 a municipal perspective is one of both the user and the
17 regulator; one who has an interest in clean water as well
18 as an interest in maintaining the cost at a level that the
19 taxpayer and the rate payers feels acceptable.

20 I think Rick Austermann's concept of a blending
21 between the polluter and the user is true. All of us are
22 in this bag together. We are all trying to figure out what
23 is reasonable. Probably the institutional question that is
24 becoming more and more important is, it was easy to go that
25 first 80% of clean up cost, or even 90% of clean up cost.

1 Now, we are at the last 10% and it is going to cost us
2 more for that last 10% of clean up cost than it did for
3 the first part. And now the question is, it is all nice to
4 be in favor of clean water and pristine water, but if we
5 don't receive any tangible benefit from that huge additional
6 cost, what is our position? Those of us who wear an
7 institutional hat on behalf of municipalities may be more
8 recalcitrant than those who have a position on simply
9 taking an environmental perspective of saying pristine
10 water is great. On the other hand, even the environmental
11 community recognizes that if we go so far as costs so much
12 we are going to get a back lash at a political level, that
13 is going to be worse, so where is the compromise. I would
14 suggest that so far as the institutional framework, a
15 Commission, I think, works well. The question is, who is on
16 the Commission, and you really have to participate at the
17 political level in getting the right kind of individuals
18 on that Commission. Probably what is most important is
19 the quality of the individuals that will be able to
20 devote the time to it. It is a hell of a time consumer,
21 and will he be able to listen to the facts presented
22 with an objective mind. Are they going to be willing to
23 participate in making decisions that have to be made where
24 there is not sufficient information. We cannot study an
25 issue to death. The people aren't there who can afford to

1 do the studies that are often necessary to the kind of
2 decisions to be made in a very technical area. That does
3 have political overtones. I would suggest that most of
4 the time from the Water Quality Control Commission perspective
5 the decisions we make are not political, but technical,
6 but they are developing more and more of a question of how
7 far do we go with the imposition of cost on the discharger,
8 and are we seeing any benefit from that.

9 In the case of the Clean Water Act, the interpretation
10 that we are getting from EPA, the purpose of the Clean
11 Water Act is to restore the streams and we are now past
12 the point where the cost is free of any relevant -- it will
13 be restored regardless of cost. That is the kind of story
14 we are getting in Colorado. I think we need to be looking
15 at that question in terms of ground water; do we want to
16 put a limit on. Where does cost come in the framework of
17 the discussion.

18 MR. SHUEY: We also have a Water Quality
19 Control Commission. It is made up of eight representatives
20 of different state agencies that have some concern about
21 water quality and one member of the public at large
22 appointed by the governor.

23 Now, under the state statute in addition to being
24 able to adopt the regulations and prevent and abate water
25 pollution the Commission must, in adopting regulations,

1 consider six statutory factors, almost all of which have to
2 deal with the economic impact of the regulated community
3 of the regulation. From the standpoint of my bias, there was
4 a time I think when those of us who were in the environmental
5 movement perceived the water Quality Control commission on
6 the side of the discharger. I got to believe that has
7 changed.

8 There was an attempt in the last legislature,
9 however, to adopt a bill that would amend the water quality
10 act to appoint by statute on the water quality control
11 commission a representative from agriculture, industry, the
12 state extractive industry and the state's manufacturing
13 industry, and to exempt them from the conflict of interest
14 requirements, which says that you can't make half of your
15 livelihood from the enterprise regulated by the Commission.
16 We effectively defeated that. I don't have as many
17 complaints about the operation of it now as I think some of
18 us did at one time.

19 MR. EHRMANN: Any other comments on the
20 panel?

21 MR. JIM WARNER: I am Jim Warner with Colorado
22 State University.

23 I am in the Department of Civil Engineering and
24 Ground Water there. I have a question for Gary Broetzman
25 on the panel. My first question has to do with the

1 State of Colorado. The State Engineer's office has primary
2 responsibility for quantity of flow or quantity of water,
3 and the Health Department has to do with the quality of
4 water. Historically in the State of Colorado, most of the
5 concern has been with quantity, so it seems as if the state
6 engineer's office has had the concentration of engineers
7 and hydrologists and stuff, who are more expertise in ground
8 water. Do you see a problem with the Division as it is
9 set up? The Colorado Water Quality area is in one agency
10 and the quantity in another agency. That is my first
11 question.

12 I have a second question, and it is directed to Gary
13 and the industry representative, and that is, it has been my
14 observation that when the permit application, when the
15 ground water contamination comes up in Colorado, that
16 your agency may be dependent a bit on data provided by the
17 industry that is doing the pollution or the consultant hired
18 by them,--which seems to be somewhat of a conflict of interest.
19 Do you see a problem there?

20 MR. BROETZMAN: Let me deal with the last one
21 first. There is no question that a lot of the data that we
22 use for decision making is developed by the permittee or
23 the applicant. We also develop some data on our own. We
24 have a limited budget certainly to do stream monitoring,
25 both in terms of hot spots where there are decisions to

1 defining ambient data.

2 We try to review the quality of the data as best we
3 can. We rely on the professionals who are developing the
4 data, and assess that in relation to standard approaches for
5 data acquisition. We generally don't find a great deal of
6 problem with the data. We find more of a problem in the
7 interpretation of the data and I think that is where a lot
8 of the disagreements and honest professional disagreements
9 take place. We have encouraged the permittees to do more
10 stream monitoring. We try to work with them so that we
11 are watching the process unfold rather than wait until the
12 end of the monitoring or study process. We feel that more
13 data certainly helps for making better decisions. I might
14 point out the whole system of water quality control, drinking
15 water control in this country and at the state level is
16 based on the data being generated primarily by the
17 regulated entities, and with us overseeing that, and
18 relying considerably on that data for decision making.

19 So to change that would be a very difficult process
20 and a very costly process. So those are my comments on that
21 last question.

22 With respect to the first question of fragmentation.
23 I pointed out in my statement that is a problem with most
24 states across the country and in the west. I think it would
25 be very difficult institutionally to change that. There are

1 some advantages and some disadvantages in being separate.
2 There are some advantages of maintaining some independence
3 in being separated. We are in the process of developing
4 capabilities in engineering, geologic and hydrologic with
5 respect to ground water. We do have quite a bit of
6 engineering support within my division with respect to
7 stream standard and stream data. As to whether we are
8 placed at a disadvantage, I don't think we are necessarily
9 placed at a disadvantage. We have, I might add, a
10 good working relationship with the water people in the
11 state engineer's office. It has been a very helpful
12 cooperative effort. I don't see us competing over turf as
13 it is. We are just developing that capability on my own
14 staff and we are doing that so we can communicate
15 effectively with the other agencies.

16 MR. DAN LUECKE: My name is Dan Luecke with
17 the Environmental Defense Fund. I have a question for Mr.
18 Broetzman and also for Mr. Shuey and Mr. Austermann. Before
19 I ask the question I would like to state what I have
20 suspected is obvious, and that is, when we are talking about
21 ground water protection from contamination, it is something
22 different from surface water and air pollution. In fact, I
23 would say that anything that has to do with pollution of
24 the land is in a different category. If we take Mr. Goolsby's
25 data on Nebraska, for example, those areas we see contamination,

1 I would submit if all sources of that contamination seek
2 to discharge immediately, resident times and half lives of
3 those materials, those contaminants in the ground water
4 would leave it there for a very very long period. We don't
5 clean up the ground water the same way we clean up the
6 surface water, or contamination of the air by cutting off
7 the source of the contaminant.

8 Given that is the case, do those to whom I asked the
9 question believe that the potential polluters of the ground
10 water ought to be held to a different standard of proof, if
11 you will, than any of those who are potential polluters of
12 surface waters or of the air?

13 MR. BROETZMAN: Let me say that I believe that
14 one can develop a very strong case for a more preventative
15 program for ground water quality management than perhaps
16 for surface water, because it takes geologic time to correct
17 a problem that occurs. I think one can also build a case
18 that one should error on the side of it being overly
19 protective of ground water. That is a tough one in dealing
20 with the regulated community. Wisconsin, I believe, has a
21 program where they use a more stringent set of criteria for
22 protecting ground water for public health than they would
23 a surface water, because if they make mistakes or make the
24 wrong assumptions in setting wrong standards and finding
25 out with time, then it is very difficult to correct that

1 problem. That has been going on prior to the time that
2 a change needs to be made. I think as a philosophical
3 approach, yes, one should try to be a little bit more
4 careful of ground water contamination than the surface, and
5 whether that will evolve in our program we will have to
6 see, but I tend to agree with that philosophically.

7 MR. SHUEY: Well, I would agree philosophically
8 too Dan. As you know, there are a couple of differences
9 between surface and ground water. One is that surface
10 water has a dilution system, and we have had the concept
11 of everytime that dilution is not the solution to pollution,
12 and that is how we clean out surface water. Ground water,
13 as you know, is not amenable to that. It takes a long time
14 after the pollution stops to clean up the system, if it
15 is ever cleaned up, and that may take hundreds of years.
16 At least looking at our standard, we already have a more
17 stringent requirement for ground water protection than
18 surface water protection, but what we lack is remedial
19 action, and we lack that because everybody sits around
20 scratching their heads to what extent do you clean up a
21 polluted system. Do you clean it up to background or
22 existing concentrations that were in the aquifer at the
23 start of the operation, or that were contributed by the
24 operation before it came into regulation, or do you allow
25 a certain amount of residual pollution to exist forever.

1 My view is that you do everything possible to clean it up
2 and I think that is an additional burden on the discharger.
3 In our state we have been trying to forgive some of the
4 initial pollutants, but now that it is well known that we
5 want to try to prevent pollution wherever we can, I think
6 that in itself is a different standard, a more stringent
7 standard. I am always looking for suggestions on how to
8 deal with remedial problems, because they are very
9 big problems.

10 MR. AUSTERMANN: I think the air, surface
11 water and groundwater programs are designed to be, and should
12 be designed to do different things, so to dance around your
13 question, I think the standards of dischargers to ground
14 water are properly different from those that apply to air
15 and surface water emitters. I think whether those are more
16 or less stringent would depend upon a lot of site specific
17 circumstances. The air program is primarily designed to
18 protect ambient air quality standards, which are designed
19 to protect public health. I think the operative assumption
20 in the air program is that plumes of pollutant disperse
21 very quickly, which doesn't mean they go away, but any
22 pollutant emitted into the atmosphere very quickly affects
23 all of the air around the polluting source. If you look
24 at surface water programs, at least as it operates here in
25 Colorado, it has been more restrictive standards and

1 designed to protect not people, but aquatic life. I think
2 the application that occurs after pollutant is discharged
3 to surface waters is some what less complete and somewhat
4 less quick than it is into the air, and that is certainly
5 less to ground water. Once you talk about a discharge to
6 ground water, one of the problems you have to address, and I
7 think I raised what is it you are intending to do, are you
8 protecting all sole source aquifers for drinking water or
9 are you trying to protect downgrading of diversions in
10 irrigation or what? Are you talking about a single water
11 source, where possible, you can identify a discrete plume
12 that will result, or are you looking at a lot of diffusion
13 smaller sources, which may be contaminating a larger portion
14 of the aquifer more quickly. To answer your question, I
15 think you ought to take a more detailed look at the next
16 use between dischargers and the user and the potential
17 users than you do the surface water and the air.

18 MR. LUECKE: May I be allowed a follow up
19 question and a point of clarification on my question?

20 MR. EHRMANN: Sure.

21 MR. LUECKE: I think there are two issues
22 here. One is to standard. In other words, concentrations
23 that might be allowed in ground water or in a surface water
24 system or air. The other is the understanding of the
25 mechanisms by which the source is polluted and then the

1 movement of material through the medium, whether it is
2 the air, ground or surface waters. My question was directed
3 more at that second concept than the first. It is not a
4 question of standards, but a question of our understanding
5 of the physical system. For those of us that have had the
6 misfortune to be in Denver earlier in the week when we had
7 a couple of earlier rather unpleasant days with the
8 meteorology, what it was and the conditions they were, we
9 had very very polluted air. I would submit that if the
10 resident time of that air quality were measured in years or
11 decades rather than in days, that the department of health
12 and the community at large would be very concerned about our
13 understanding of the mechanism of the sources, the
14 dispersion and so on, and would be doing more about the
15 problem. We, as a community, would demand to know more
16 about the problem than it is doing.

17 With ground water we do have those long resident times.
18 Once we have made a mistake, once we realize we didn't
19 understand the mechanisms, once we realize that we didn't
20 appreciate the hydraulic connection between various
21 aquifers or ground water systems or whatever the state calls
22 them, there is not much we can do about it. When it is the
23 air we can hope for a strong wind and we know we will get
24 it, but with respect to the ground water that is not the
25 case, so the question was directed at our understanding

1 of the mechanism and there the burden of proof, if you
2 will, on the user.

3 MR.EHRMANN: I am going to just let that stand
4 where it is. Dan will be on the panel this afternoon, but I
5 got three people or four that want to ask questions, and we
6 are running short on time.

7 MR.DICK RUSSELL: I am Dick Russell, environ-
8 mental writer, and my family has a farm in Kansas, and I think
9 my question would be directed to Chris. Before I ask it,
10 let me say I wasn't here for much of this morning's discussion.
11 I got here a little bit late, so you may have covered this.
12 If so, you can make your answer brief. I also want to
13 state I am the publisher of the new National Magazine called
14 You and I, which I would like to show people, whoever is
15 interested at the break. Most of this issue is about rural
16 life and what is happening to the rural environment. I
17 have written an article and another article, what is
18 happening to the Ogallala Aquifer, and is focused on
19 western Kansas and southwestern Kansas, and in the Garden
20 City area, both in the magazine and my question, of course,
21 the depletion of the aquifer is really bad. It is down 40%
22 in many places in what it was 20 years ago, and is a very
23 serious problem that has come about mainly because of
24 center pivot irrigation and creation of an artificial corn
25 belt there. My question is, what is the status, and I know

1 that Kansas has been suing Colorado under the Arkansas
2 River compact, because they say in Kansas that Colorado
3 is holding up too much water from the dam here and I
4 wonder what the status of that lawsuit is and also briefly
5 if you haven't covered it, whether Colorado is facing
6 similar problems with the Ogallala?

7 MR. SHUEY: Well, I have to decline, because
8 I am not -- my work has been really in quality aspects of
9 ground water and I only know peripherally about the Ogallala
10 Aquifer from what I read in the newspapers. In the eastern
11 plains of New Mexico, I think the general attitude, most
12 especially in the agricultural community, there is not a
13 great concern about the quantity problem as the folks in
14 Colorado have expressed. I'd really rather let them address
15 that point.

16 MR. EHRMANN: I think since our focus is
17 quality, if the answer is, I want to answer your question,
18 but I don't want to take too much time. If someone on the
19 panel could answer that.

20 MR. BROETZMAN: It is my understanding that
21 both issues were raised in the Arkansas and Ogallala, and
22 are more of a quantity than they are a quality problem.

23 MRS. HESTER McNULTY: I am Hester McNulty
24 and I am Water Chairman of the League of Women Voters. I
25 have a comment and then a question. The comment is in

1 response to the question previously asked about
2 the separation of water quality and water quantity, and I
3 would like to point out that the Water Conservation Board
4 addresses quantity only. We had a hearing yesterday on where
5 should the state go forward with some sort of water planning
6 in a background paper, and they said it has been the duty
7 of the state to protect water rights from water quality and
8 water quality legislation. So they didn't even consider the
9 Water Quality Commission part of the state. In our testimony
10 we pointed out that in fact the Water Quality Control
11 Commission part of it was part of the state, so my question
12 Mr. Foster: my organization, the League of Women Voters, has
13 been following ground water for a period of years and it has
14 been a priority with our organization all over the state.
15 We have found that if you can't beat a party to the hearing
16 because of the Colorado legislation that lets organizations
17 that can hire lawyers and come in with reams of paper, you
18 don't have as much say. I would like his response. I
19 don't feel very defeated after the ground water quality
20 hearings that the lawyers were going to win the day, and the
21 citizens groups like ours that have worked their heads off
22 on ground water quality didn't count for much, and I would
23 like his response?

24 MR. FOSTER: Hester is definitely a well known
25 face in front of the Commission, and is always an effective

1 participant despite our demeaning attitude at this point.
2 I think it is a question to what extent can the public
3 effectively be a participant in what are basically very
4 technical type hearings, without assistance of either
5 lawyers or expert witnesses. I would also suggest that
6 if we look to Trout Unlimited as an example, public
7 participation can be effective in a technical type proceeding.
8 Trout Unlimited has been effective in finding attorneys
9 in town who are willing to do a pro bona basis. They have
10 been able to find within their own membership the kind of
11 expertise on aquatic life issues that have been able to
12 participate in the hearings. Trout Unlimited picks their
13 battles very well, and they usually are successful in their
14 presentation.

15 Perhaps what we are seeing now is the role of
16 citizen participation in what basically are technical
17 decisions -- to move more and more toward utilizing
18 technical expertise if they can find it on a pro bona basis.

19 Now, I think it is fair to say that other state agencies
20 such as the Division of Wildlife, such as our own staff,
21 the Water Quality Control Division often take a position
22 that is very similar to the League of Women Voters and other
23 public interest type organizations. So they often have
24 significant amounts of clout because of the other state
25 agencies that are taking similar positions. There is no way

1 to make a simple solution. I think we have to realize it
2 takes time and effort and money to make these kinds of
3 decisions come to fruition.

4 MR. SHUEY: If I may add, Tess, as you know
5 it has always been a concern of ours, and I think we tried
6 to address it in terms of not only educating ourselves,
7 but not being afraid to address the technical issues; not
8 that we are expecting to or can do ground water modeling
9 or very detailed hydrologic studies-- you know, transmissivity,
10 permeability and all that kind of stuff--but you largely
11 find that average citizens who are well owners and who
12 use the ground water have very important pieces of infor-
13 mation to add to those kinds of regulatory situations.
14 Don't discount their involvement or the role that they can
15 play in these large technical decisions. We tried to bring
16 to them citizens who have experiences that all the hydrologists
17 and the lawyers in the world don't have.

18 MRS. McNULTY: I did organize the health
19 department to show up for those sort of comments, but
20 because the state health department around the state, but
21 then it was more a bunch of lawyers, and it was technical.
22 I was on the committee and kept up with all the advisory
23 committees with the technical things. I am not complaining
24 about technology. I am complaining about the lawyers.

25 MS. MARLEN FISH: I am Marlen Fish and I live

1 in Lakewood and I am going to be introducing a bill next
2 week on establishing an office of geographic information in
3 the Department of Local Affairs. I think several of you
4 have already heard about that. I am not sure I want to bring
5 that subject up today, but I think there are a lot of you
6 interested in what this might mean, and you might want to
7 talk with me about it at lunch. I have heard a lot about
8 information stashed away in agencies, and the idea of
9 this particular piece of legislation is to try to establish
10 some guidelines to make the data base so that we do
11 have a plan down the road that fits together, especially for
12 the counties, but also for the state and also the geological
13 information. So we are still drafting and there is time for
14 input and I think perhaps it is better to talk about some of
15 those things before the bill gets on the table, so that is
16 why I am letting you know that I am doing this and I basically
17 came to listen and to learn. Thank you.

18 MR. EHRMANN: Thank you for the comment.

19 MR. LYONS: Mr. Foster says that he favors a
20 rebuttable presumption of a drinking water quality standard
21 across the board. I am just interested in knowing if there
22 is anyone on the panel who would take issue with that?

23 MR. SHUEY: Why don't we have Mr. Foster define
24 what he meant by rebuttable presumption?

25 MR. FOSTER: The concept behind rebuttable

1 presumption in essence, we would deem all ground water in the
2 state, all ground water within the state as suitable for
3 drinking water purposes, and if anybody wanted to use or
4 discharge water to ground water at quality less than ground
5 water quality or drinking water quality, they would have to
6 establish to the commission why they should be able to do
7 so. In other words, let's establish a floor of drinking
8 water quality which is to be protected and maintained. Now,
9 you asked will anybody take issue. I will take issue with
10 it. Going back to Dan Luecke's earlier comment, realizing
11 that once ground water is fouled it is fouled for decades
12 and longer, do we want to even foul it to the slightest
13 degree? If we have ground water that is better than drinking
14 water quality, do we want to even let it deteriorate and
15 degrade down to drinking water quality. Certainly you can
16 make a lot of good argument there should be no degradation at
17 all because of the difficulty of clean up. I would suggest
18 that even though the State of Colorado has not really
19 developed a policy along that line, when you look at the
20 regulations that are already in place, for the establishment
21 of solid waste sites, for beneficial use of sewage sludge, in
22 essence, we have adopted a non-degradation provision, but
23 then the question becomes, is that really beneficial? What
24 is the cost trade off? Is it really realistic? Can you
25 line the bottom of a sewer lagoon so that it is absolutely

1 impermeable, or should you expect there is going to be some
2 permeability over the life of that facility that is going
3 to impact the ground water, and is antidegradation really
4 an achievable goal? These are the kinds of issues that we
5 are frankly struggling with before the Commission.

6 Going back to the question of drinking water
7 quality, does anybody really know what drinking water quality
8 is. We have got a whole set of primary treatment drinking
9 water standards that have come out of the EPA, and yet
10 Congress is looking through the Safe Drinking Water Act of
11 imposing a whole new set of additional parameters. That
12 must have limitations imposed on it so if we were to simply
13 protect an aquifer to the existing set of parameters,
14 contaminants, then a whole new set of contaminants came out
15 that we had not earlier protected, how are we protecting
16 them. One of the problems we are trying to figure out is the
17 level of protection we are seeking to achieve when we really
18 don't know what is coming in front of us, that is far down
19 the line.

20 MR. SHUEY: In New Mexico, we already have. We
21 protect ground water that is 10,000 parts per million TDS
22 or less. And if the TDS is 200 parts per million, and you
23 got a waste disposal that causes the contamination to rise
24 to 199, the standard is 1,000, that is limited degradation.
25 You know, you can ask me what I think about that as a policy

1 matter. The thing that we try to avoid though is this
2 concept of significant risk in which you somehow,
3 especially for the synthetics and organics and the real toxic
4 materials, that you have to somehow establish this is the
5 effect before you take action, and I kind of hear that as
6 an undertone not only here but in many of the things
7 that I have participated in, where we have to go out and
8 have to show there is some polluted ground water or a
9 statistically significant number of dead bodies before we
10 can take action to prevent pollution. I think that is
11 standing on its head the concept of the ample margin of
12 safety that was in the Clean Air Act and the kinds of
13 requirements that are built into RCRA to keep those things
14 out of the ground water system. It is a rough policy decision
15 to make. That requires a lot of people getting together and
16 doing a lot of discussion.

17 MR. EHRMANN: I would like to thank the panel
18 for their participation as well as those of you in the
19 audience who queried them. It was a session that set the
20 stage well for our discussion this afternoon on policy
21 options.

22 We will be in recess for the noon hour.

23 (Noon recess taken.)
24
25

AFTERNOON SESSION

1
2
3
4 DR. NORMAN EVANS: Ladies and gentlemen, let's
5 come to order if you please.

6 We have the panel in place and just ready to go.

7 I am just here to introduce the afternoon participants.
8 I do want to say a couple of things first before we go
9 further. These proceedings will be printed from this
10 transcript and it will be available and a notice mailed
11 to you when it is ready, and it won't be too long, so you
12 will get a notice in the mail.

13 I am going to close a gap that may or may not exist,
14 but we talked a good deal about data information, about
15 facts, and one of the things we all feel sensitive toward
16 considering the subject at hand is that the lack of
17 solid scientific facts in a lot of the cases that we're
18 dealing with. As for example, how does the critical
19 concentration of particular elements itself affect biota
20 of certain kinds. I did want to point out then that
21 research is an element in this big picture that we ought not
22 to lose sight of. I just call that to your attention
23 so it doesn't fall through the cracks in any consideration
24 of long range plans.

25 I wanted to point out in our program in Colorado and

1 Water Research Institute, for example, we are doing work
2 for the water quality control interest. Just a couple of
3 examples I wanted to mention.

4 Chemigation was talked about, and we have worked on
5 evaluating the contamination in an aquifer for a slug
6 of chemicals that might back flush back down into the well,
7 and where does it go and what happens when the pump starts
8 up again, does it all come right back out, or how does it
9 diffuse in the aquifer, and trying to look into that
10 slug of chemicals that might go back down the well.

11 The second one is geochemical injection of the deep
12 aquifers in the Denver Basin, which locally is a very
13 important source of water supply in the metro area just
14 coming into its own more or less. The question of
15 injection of recharge is a real one facing water managers,
16 and the chemical interaction and geochemistry in the
17 aquifer is under question and study.

18 A step in the direction of eventual recharge
19 and monitoring strategies for ground water quality
20 management is another research project and subject that we
21 have actively going on relevant to the questions we are
22 talking about today Also incentives for improving
23 irrigation efficiencies is another subject very closely
24 related because of chemicals, fertilizers, pesticides and
25 so on, and some of which are leachers that have been talked

1 about, and it is related to the management of irrigation
2 water, so those are some of the things I just wanted to
3 bring into focus very quickly. Now, the moderator for
4 the afternoon will be Professor Henry Caulfield. He is
5 Professor of Political Science at CSU. He has a long career
6 and is very closely oriented to the subject of the meeting;
7 a long career with the Department of Interior, and he retired
8 and joined the University Academic Community probably about
9 15 years ago. It is my pleasure now to introduce
10 Professor Caulfield.

11 PROFESSOR CAULFIELD: Thank you very much, Mr.
12 Chairman.

13 This afternoon we need to get on as we are starting
14 a bit late. Ms. Bird is going to participate again as a
15 questioner from the Staff that is sponsoring this
16 conference.

17 This afternoon, the topic is National Ground Water
18 Protection Policy Alternatives. So we are getting in
19 to the idea of policy and into the question of alternatives,
20 and I'd like to highlight a couple of things from this
21 morning that are going to come up again this afternoon.
22 One is the organizational diversity that is involved at the
23 state level and also the national level to some extent in
24 handling this problem. We also have brought as was brought
25 out this morning many policies at the federal government as

1 represented by different laws, and that impinge on this
2 question, but no one law which focuses on this question. As
3 I understand the national level EPA considered the question
4 whether there should be a ground water law or not, and to
5 some degree they decided there shouldn't be a separate
6 new statute on this question, but instead, they should have
7 a ground water strategy as a regulatory matter, and that is
8 where they are today.

9 The question though makes relevant this session on
10 a national ground water protection policy to separate
11 states as exemplified in S 1836 introduced by several
12 Senators and including a friend of mine, senator Gary Hart
13 of this state. And so it becomes a question, and
14 probably will come up this afternoon, as to whether a bill
15 like S 1836 is relevant to our times or is way past the
16 time when we need this or maybe it is not good enough,
17 We are talking about national policy, but this is the
18 situation from the facts brought out this morning and it is
19 relevant obviously for any of us that were here this
20 morning to question what we need in the way of additional
21 national policy with respect to this particular problem,
22 which is addressed in terms, or implied in many laws that
23 are already on the books.

24 With those few remarks, I will just proceed now
25 with our speakers. I am not going to introduce them anymore

1 than they were this morning because we want to get on to the
2 substance of the program, so our first speaker is Max Dotson,
3 the Water Management Division of EPA, Region VIII.

4 MR. MAX DOTSON: First of all, let me thank
5 the sponsors of the meeting today for the opportunity to speak
6 to such an auspicious crowd. I am particularly thankful for
7 being put on the agenda.

8 I am reminded of the bumper sticker I saw the other
9 day that said, "Fight Crime. Shoot First." And so maybe we can
10 change that away and fight pollution, talk first.

11 Another reason I always like to be put first on the
12 agenda has to do with an experience I had this last fall at
13 a meeting at Thornton, which puts on every year a clean water
14 week. I was second on the agenda, and Congressman Brown
15 was first, and as usual he did a good job and answered a lot
16 of questions. Prior to the meeting I had probably an
17 over consumption of coffee and beverage, and had to take
18 care of a personal matter. I left the podium and went down
19 to the men's room. They summarily introduced Margaret
20 Carpenter while I was in the bathroom and that was somewhat
21 embarrassing as she was introduced as me as I was walking up
22 the aisle, so fortunately, I am able to sit here today, having
23 taken care of my important body functions.

24 Let me lay out a little theme here in terms of my
25 remarks having to do with the fact that I very commonly like

1 to play the devils advocate in many instances, and I like
2 to work people in the audience, not the panel up here, to
3 work the people into an anti-EPA frenzy, and I think that
4 might be very important today after having a very good
5 lunch, that we need to get on with it. So I will play
6 the devils advocate. One thing I want to make perfectly
7 clear; as I present EPA's policy option, I will tell you that
8 I don't make the cars, I just try to sell them. So keep in
9 mind, the decision has been made that is our policy and we
10 can discuss it in that manner.

11 First of all, let me say that the strategy which is
12 essentially the policy right now that EPA is dealing
13 with particularly with the states is long in coming, and
14 I think from an attempt to go all the way back to '78 by
15 the Agency to try to put together something called ground
16 water protection strategy. It was finally signed and put
17 in place in August of '84, so the point to be made here,
18 as you sit here and talk about different policy options,
19 just a ground water strategy took six years to put into place.
20 So it gives you an idea of perhaps the difficulty of putting
21 legislation or putting some things in place that go
22 significantly beyond what we presently have in the ground
23 water strategy.

24 The basic approach that EPA has laid out in its ground
25 water protection strategy is fairly simple.

1 Now, with regard to EPA, it is built on a strong
2 tradition in terms of allowing the states to take the lead.
3 As you know, most of our environmental programs have been
4 delegated to the state and the states are essentially the
5 agent for that particular piece of national legislation. It
6 has served us well. I think there has been remarkable
7 progress, particularly in the areas of responsibility, and
8 there has been remarkable progress by the state in doing the
9 right job as specified by the federal criteria.

10 So that is the basic theme; the ground water
11 protection strategy essentially relies upon the traditional
12 approach.

13 Another idea inherent in the strategy is to do a
14 better job of using our many statutes. As you know, it is
15 quite an alphabetical soup out there, CERCLA, RCRA, and I
16 can go on and on. Kind of reminds me of Congresswoman
17 Schroeder's comments this morning, she was referring to
18 it as the safe drinking water act. I know for a fact --
19 Gary Broetzman, are you here, this is kind of a long
20 tradition -- that I always have to take a cheap shot at
21 Gary. The reason I do that is because I like him so
22 much. Gary is an example. He heads up the water quality
23 program of the State of Colorado, and he has a hard time
24 differentiating between the safe drinking water and the
25 safe water drinking act, and everytime he gets too much

1 vermouth in his martini, he gives a call to Rick Carr
2 his drinking water chief and starts to complain, but
3 anyway, as you can tell, even the acronyms get meshed
4 together, and that is probably symptomatic of a bigger
5 problem; if you think it is hard just stating what the
6 acts are, it is even more difficult trying to coordinate
7 them.

8 Again, inherent from EPA's groundwater protection
9 strategy is needed to coordinate those programs and a
10 mighty difficult task.

11 Another aspect of the ground water protection strategy
12 is to enhance state programs that are presently in place. This
13 is through technical assistance and so forth. We currently
14 have seven million dollars in supplemental appropriations
15 to give to the states to develop a ground water strategy
16 of their own.

17 I would say the response by the states has been
18 remarkable. I think we have very good work plans that
19 the states have been working on and implementing, all
20 of our states in our region, and this is a situation that
21 may exist nationwide. I don't have a real good handle on
22 it, but keep in mind that the six states in Region VIII
23 have basic statutes that do not exclude ground water. They
24 all include ground water, which is in contrast to the
25 federal clean water act. So in terms of us relying on state

1 programs we're blessed with the fact they do have fairly
2 broad authorities. That is not to say there is not some
3 gap in their authorities, but anyway, I think a lot of our
4 states have taken advantage of this funding mechanism and
5 the technical assistance, and are really up front. Some
6 states, as a matter of fact, were out front before the
7 ground water protection strategy was put in place. As an
8 example, Wyoming has a fairly sophisticated program,
9 including classifications and regulations. Montana
10 started issuing permits for discharges to ground water
11 three years ago. Another aspect of the ground water
12 strategy is dealing with major sources of contamination. I
13 can go through problems that have been detected nationally,
14 but I don't think are fairly productive. Keep in mind that
15 there are serious problems in ground water protection
16 strategies dealing with most significant problems first.

17 Now, the framework for decision making in the ground
18 water protection strategy does involve a classification
19 system. Now, classification systems and decision making
20 frameworks are interchangeable from the standpoint that
21 the classification system that is specified in the ground
22 water protection strategy does not mean that the states
23 are required to go out and map aquifers and classify
24 everything. It is a decision making process that occurs
25 when the decision needs to be made on siting a facility or

1 making a regulatory decision having to do with a discharge
2 to ground water. The program involves three tiers of
3 classification, class one and I am just going through this
4 very briefly.

5 Geographically limited high mobility, vital for
6 drinking water or ecological sensitive areas. In other
7 words, extremely high quality and very vulnerable. And
8 the controls for the most part will go beyond the baseline
9 inherent in our legislation and our regulations. Class
10 one current potential sources of drinking water and water
11 having other beneficial uses. This is going to be
12 probably the vast majority of ground water in the United
13 States, and these types of ground water will be afforded
14 typical levels of protection. Class three, this is ground
15 water not considered potential sources of drinking water or
16 of a limited beneficial use. These are isolated aquifers
17 affected pretty much in a big way with either natural or
18 man made contamination. Of course, less stringent
19 measures attached to class three. Class three, I will say
20 is somewhat a sensitive area nationally with the implications
21 that somewhat of a sacrifice area, I will just assure you
22 that is not the case, but there will be regulations applied
23 those class three. Right now the Agency is currently
24 completing the guidelines and hopefully that will be out
25 in the very near future.

1 Now, that is essentially the federal approach, the
2 EPA approach to ground water protection. Of course, you can
3 see there is a lot of criticism of that approach. I know in
4 looking at the testimony of a recent Congressional hearing
5 Governor Babbit of Arizona said it just is a voluntary
6 program and therefore does not really push the states toward
7 a national concensus; but at the same time, we say again,
8 progress that we have made in Region 8 in getting our states
9 to take somewhat of a consistent approach has been very good.

10 Let me introduce three other policy options. The
11 first one is actually the second one; the EPA urges
12 a strong federal role, and this is advocated by a
13 conservation foundation report. The strong federal role
14 provides for focusing on ground water research and technical
15 assistance, and approval of state programs based on criteria
16 establishing national legislation. This is very similar
17 to all of our legislation. It recommends health base
18 guidelines for uses in state classification systems, and
19 that goes beyond traditional MCL approaches in the safe
20 drinking water act, perhaps somewhat similar to the
21 surface water quality standard. Periodic review of state
22 programs ensures consistency with federal established guide-
23 lines. Again, very similar to a lot of our other environ-
24 mental legislation. There is implication again in the
25 Conservation Foundation report for federal ground water

1 policy to support state programs and minimum federal
2 programs for those states which cannot or will not develop
3 their own.

4 Aquifer classifications, participatory type programs.
5 In other words, classification will be put in place long
6 before regulatory decision has to be made involving ambient
7 ground water standards. Authority to control potential
8 ground water contamination and effective enforcement
9 is provided. Some optional state program activities would
10 would be surface use restrictions, including restrictions
11 to use, and control of groundwater withdrawals, in other
12 words, tying quantity/quality together. If EPA got involved
13 on quantity, it would sink the ship, and I think to some
14 extent, that may be the case, however, let me also state,
15 and I think a couple of panel members mentioned it, that there
16 is a relationship between quantity and quality. I think there
17 is a tendency by the federal government in some instances to
18 go high when that interface becomes obvious. I think there
19 has to be a recognition by the federal government as water
20 rights that have to be honored.

21 Another optional state program activity, coordinating
22 ground water and surface water management. In other words,
23 strong federal role advocated by those two organizations
24 is fairly comprehensive. Let me just state that kind of
25 program would be very resource intensive at both state and

1 federal levels. States in the West are not capable of
2 handling this kind of activity. They are not aware of any
3 western state which has a participatory classification
4 system which essentially requires a lot of up front work.

5 The third policy option, this is pretty much laid out
6 in the Mitchell/Baucus bill, the federal role is essentially
7 a primary advisory to the states. In other words, it is a
8 very voluntary kind of effort. It would be the federal
9 government conducting research and publishing technical
10 information on ground water. We would publish guidelines on
11 how to conduct tests and how to develop a program, require
12 states to set standards no less stringent than MCLS,
13 however, no federal approval of those standards. It would
14 establish monitoring programs, develop ground water management
15 program strategies and develop control programs for resources,
16 and have a compliance program. However, no federal program
17 would be inserted in lieu of the state program. There would
18 be grants from U.S.G.S. of \$25 million dollars, 75%
19 eligible. There would be 50 million dollars available from
20 EPA at 50% program implementation. By the way, the USGS
21 money would be available for conducting assessments and
22 the EPA grant funds would be more broadly interpreted as
23 program grant funds. EPA would be required to conduct
24 clean up to state standards, although state standards again
25 are going to be set by the state. The state could create

1 protection areas which have greater or less standards. So
2 in terms of that particular piece of legislation, there are
3 a lot of questions having to do with what implications they
4 have for such federal statutes as CERCLA, which is probably
5 a piece of legislation that doesn't necessarily tie into
6 other state and federal requirements. Pretty much a fairly
7 independent kind of clean up activity. So as you look
8 at the Mitchell/Baucus bill, what kind of relationship
9 would it have with CERCLA and also the bill has a tendency
10 not to take a look at the fact that aquifers do not follow
11 state boundaries.

12 The last policy option, particularly the federal
13 government is to take a look at the Long Island example,
14 which is essentially a local government program implemented
15 at the local level, where there is no federal funding per se.
16 And that responsibility for implementation lies at the local
17 government level and gets involved in such things as zoning
18 and land use decisions.

19 My staff had a note down here at the bottom of my
20 materials that said, Max, if you need us to list the
21 issues here, you are blind to the real world.

22 In terms of the local ground water districts, Dick
23 Long, my ground water coordinator reminded me of some of the
24 frustrations that local governments are going through. I
25 guess the one that hits home is Lamont, Wyoming, which has

1 an uncontaminated underground source of drinking water.
2 They have no alternative. In other words, they can't get
3 surface water, probably cannot afford a treatment plant, and
4 are too far removed from another aquifer. They are out of
5 luck. In other words, I think we have to be somewhat
6 realistic in saying that the state and federal government
7 can walk away from local ground water problems. I think
8 that is totally unrealistic. They need help.

9 So, in summary fashion, those are the four policy
10 options as I see them.

11 PROFESSOR CAULFIELD: Our next speaker is
12 Craig Bell from the Western States Water Council.

13 MR. CRAIG BELL: I appreciate the opportunity
14 to be here. I am the Executive Director of the Western
15 States Water Council. The Council is a water policy
16 organization comprised of representatives appointed by the
17 Governors of thirteen western states. Protection of ground
18 water resources is an important concern of the state officials
19 who serve as council members.

20 As you know, western states depend on ground water for
21 50% or more of their municipal needs, and as much as 80-90%
22 in some areas. Irrigated agriculture, however, accounts for
23 the vast majority of ground water use in the western states.
24 Also, ground water is an important source of water used in
25 industry, mining and electric power generation. Thus,

1 westerners appreciate the significance of ground water and
2 are willing to take the steps necessary to assure that it is
3 of sufficient quality to allow for its beneficial use.

4 Ground water management -- the protection of its
5 quality and its allocation for beneficial use -- requires
6 coordination among all levels of government. Historic
7 federal policies have emphasized the primacy of states in
8 administering ground water allocation and quality protection.
9 Consistent with this policy of deference, the western states
10 have established permitting programs to govern ground water
11 rights and have created various legal systems to protect
12 ground water quality.

13 Federal statutes also impact the management of ground
14 water resources in western states. I am sure most of you
15 are aware of the Environmental Protection Agency's Ground
16 Water Strategy published in 1984. The strategy is aimed at
17 coordinating federal ground water related actions under
18 applicable federal statutes. To facilitate the implementa-
19 tion of the strategy, EPA formed a state/local/EPA ground
20 water liaison group of which I am a member.

21 And, of course, there has been activity within
22 Congress, as well. One bill has been introduced and other
23 ground water quality protection bills are expected to be
24 considered by Congress. As we analyze these proposals, I
25 believe we should be careful to assure that they do not

1 contain elements that could increase the federal role in a
2 fashion that would undermine the state programs. This
3 could ultimately lead to less ground water quality
4 protection, not more.

5 The western United states are geographically and
6 economically diverse. Understandably, western state legal
7 schemes for protection of ground water quality differ.
8 However, it is important to realize that all western states
9 have established legal authority to protect the quality of
10 ground water resources.

11 Many state plans categorize ground waters into
12 classes and establish standards, both discharge and ambient,
13 aimed at protecting each class. Some states designate
14 critical ground water recharge areas and formulate regula-
15 tions specifically aimed at their protection. Regulation of
16 the underground injection of hazardous wastes is
17 accomplished either under the federal Underground Injection
18 Control Act or pursuant to state injection control laws.
19 Also included in state ground water protection programs
20 are regional enforcement mechanisms, interagency
21 coordination among the various state agencies with juris-
22 diction over laws which effect groundwater quality,
23 and public notice and participation practices.

24 In areas where ground water related problems have
25 been particularly troublesome, such as in Arizona, states

1 have stepped forward to meet the challenge with innovative
2 legal mechanisms. Arizona has enacted one of the more
3 carefully conceived and far reaching ground water laws of any
4 state. Enactment of the law involved difficult policy
5 decisions. Its enforcement also presents challenges. Yet,
6 the state has taken the legal precautions it believes
7 necessary to properly administer its ground water resources.

8 In addition to state ground water quality programs,
9 all western states, with the exception of Texas, have legal
10 schemes to govern allocation of ground water. Generally, an
11 application must be made before a well may be drilled. A
12 state administrative official or body will rule on the
13 application based on factors which differ from state to
14 state. Once a permit is issued, the permittee is recognized
15 as having a legal right, which is also a usufructuary
16 property right, to withdraw a certain amount of ground water
17 for beneficial use.

18 As proposals for federal programs to enhance ground
19 water quality are evaluated, we would hope that this back-
20 ground of historical state responsibility for water quality
21 and quantity regulation will be kept in mind. Any proposal
22 should be measured by its impact on the state's role in
23 protecting this vital resource. In this light, the Western
24 States Water Council has made several recommendations.

25 Any federal policy should provide the necessary

1 flexibility for the states to develop programs appropriate
2 in their respective states, with foundation elements which
3 include aquifer protection standards or criteria to protect
4 all legitimate interests, including federal for various
5 water bearing zones; and mechanisms to assure their protec-
6 tion. It would be contrary to this principle to impose
7 federal aquifer classification systems. Although such
8 classification systems may bring uniformity in the imple-
9 mentation of federal programs, determinations as to the levels
10 of treatment required for various water bearing zones could
11 thereby be effectively transferred from the various states
12 to the federal government. Such a federal aquifer classifi-
13 cation system would implicitly establishing water quality
14 criteria or standards for application to all ground water
15 bodies or zones within a state. This would be available,
16 as is often the case, to obtain and retain approval of state
17 administration of various environmental protection programs
18 relating to ground waters, state regulation would have to
19 be at least as stringent as the requirements of the classifi-
20 cation system. The overall effect of such a classification
21 system so administered could amount to a long step towards
22 reversing the historical congressionally approved federal
23 and state roles.

24 The council submits that Congress, by empowering
25 federal programs over the last decade to administer various

1 environmental protection regulations and clean up statutes,
2 did not intend such a role change. However, such a result
3 could accrue from the imposition of a nationally uniform
4 classification system for ground water basins. Instead,
5 federal programs should be supplementary to already existing
6 state programs.

7 Flexibility is also important with respect to
8 federal funding of state efforts. Such funding is desirable
9 in promoting the objective of building and enhancing the
10 strength and effectiveness of state programs. However, the
11 use of such funds should not be restricted to program
12 development. Use thereof for state implementation programs
13 should also be allowed. Otherwise states that have already
14 developed ground water programs would be ineligible for
15 funding. The most effective return on the federal dollar
16 invested would come from allowing funding not only for
17 program development but implementation.

18 As a positive and necessary first step in the
19 development of a federally supported state program of
20 prevention and cleanup, there needs to be an inventory
21 of inadequately addressed sources of ground water contamina-
22 tion. The emphasis in the EPA strategy upon such an
23 inventory is therefore commendable.

24 The Council has also commended EPA for establishing
25 the special Ground Water Office within EPA. The Council

1 sees this as a means of providing improved liaison and
2 valuable coordination between EPA and the states at a high
3 level within EPA. The new office should also allow for
4 proper focus within EPA so that all EPA ground water related
5 activities are coordinated, especially in ensuring that they
6 are conducted in accord with and in support of the dominant,
7 comprehensive ground water quality program established by
8 each state. We hope that the new office will provide each
9 state with expeditious, effective access to EPA both in
10 Washington, D. C. and regionally. This access, properly
11 administered by EPA, will provide a coordination point
12 leading to greater harmony in federal/state program
13 implementation.

14 We also would recommend that any federal ground water
15 quality protection program seek to insure the inclusion of a
16 good neighbor policy that encourages all federal agencies
17 to conduct their activities in accord with state ground water
18 protection processes and requirements. Federal lands
19 constitute a majority of all lands within several western
20 states. Therefore, we think that the inclusion of such a
21 good neighbor policy would be an important element of any
22 proposal.

23 In conclusion, I would reiterate that the Western
24 States Water Council has as a high priority the commitment
25 to work with Congress and others to bring about enactments

1 and strategies at the federal level that support, not
2 undermine, override or otherwise impair the successful
3 administration of state ground water programs. Federal
4 programs should be carefully tailored to support the states
5 in their efforts to carry out state ground water quality
6 laws as well as carefully designed to avoid interference
7 with constitutionally protected property rights to the use
8 of ground water.

9 Flexibility should be a key concept in any federal
10 ground water legislation which is to receive the support of
11 western state water officials. It would be inappropriate
12 for Congress to enact ground water legislation which
13 mandated that state programs meet rigid requirements and
14 criteria which might not be applicable in the western United
15 States. Further, it would be inappropriate for Congress
16 to re-invent the wheel where state programs are in place and
17 are functioning well.

18 Where some state programs have been less effective
19 than others in achieving ground water protection goals, the
20 underlying problem has nearly always been the lack of
21 technical and financial resources. Generally, the western
22 states would welcome the infusion of new federal funds into
23 ground water protection efforts and the provision of
24 increased technical support. Indeed, the Council recognizes
25 that these recommendations are based on active, assertive,

1 effective state protection efforts. With the federal
2 government providing its full backup support, we are
3 confident that every member state of the Council will meet
4 the challenge of providing these essential efforts. You may
5 be assured that the Western State Water Council supports
6 that objective. Thank you.

7 PROFESSOR CAULFIELD: Our next speaker is
8 Gerald Dahl representing the Colorado Municipal League.

9 MR. GERALD DAHL: I am General Counsel for
10 the Colorado Municipal League. I have been doing that now
11 a little over a year. Previous to that time, I spent six
12 years at Northwest Colorado Council of Governments up in
13 Frisco, Colorado, and my role there was very different than
14 my role with the CML. In CML, I represent all of the 263
15 municipalities in Colorado on a broad range of issues. For
16 the previous six years however, I represented six counties
17 and 26 towns primarily on the Western Slope west of the
18 Continental Divide, and better than half of my time was
19 spent defending lawsuits brought against those counties and
20 towns by my good friend on the front range for whom you
21 now work.

22 The Northwest COG has an interesting proposal for
23 tying quantity and quality together under their 208 Plan,
24 taking the position that transmountain diversions of water
25 from the Western Slope to the Eastern Slope resulted in water

1 quality problems. It is only just that I, in my new job,
2 am now working for a number of those Western Slope
3 communities that used to be the plaintiff against my
4 defendants in those cases. Anyhow, now I am in Denver and
5 I work for the League. A good part of my time, especially
6 when the legislature is in session, is spent over beneath
7 the Golden Dome monitoring legislation on a number of
8 subjects. Last year, I spent a good fraction of that time
9 following a bill in the legislature which would have
10 affected the 100 year old statute that Colorado has allowing
11 municipalities to protect their water supplies. As
12 Representative Fish will tell you, it took probably more
13 of our time than it should have, and you don't want to talk
14 about that briefly.

15 One joke I want to get off with deference to
16 Representative Fish. When you work with legislators, there
17 are two things they say you should never watch being made,
18 sausage and legislation, because you don't want to know what
19 goes into either one. And sometimes I think even this
20 legislature and lobbyists don't want to know what goes in
21 either one.

22 The speakers so far today have talked about what programs
23 at the the state and federal level are in place to deal with
24 ground water, not so much physical allocation, but its
25 quality protection. My perspective on this issue is as

1 follows.

2 Local government, counties, towns and special
3 districts are the ultimate providers of that ground water
4 to domestic and municipal consumers in almost every case.
5 At the same time, I think it is fair to state they are the
6 least involved in the process in the existing system or any
7 other system for ground water quality protection. We sell
8 water to you people, but we don't have the regulatory
9 authority necessary to insure that the raw water supplies,
10 from ground water supplies are pure. We, of course, have
11 the obligation when we find the supply to clean it up and
12 before we sell it to you, that is an obligation that local
13 governments are willing to take on.

14 However, increasingly our ability to protect those raw
15 water sources from ground water supplies are threatened
16 from outside of local government control. That is not
17 necessarily a bad thing. I think it is probably right and
18 true that you don't want to have in Colorado 260 towns
19 and some 63 counties, where you have some 323 different
20 ground water quality regulations. You don't want to have
21 that. At the same time, I think it is probably fair to
22 state that when you are the one on the hook for liability,
23 you have a special and different and peculiar interest in
24 how the regulations are developed. If you are regulating
25 and not selling this, there is a gap there. And again, 323

1 sets of regulations, I don't think, ought to exist, but
2 what I do want to say, is the fact responsibility to sell
3 and responsibility to take liability for ground water
4 problems at the ultimate end of the buck really does stop
5 in between the customers, I guess, the ultimate consumer
6 and the people that sell that water to them. It doesn't
7 necessarily stop when the state or federal government takes
8 an action to try to protect ground water quality.

9 I think we are already moved by the efforts of the
10 state to consider the adoption of ground water quality
11 regulations and in Colorado, because I think there is a
12 growing need for that and I think we are all recognizing
13 that.

14 I want to touch upon a couple of examples of how
15 local governments interact with the state and federal govern-
16 ment programs on ground water quality or water quality in
17 general.

18 Now, it is true that a couple of these examples won't
19 be ground water examples per se. I sort of can't help
20 that, because there aren't a lot of local governments with
21 regulatory authority in this area, but what I do want to
22 point out, and I guess the only point I want to make here
23 today is, that local governments ought to be allowed some
24 kind of flexibility, and ought to be encouraged to work out
25 arrangements. Some are very technical and legal and some

1 are very much more informal, but arrangements to work with
2 the people that are setting standards for water, with the
3 local government will then turn around and sell. It is
4 kind of, let's approach each case on its facts and try to
5 react to it and try to encourage any number of sort of
6 informal or formal arrangements to bridge the gap that
7 probably has to exist. The gap between regulations on the
8 on hand for water quality and the responsibility to approve
9 development projects, and that is a local responsibility.
10 That is a local responsibility, as somewhere in those
11 findings, when you approve a subdivision, you make a
12 finding as a board of county commissioners or town council
13 that there is adequate water in both quantity and quality.
14 Ten years from now there is a ground water contamination
15 problem, and 10 years ago you, as city council said, yes,
16 I am making a finding before I approve this 30 lot
17 subdivision, there is adequate water and quality and
18 quantity, and 10 years later, it is adequate in terms of
19 quantity, but as a discovery is made, as in the case in
20 Wyoming, it is not adequate in terms of quality. If you are
21 a home owner who are you going to sue. I would suspect you
22 would sue the people that took the action that has a little
23 plat note on the plat, that lists the property you bought,
24 you are going to say you made the findings city council
25 that this was okay, and it is not, and you are on the hook.

1 I am really not sure what an innovative lawyer for
2 the city council would do at that point in time. I am sure
3 they would immediately get hold of the state agency that
4 would take the position as far as water quality, they are
5 preempted by statewide systems, but you see the problem I
6 am trying to raise. How do you bridge that. I think there
7 are a couple of different ways that could be done.

8 There is statutory authority for municipal protection
9 of water supplies. I passed out a handout, which you
10 probably have. It is two pages out of the Supreme Court
11 decision in 1984, involving a lawsuit with the Amax Mining
12 Corporation and the Town of Crested Butte. In 1977 the
13 Colorado Legislature in their first session adopted a
14 statute that says, as you can see from the first side of
15 that page, which was really page number 234, I guess, and
16 over in the righthand column, it says, this particular
17 statute allows municipalities to adopt ordinances to
18 protect the watershed for their water supply, and what you
19 do is you take that water intake and measure 35 miles
20 out from the intake, and get a radius, and it is over that
21 area, whether it be in the city or not, that you can adopt
22 reasonable ordinances to protect water quality and, of
23 course, that was enacted in a time when you had tanneries
24 and feed lots and so forth up above a mountain community's
25 water supply, and that was the fact that was addressed back

1 then.

2 Crested Butte took the position that mining proposal
3 would similarly affect their water supply, and said Amax
4 has got to get a water permit. Amax said we are not going
5 to get a permit for several reasons, primarily for the fact
6 we are running this operation under a federal mining law,
7 and we are appropriating water rights, and water quality
8 matters are preempted from local government control, and are
9 given over to the state Water Quality Control Commission,
10 therefore, Crested Butte, you can't require a permit for
11 anykind of water quality matter. If you turn the page over,
12 you see what the Colorado Supreme Court says about that.
13 The court made a distinction, and a number of parties were
14 amicus curie in the case, trying to see what the distinction
15 of the point source discharge and non-point source discharges,
16 and this is a non-point source control, land disturbance and
17 so forth, and that could conceivably result in injury to
18 water supply activities. You will note the Supreme Court
19 seemed to buy that argument. You advance that as one
20 really pretty narrow area in which municipalities can
21 attempt to control or prevent injury to their water supplies,
22 both surface and ground water. I believe the city council
23 of Castle Rock is considering or has adopted an ordinance
24 that essentially measures the radius five miles around
25

1 their municipal well. The point of intake doesn't
2 necessarily have to be surface; it can easily be below
3 ground. I think that is one example.

4 When we lobbied against the bill, that would have
5 interfered with the change in statute and in the legislature
6 last year; one of the key examples, I think, that came
7 up, was the Martin Marietta ground water pollution
8 approaching the Denver Water Department shallow wells, and
9 the issue really became this; there is growing need for
10 pre-activity permitting from municipalities' perspective,
11 if you are relying to 50 to 90% on municipal wells. The
12 issue in the legislature is, we can deal with these
13 problems after they have happened. I guess I submit that
14 the nature of the problem and the nature of the difficulty
15 of dealing with the problem is very different from ground
16 water contamination than it is for surface water contamination.
17 As a result, all of the federal and state programs
18 notwithstanding, if things happen, you sure wish you had
19 maybe a permit process in place that requires people
20 that are going to do things like store chemicals, whatever,
21 within five miles of your well, to tell you at least that
22 they were going to do that. That was some of the discussion
23 that went on ad nauseum at the legislature, that the nature
24 of ground water contamination from a municipal supplier's
25 perspective is really different. That is how come we ought

1 to be able to have some sort of permitting and notification
2 program ahead of time.

3 I agree that you can't separate quantity from quality
4 or you shouldn't, and I am heartened, I think also by the
5 efforts of the legislature in adopting Senate Bill 5, which
6 as a ground water quantity statute essentially allocates
7 and sets up the situation under which you can get water
8 rights in non-tributary ground water, which will become
9 increasingly municipal sources, and interesting in that
10 legislation, there is specific provision for local
11 governments and water suppliers to pass ordinances to achieve
12 some sort of dominion over non-tributary ground water
13 supplies beneath their territory. It is that kind of
14 thing on the one hand, that statute, that allows municipali-
15 ties to have some sort of permitting authority, and another
16 example of a statute that allows municipalities and others
17 to gain some sort of dominion over ground water supplies.
18 I think any other kind of cooperative endeavors between the
19 state and federal agencies on the one hand and the water
20 providers on the other hand should be encouraged; otherwise,
21 the regulatory authority will stop, and the regulations
22 will be adopted, and from that standpoint, I think it is
23 fine; then, it becomes our obligation to sell water, and 10
24 years later, you bought a house in the subdivision that
25 relies upon a contaminated well.

1 It is that kind of interface, even though it is not
2 a strict legal interface, that I think is very important
3 and should be encouraged. Thank you.

4 PROFESSOR CAULFIELD: Our next speaker is
5 Paul Frohardt of Holland and Hart.

6 MR. PAUL FROHARDT: I should tell you a little
7 bit about what my perspective is in this issue. I am
8 an attorney in private practice representing mostly,
9 although people on both sides of the process, mostly
10 industrial clients, the majority in the mining and mineral
11 processing industry, and so my perspective is one of a
12 practicing attorney who is trying to assist clients in
13 dealing with the day-to-day realities of complying with the
14 current programs, the environmental programs and interacting
15 with the various federal and state agencies.

16 In trying to determine what the appropriate federal
17 role should be in ground water quality protection, I think
18 there is a real danger that sometimes the response to that
19 question comes across as an abstract or philosophical
20 discussion. To me, the issue is what should the federal
21 government do right now today. I think that in answering
22 that question you need to start with a thorough under-
23 standing of exactly what regulatory structure currently
24 exists, and then decide where we go from here.

25 As has been touched on by a member of the panel earlier

1 today, there are several major federal ground water
2 quality regulatory programs that are currently in place:
3 RCRA regulations, hazardous waste and now underground storage
4 tanks, Superfund, the Safe Drinking water Act and also
5 quite a number of other federal statutes which have the
6 aspect of ground water quality.

7 I think one of the handouts you got today goes
8 through and enumerates all of those, and we have the EPA
9 coordinating strategy that Max Dotson has described to you,
10 and, of course, states are currently in a wide variety
11 of situations as to efforts to develop and implement ground
12 water programs.

13 Where does that leave us right now? How is that
14 working? I think that it is important to look at two
15 different issues, one what is happening on the remedial
16 side to take care of the past ground water quality problems
17 and second, what is happening on the preventitive side to
18 avoid future problems.

19 On the remedial side at present, a lot of the time,
20 money and energy are being devoted both by EPA and state
21 agencies and private parties towards cleaning up existing
22 contamination problems, especially under the federal
23 hazardous statute, RCRA and CERCLA. Generally, it is my
24 experience that in this process, and I think this is
25 reflected somewhat in some of the comments that were made

1 by Alexandra Smith of EPA's historical perspective, and
2 where they are in getting into expertise in this area.
3 I think that everyone on all sides of the process is
4 currently at a very early phase in the learning curve as to
5 what remedial measures and technical measures, and what
6 clean up is necessary if there are health and other
7 environmental standpoints, and what clean up options are
8 cost effective.

9 Overall, I think the scope of the authority under
10 the existing programs, especially RCRA and CERCLA, the
11 Superfund are very broad, and are indeed broad enough to
12 address a tremendous percentage of the existing ground water
13 quality problems.

14 Looking in particular at agriculture and mining, the
15 specific areas that we are asked to focus on today, there
16 was a fair discussion this morning about the status of
17 efforts, not all at the federal level, but at both federal
18 and state levels to address agriculture concerns with
19 respect to mining wastes.

20 EPA just submitted a report to Congress on their
21 views as to the need for regulating various types of
22 mining wastes under RCRA, and now begin a debate and
23 eventually presumably a rulemaking process, to determine
24 what further specific controls maybe appropriate.

25 Overall, it seems to me that it is clear that the

1 primary concern or constraint on clean up is not the scope
2 of existing regulatory authority, the availability of
3 resources and information to implement that authority.

4 On the preventative side, I think that it is fair
5 to say, and it is certainly true from my experience in
6 dealing with the clients, that the applicability and the
7 potential for applicability of RCRA and the specter of
8 Superfund liability down the line is starting to have a very
9 real and major impact on how new industrial facilities are
10 sited and designed. Current state programs and proposed
11 state programs are also having an influence as far as how
12 people design and construct new facilities.

13 With that current assessment of the situation, what do
14 we need at present. At this point in today's discussion
15 it is not a novel viewpoint, but it is also my viewpoint
16 that we do not need a new comprehensive federal regulatory
17 program or mandatory federal standard. The current programs
18 are addressing the majority of the existing problems and
19 the limits of the current knowledge and resources are being
20 severely pressed in implementing those programs. It seems
21 to me that the primary beneficiary of any new federal
22 legislative initiative at this point in time would be lawyers
23 who would be required to try to explain the new requirements
24 to their clients, who hadn't thought things could get any
25 worse.

1 I think indeed there is a danger that a new major
2 federal legislative initiative at present would delay
3 real progress towards solving and resolving our ground
4 water quality problems because it would divert existing
5 regulatory resources over at Max Dotson's shop from solving
6 the current problems to developing more new regulations, and
7 undertaking more analysis of how various programs in fact
8 interrelate with each other.

9 I think the public would be better served if available
10 federal resources were devoted to implementing existing
11 programs fairly and consistently while we all gain experience
12 with respect to solving real world ground water quality
13 problems, so that we could determine what does work
14 technically, economically and politically.

15 What about the future? I don't mean to suggest that
16 this is a long term answer as to what the federal role
17 should always be. I think that it is important to
18 continually reassess that role over time. From my
19 experience in environmental regulations, which has really
20 mostly come about in the last 15 years, that is, whenever
21 you have a new program, there is sort of a regulatory
22 digestion period, and all of the people on all sides of the
23 process have to try to figure out how this new program is
24 supposed to work and how it can work best, and until one
25 set of efforts is substantially underway and implemented, I

1 think it is very often very inefficient in every one's
2 resources to move to the next level of detail and start
3 passing more laws that simply tend to divert resources
4 and complicate the process.

5 It may be that over the next five to ten years of
6 experience with existing programs we will decide there are
7 regulatory gaps that aren't being adequately addressed and
8 the need to be addressed by the federal government. Or it
9 may turn out that some individual states are unduly lax in
10 protecting ground water and there is a need for more federal
11 direction to assure adequate state protection. At present,
12 however, it seems to me that the federal effort should be
13 to focus on doing well the job of implementing existing
14 programs in gaining more experience in that effort.

15 One of the handouts this morning, a summary sheet I
16 noticed, contained the statement that in the U. S. Congress
17 ground water protection is just emerging as the next
18 environmental issue. I find statements like that a little
19 scary, because I think as soon as something is identified
20 as the next big issue then Congress feels like that means
21 they need to do something about it. I am not sure that any
22 major new initiative is going to be particularly productive
23 in the overall process at this particular time. Politically
24 I think it is always more exciting to pass a new law or set
25 up a new program than to devote your efforts to more complex

1 and tedious tasks of implementing existing programs. But
2 in terms again of making real progress in solving the
3 problems, from my perspective dealing with these programs
4 on a day-to-day basis it is clear to me they we are at a
5 particular historical point where the need is for
6 implementation and not for legislation. Thank you.

7 PROFESSOR CAULFIELD: Our next speaker is Mr.
8 Ray Christianson of the Colorado Farm Bureau Federation.

9 MR. RAY CHRISTIANSON: I am sure everybody
10 knows where they got their food from this noon, so I am not
11 going to elaborate on the fact that all those good farmers
12 out there are providing us with all this wonderful food.

13 I am not a farmer by the way. I am a staff person
14 for the Colorado Farm Bureau. I am pleased to be here this
15 afternoon and have the opportunity to address this ground
16 water protection conference on behalf of the Colorado Farm
17 Bureau.

18 First, let me identify the Colorado Farm Bureau as an
19 organization that represents about 14,700 volunteer farmers
20 and ranchers throughout Colorado, which does make our group
21 the largest of the farm organizations. We are part of the
22 3.2 member Farm Bureau. I don't want to over emphasize that
23 point. What I would like to say that is more important is
24 that our organization establishes policy on agricultural
25 related issues, including ground water. So my comments

1 today will be basically reflective of the policies and
2 ideas of the farmers and ranchers.

3 You are all aware of the condition of the agricultural
4 economy in America, but I don't want to dwell on that
5 particular subject right now. My remarks will address
6 specifics of ground water and some thoughts on how to
7 protect it from contamination without putting farmers and
8 ranchers, who use this precious resource, out of business.

9 What is the appropriate role for the federal
10 government? Well, first, let me give you an example of
11 a case where Connecticut farmers are facing a real challenge
12 on this ground water issue. In 1984, Connecticut farmers
13 faced a big challenge when low concentrations of EDB
14 were found in some wells, which was years after the farmers
15 applied it. These pesticides were used to fumigate
16 tobacco fields to kill nematodes and weed seeds. Now,
17 under Connecticut law land owners are assigned the
18 liability for contaminating the ground water. The land
19 owners must provide and pay for short term solutions, such
20 as furnish bottle water to those whose water is unusable,
21 and possibly long term solutions such as redrilling a well,
22 arranging for a hook up to a new water supply or buying
23 water treatment facilities for those who have contaminated
24 water supplies.

25 Now, many Connecticut farmers feared they would be

1 driven into bankruptcy if they had to provide these remedies.
2 Obviously, no farmers set out to contaminate other people's
3 water, yet, the law said that farmers are totally liable
4 for applied chemicals even if the chemicals were used in
5 accordance with the label's directions, and the product was
6 authorized for use by the state and federal agencies.

7 Individual farmers could be paying anywhere from
8 \$20,000 to \$30,000 dollars to pay for the bottled water
9 and hydrological studies in affected areas.

10 One farmer had what they call water orders. If you could
11 prove your water was damaged, then you could have a water
12 order, so one farmer was assessed 18 water orders against
13 him at a cost of \$2,700 dollars for six weeks of use. That
14 would total up to \$15,000 dollars per year.

15 Now, in addition a lien could be placed on the farm
16 property to ensure compliance. At this point the law
17 said the only recourse for the farmer was an appeal. Now,
18 farmers then had proposed a self imposed tax they could
19 call a superfund to curtail any future liability.

20 My point is what happened in Connecticut could happen
21 in other states. Today, I am told only six states expressly
22 exempt farmers from liability when chemicals are properly
23 used. I am not trying to suggest that farmers have to be
24 totally unliable for these types of occurrences, but in the
25 case of where they are following directions, you might need

1 to take a closer look at that point.

2 Ground water contamination, as we know, is only
3 recently discovered, and also water was thought to
4 purify itself through normal filtration. Now, we know that
5 the quality is hard to monitor, and when it is contaminated
6 it is even harder to clean up. So now farmers in their
7 agricultural practices are increasingly being singled out
8 as major causes of water contamination. As a result, they
9 must take steps to prevent farm runoff and ground water
10 contamination as they will face costly liability and
11 state and federal regulations.

12 First, we better evaluate the condition of this
13 precious ground water. Those of us in agriculture are
14 extremely concerned about our contribution and whatever
15 contamination exists in the aquifers. Here in Colorado
16 the health department tells me they are concerned about
17 chemigation as the gentleman from the health department
18 said. I believe maybe even to a lesser degree there might
19 be some concern over return flows and feedlots and
20 application of fertilizers and pesticides, but we still
21 may not know the magnitude of these agricultural activities
22 which are contributing to ground water pollution, because
23 we are also aware of the sources from the Rocky Mountain
24 Arsenal and mill tailings and so forth. I have visited with
25 farmers around the State of Colorado, and they do express

1 concerns for water quality. They are fully aware of the
2 need to have good quality water for their own drinking and
3 their own irrigation and for livestock water and so on.

4 But you must remember that farmers and ranchers are guided
5 by the efficiencies needed for their particular operation--
6 what comes out of their pocket book, such as fertilizers
7 and fuels and chemicals. They have no reason to over
8 apply any of these materials except by accident.

9 Remember just a few years ago when Congress passed
10 NEPA, the Water Pollution Control in 1972 and the Clean
11 Water Act of 1977, and Max asked me not to take a shot at
12 the EPA, but I can't help it here. It sounds like a swell
13 idea when we had 208 state areawide water quality plans.
14 It sounded like a good intentional way of protecting water
15 quality, and I suspect in some states it is working; and
16 I am suspecting that in some states the planned amendments
17 have not been met. Why? Because of regulatory requirements
18 to meet too restrictive standards and imposing impractical
19 network and overlapping authority. You don't want the
20 federal government establishing nationwide approaches to
21 protect water quality, and then expect state and local
22 governments to follow along or even meet the necessary
23 financial and regulatory requirements. Of course, it
24 has been said before that ground water doesn't follow
25 state and local political division lines. Somehow we need

1 to localize our efforts as much as possible. We should
2 try to obtain state laws for protection and development
3 and administration of all ground water and still protect
4 the rights of overlying land owners.

5 A few years ago the Colorado Department of Health
6 produced a survey. I just want to relate some of the
7 statistics to you, and the gentleman from the health
8 department can correct me if I am wrong. The statement read,
9 the state should leave protection of the quality of the
10 ground water to the federal government, and 27%
11 strongly disagreed with that.

12 Another statement, Colorado should protect the quality
13 of ground water for existing beneficial uses, had 77%
14 approval and Colorado should protect the ground water for
15 beneficial users, 75% approval. So it is obvious everybody
16 wants to protect the ground water but doesn't want the
17 federal government to have a dominant role.

18 If we remember we looked at the coverage of ground
19 water by existing regulatory programs which have already
20 been mentioned, the federal pollution control amendment
21 Safe Drinking water, the Surface Mining Control and
22 Reclamation Act, Resource Recovery and Conservation
23 Act, Federal Fungicide and Pesticide Act and, of course,
24 Colorado water Quality Control Protection Act. We do
25 want to look at the idea regarding ground water management

1 districts here in Colorado, and we do have some people here
2 who are more attuned as to what the ground water management
3 districts are up to these days. I think it is worth
4 looking at because we are looking to attack this problem of
5 ground water pollution, and whether or not the management
6 districts have the authority, I think, is worth looking into.
7 I believe they may have some authority in this area. Maybe
8 they are the correct agencies to monitor groundwater.

9 Forgive me for saying I don't want to have a permit to farm,
10 but maybe in the area of the permitting we may have to
11 look into that -- all these federal laws combined with
12 state laws and the state law is really only basically
13 an overlap of the federal law. More federal government
14 control, each with its own area of responsibility just simply
15 is not the answer. What we need in terms of answering
16 agriculture's problems is we might need stricter labeling.
17 We might need an improved applicator test, and we need
18 research to use more effective chemicals with little or
19 no adverse environmental effects and equipment design, and
20 fourthly, our farmers need to have better record keeping.

21 Now, let me identify some of these that the federal
22 government may have a role in. Stricter labeling and
23 enforcement. I hope somebody might forgive me for this, for
24 saying this, that this may be the role where the EPA needs
25 to have a little bit stricter enforcement, possibly through

1 enforcement of stricter labeling by chemical or fertilizer
2 statutes. This should be based on the application necessary
3 for effective plant growth that avoids water contamination.
4 Now, what we are really talking about here is economics.
5 Why would farmers knowingly apply that extra inch when
6 those costs are going up. You don't want these expensive
7 additives passing through the plant root zone anyway, where
8 it will not effectively aid the plants. Applications have
9 significantly decreased over the last three to five years
10 because of high energy costs, water costs, chemical and
11 fertilizer costs, even though those costs have come down
12 slightly over the past year. Applicator testing and
13 improvement is needed.

14 I was glad to hear the remark by Mr. Raley regarding
15 irrigation scheduling and some of the things which
16 extensions can get involved in--training programs such as
17 home study courses could stand more review, and improvement
18 by the applicator of the commercial and private manufacturers
19 and EPA.

20 Presently, I am aware that a section on chemigation
21 has been included in that home study course, and that is a
22 good first step.

23 The liability question, I think, is very important.
24 We need to focus on reasonableness and some types of limits
25 when lawsuits come up. Why should farmers, who follow the

1 direction on the label to a letter, be guilty of any
2 ground water contamination. There might be that one percent
3 out there that is guilty of this; yet, we write the laws
4 that are applicable to them. I am aware that some farmers
5 who fear this liability hire their own professional
6 commercial applicators to apply chemicals. What can farmers
7 do? Farmers can receive training through programs conducted
8 by the extension services. Farmers need to keep better
9 records. Record keeping of all manufacturer's labels, the
10 sales slip showing the amounts of purchases, and the amounts
11 applied to the fields and the yield and the planting
12 acreages are all important. If the farmers follow the
13 instructions and the records can prove it, the liability
14 against him then will be reduced.

15 The other thing, of course, the equipment. We all
16 know from talking about chemigation the need to apply
17 the check valves to prevent the back flow of the chemicals
18 through the system back to the ground water. I think
19 real positive thinking is going on with farmers who realize
20 that at a minimal cost they can install that check valve
21 and greatly reduce the potential liability question.

22 So there is just one other thing I wanted to mention
23 to you. There was a letter in the Denver Post yesterday
24 that said, why don't farmers give up. It was a letter by a
25 lady from Colorado Springs who grew up in the city and

1 decided to move to the farm. She says, "Would you want
2 to be a farmer? Years ago, before I married a farmer and
3 moved from the city to the country, I would have answered
4 this question with a positive, yes. Now I answer by saying
5 no one would work under such conditions for so little pay
6 and still call it a job. I soon learned that a farmer's
7 money goes back into the farm, unless there is extra,
8 which there doesn't ever seem to be. Still, we did
9 somehow manage to raise five sons with a minimum of
10 discomfort. We never had a new house or furnishings, but
11 that never seemed to matter. The farm was always home to
12 us and relatives and we, with so many others, are
13 faced with losing it. It was impossible for me to answer
14 these questions as it is for you. What I do know is that
15 as long as there is any hope at all, a farmer will fight
16 to keep his land. His land becomes a part of him and he
17 becomes a part of the land. When he loses, it is as if a
18 member of the family has died. He feels he has just failed
19 because he wasn't able to stay.

20 I just wanted to leave you with that thought.

21 PROFESSOR CAULFIELD: Our last speaker is
22 Dan Luecke from the Environmental Defense Fund.

23 MR. DAN LUECKE: Down at the end of the table,
24 Ray and I have been making book on how many people would
25 be awake and how many would be left when it got to this

1 end of the table. Now, if three more of you go to sleep,
2 or five more leave before I finish, I lose. I would like
3 to take a moment to have everyone stand up and stretch.

4 One of the things I did in preparing my remarks this
5 afternoon was to think about how far back you would have
6 to go to say that the more we learn about a public health
7 problem or the more we learn about an environmental
8 problem, the less serious the problem. I would submit
9 that we may well have to go back to Louis Pasteur and his
10 work on contaminated milk. When he was able to
11 establish the link between drinking contaminated milk and
12 the spread of disease, tuberculosis as I recall, what he
13 did was let the critics off the hook. We no longer
14 believe that just by walking down the street and breathing
15 air that we are likely to contact some sort of disease,
16 but you have a hard time in modern times identifying a
17 problem or when we learn more about it, we know that the
18 problem is less serious. I think that is certainly the
19 case with ground water.

20 One of the other things that I did in getting ready
21 was go to through the statutes that have something to say
22 about ground water and Max Dotson has talked about that
23 this alphabet soup of statutes that we have out there. You
24 can find virtually every letter in the alphabet in there.
25 I believe at least once, except perhaps Y and Z, and that is

1 only because we have no interest in controlling Zebras
2 or regulating yodeling; but otherwise, they would be
3 there for sure.

4 I would say that in addition to that, if you take
5 a look at those statutes, the federal statutes, that the
6 mining industry deserves a special award for artful dodging,
7 because they have managed to keep themselves unregulated
8 in this area inspite of the large number of statutes that we
9 seem to have on the books.

10 What I would like to do is kick off some important
11 issues -- what I see as some important issues associated
12 with the nature of the ground water problem or with its
13 solution perhaps, and then get to a couple of guiding
14 principles that we all should have in mind, I believe, as we
15 think about how to deal with the protection of ground water
16 resources.

17 First, we are talking here about agriculture and
18 mining. There is only one industry that handles more
19 waste material than mining and that is agriculture, so we
20 are talking about the two industries that handle more
21 waste material than any others. I am not saying all of that
22 waste material is necessarily hazardous, but a great deal of
23 it can be.

24 With respect to ground water, we have a number of
25 important technical problems. Understanding the geohydrology

1 is extremely important; being able to model aquifers and
2 model their response to various kinds of input is still a
3 challenging technical problem. Monitoring in the
4 unsaturated zone or monitoring in the beta zone, catching
5 the contamination or pollution before it ever gets into the
6 saturated zone again is a difficult problem, a technical
7 challenge.

8 Once contaminants reach the saturated zones, once
9 they are there, the resident time of those contaminants
10 is very long. The half life is measured in terms of
11 centuries, not in terms of years or decades.

12 We also know that the cost of clean up, the cost of
13 correcting a mistake is orders of magnitude greater than
14 the cost of protection in the first place. We have a
15 wonderful example close at hand right now, and I am not
16 even referring to the Arsenal. The Eagle Mine along
17 the Eagle River, a tributary of the Colorado, has an old
18 zinc mine there. Zinc mining started in the last century,
19 and I would say that were the job done properly where the
20 waste materials were removed, the tailings pond, the waste
21 rock and the rooster piles were those removed, the cost of
22 doing that, I am not suggesting by the way, Gary, that
23 they not be removed, but were they removed, I would submit
24 those costs would equal the value of the resource extracted
25 in that area. Now, most of the contamination was done at a

1 time before we thought much about this, but it was probably
2 the way business was done then, We do business
3 differently now, but that is not to say we understand the
4 consequences of doing it that way. We just do it.
5 Economists have developed a concept of option value. The
6 value that a community or society will place on the option
7 of using a resource. They may never use it themselves.
8 They may never see it, but just knowing that it is
9 there, just knowing that they have that option is something
10 people are willing to pay for. There are dramatic examples
11 like the Grand Canyon. I would suggest that any of us
12 would be willing to pay a fair amount of money just to
13 ensure that should we choose to go to the Grand Canyon,
14 it will be there. I am not saying that the protection of
15 an individual ground water resource would fit in that
16 category, but a remark was made by Ray that people are
17 concerned for protection of ground water, and it is an
18 option we would like to keep open. It is an option that
19 society is willing to pay for.

20 The question is though, should society pay for that
21 protection or should those whose activities potentially
22 will pollute or threaten that resource be required to
23 pay for it. One of the morning speakers suggested rather
24 strongly, I would say, that human activity pollutes. There
25 is no way around it, and that may be so, and I would say,

1 however, that for those activities that do pollute or that
2 may pollute, that pollution is going to impose a cost on
3 others, the community at large or other individuals or
4 entities. It is the source of the pollution or the
5 activity that pollutes that should be required to pay for
6 protection or if a mistake is made, for clean up. If we
7 don't give those kinds of economic signals, then we will
8 not give the message that the resource we want to protect
9 is valuable. Pollution will occur.

10 With respect to what I would see as guiding principles,
11 I think that with groundwater we should be thinking about,
12 should commit ourselves to non-degradation. To go back to
13 the Federal Water Pollution Control Act, concerned primarily
14 with surface waters, the guiding principle was not
15 non-degradation. It was enhancement, or at least it was supposed to be
16 enhancement. I don't think any of us believe we are going
17 to go about improving the quality of ground water, but at
18 the very least, we should commit ourselves to not degrading
19 the quality of the ground water.

20 The classification systems that most states use do
21 not establish that as a fundamental principle. What Colorado
22 is discussing right now, even if one does not allow movement
23 from reclassification, and there was never a reclassification
24 where we upgrade a class, there will be only reclassification
25 where we downgrade, but even in those cases where there is

1 no reclassification, there can be degradation.

2 Chris Shuey mentioned the fact that in New Mexico
3 the thought is of limited degradation, but it is
4 degradation nonetheless.

5 Another guiding principle I would think important
6 here is concept of the burden of proof and the standard
7 of that proof. I think the burden of proof for an activity
8 or for its riskiness, if you will, should be placed upon
9 those who are going to conduct the activity. Not only
10 should they have the burden of proof, but should be held
11 to a very high standard and that high standard should not
12 be a reasonable doubt. It should be the preponderance of
13 the evidence. It should be beyond a reasonable doubt if
14 they can establish that their activity is not going to
15 lead to pollution.

16 We think of ground water or our concern for
17 ground water and try to develop a syllogism that may make
18 some sense here. I think it is reasonable to say that
19 valuable resources deserve protection. Ground water is
20 a valuable resource. Ground water deserves protection.

21 Thank you.

22 MS. BIRD: I have a couple of questions. First
23 of all, Mr. Dahl, I find it interesting that you,
24 representing local government, say there is nothing much you
25 can do to prevent contamination, and at the national level,

1 the federal government, really not much more we can do,
2 because they are really all land use decisions in the end
3 anyway. What do you have to say about that? Have any of
4 your municipalities been looking at land use decisions,
5 zoning ordinances, land use planning as a way of protecting
6 the ground water?

7 MR. DAHL: It is a good question, and it is
8 something we have looked at. Both of my previous jobs and
9 the one I hold now maybe good examples. But first to
10 answer your question, particularly in Colorado it is
11 difficult to convince people of the legal theory that
12 even though the local government has ultimate control for
13 the land use development decision, does the subdivision get
14 built, does the power plant go there or over there,
15 even though they have that authority, it is difficult to
16 convince people in Colorado or the Colorado courts that
17 land use authority extends to permit conditions that would
18 guarantee water quality or water quantity issues, or
19 protection. That I think stems from a number of
20 things. Probably the most troublesome or the most difficult
21 obstacle for a local government to overcome if it is going
22 to try to use its land use powers to effect a water
23 protection plan, maybe the biggest obstacle is the Colorado
24 Constitution, Article 16, Section 6. If I only had a
25 nickel for everytime that section has been quoted to me

1 when I was on the other side of the case.

2 Here is an example. I represented a county, Grand
3 County up on the Western Slope, who wrote some legislation.
4 If you want to build a transmountain diversion system in this
5 county you need a permit from the county, because what
6 you will be doing is a land use activity. You are going to
7 be putting in pipes and building buildings and stuff like
8 that. Among the permit conditions, you got to demonstrate
9 there won't be, and broadly stated the details, while
10 interesting, are not important for this question. As part
11 of the land use permit, you got to show conditions to
12 protect the water quality. It is possible that the net
13 effect of those conditions would have reduced the amount
14 of water quantity that could be diverted by the project,
15 because if you are going to reduce a water quality impact
16 on the basis of the basin of origin one of the easy ways
17 to do so is don't take as much water; leave more water for
18 dilution. What you have just done through a land use
19 permitting process, you have attempted to reduce or maybe
20 that wasn't your intention, but the result is that you
21 have reduced the amount of water they can divert.

22 In Colorado we are very, and have been for years,
23 very serious about the constitutional rights to divert
24 water without impairment. That is how come in trying to
25 assert land use controls, when they have, and I think it

1 was Max that touched upon it when they have sort of
2 secondary tertiary impact upon water quality, people just
3 scream like mashed cats in Colorado, and you have real
4 trouble getting that kind of regulatory scheme to apply.
5 It seems to make sense, that the local government that is
6 going to approve a project where people are going to live and
7 where people are going to drink water ought to have
8 authority to make sure that that water supply is pure and
9 those water supplies aren't affected by other land use
10 decisions that the local government has control over.

11 You run into what has traditionally been in the
12 state a very tough obstacle, and that is the highly
13 ingrained desire to protect the ability to appropriate
14 water in Colorado. I think that made a lot of sense a
15 hundred years ago, because if you stood in the way of some
16 guy getting his way there was no development at all, and
17 Colorado didn't develop. That is how come there is still
18 a presumption in favor of the appropriator in this state
19 -- to encourage development in the state. The problem is
20 now, one-hundred years later, we have got a lot of people
21 in Colorado and we have got the kinds of conflicts, but we
22 are dealing with a legal system that hasn't progressed
23 a lot in that regard. We maybe pushed it a little ways,
24 by inserting land use controls to affect these things and
25 maybe change some people's thinking. All those court cases,

1 some of them are six years old, and I had to retire out of
2 the job without getting a Supreme Court decision on that end.

3 MS. BIRD: A number of people have suggested
4 that perhaps what we need to do is to refortify perhaps
5 the 208 plan process as a part of a national ground water
6 program for a number of reasons, one of which being a way
7 to facilitate the action for the use of the information.
8 WE may have to try to deal with the question of fragmentation
9 and also toget to the question of the local officials having
10 a greater impact on ground water quality. Any member of
11 the panel may wish to comment. Mr. Christianson mentioned
12 in connection with farming and agriculture the contamination
13 problems. What do you think of that suggestion?

14 MR. CHRISTIANSON: The first part of your
15 question, are you referring to the 208?

16 MS. BIRD: Yes.

17 MR. CHRISTIANSON: Well, first of all, I
18 believe that anytime you try to have a nationwide approach
19 to saying what shall be a standard for certain management
20 practices that you want to attain, that will be designed to
21 attain certain water quality, I think you are going to
22 automatically run into some difficulties. It may be well
23 intentioned and it might be a good thought, but when you
24 try to put it into practice, I think that is where it
25 begins to break down. As I recall, I had something to do

1 with the 208 when I was in South Dakota, I was with the
2 Department of Agriculture up there, so I am a little bit
3 familiar with the 208 areawide management plan and concept.
4 I just think that farmers and ranchers generally speaking
5 are the stewards of the land. They are better than anybody
6 else I know of. There might be that one percent out there
7 that is not properly managing his property. He doesn't
8 want to lose more than five tons of soil per acre per year.
9 It costs him money and certainly doesn't want to over apply
10 chemicals either. I think when it breaks down is when you
11 have the central planners in Washington try to design
12 that nationwide objective and try to make it apply over
13 the country. It just simply is not manageable.

14 PROFESSOR CAULFIELD: I would like to add
15 something on that. I was a member of the Larimer/Weld
16 Areawide Waste Treatment 208 Program Advisory committee,
17 and the point that I would like to make about that is, that
18 obviously that group does not have great authority. The
19 authority still resides in large part with the state and
20 EPA, but the effect it had for the first several years
21 while the federal government was still funding substantially
22 was to bring together farmers, municipalities, environment-
23 alists and so forth into a dialogue situation
24 among the leading people in that area. There came to be
25 common concensus as to what was desirable for this area,

1 including land use planning as well as location of sewage
2 treatment plants and so forth. The program is still on the
3 books legally speaking, but it has lacked funding of
4 any importance for sometime, therefore, it has really gone
5 down drastically in terms of its importance. Whether
6 it would have succeeded very far if that support from the
7 federal government and state government had continued, I
8 don't know. At least, in the first few years when it was
9 strongly supported, it seemed to me it was working in
10 the right direction of getting a good deal of concensus at
11 the local level among various factions, if you will,
12 interest at the local level, and it might have succeeded
13 if it had continued support.

14 MS. BIRD: Let me just say, that unfortunately,
15 we have kind of run off, and I am going to have to leave
16 shortly to catch the last plane back to Washington, but
17 I hope that we will continue on with this discussion, but
18 in case I don't get another chance, I wanted to say the
19 panelists this morning and this afternoon and the audience,
20 I would like to thank them for being so helpful in presenting
21 your insights to us and if you don't get a chance to get on
22 the record today, our address is in the information that you
23 were given this morning and please feel free to send us
24 any information materials whatever that you think would
25 be helpful in helping us get some direction to this.

1 PROFESSOR CAULFIELD: Okay, we will have
2 questions from the audience.

3 MR. FOSTER: If I can, I was on the panel
4 this morning and I would like to make a quick response, if
5 I can, on this 208 planning question that was earlier raised.

6 In some portions of Colorado 208 planning is alive
7 and well . In the Denver Metropolitan area, in the Pike
8 Peak area, in Northwest Colorado area, we are seeing
9 significant 208 planning done on an annual basis -- the 208
10 plans that resulted in both point and non-point source
11 control regulations providing for specific limitations for
12 the purpose of protecting surface water quality bodies. We
13 would expect that we will be seeing more 208 plans in the
14 future that are not merely policies, but making recommenda-
15 tions to the Water Quality Control Commission for specific
16 control regulations which would be adopted by the Commission
17 and would apply to specific activities of a specific
18 region in the way of effluent limitations or certain kinds
19 of proceedings and policies to be followed.

20 The 208 plans have community level impact insofar as
21 communities come up with erosion control plans, development
22 plans that may define the densities that are necessary
23 in order to protect the water quality of a water body that
24 communities impact.

25 It is our expectation that insofar as storm drainage

1 pollution is concerned, that 208 planning maybe the
2 direction of the future. We would be putting a
3 greater emphasis on that rather than seeing an NPDES
4 permit apply to each and every storm drain, which is the
5 present direction of the EPA, and frankly, the Clean Water
6 Act, so I would put a big hurrah for 208 plans. It has a
7 direction and no doubt that more federal funding would be
8 more appropriate if we are going to get into agricultural
9 issues, federal funding is absolutely necessary. We are
10 seeing a lot of municipalities paying the price for 208
11 planning and that is probably because most municipalities
12 in Colorado are looking at advanced waste treatment and they
13 are trying to figure out who is going to pay the price of
14 putting in advanced waste treatment. The 208 planning
15 is a necessary precedent.

16 PROFESSOR CAULFIELD: Thank you.

17 MR. CHRISTIANSON: Maybe the correct approach
18 if we are going to have 208, and because we are looking
19 really at land management practices or best management
20 practices, whatever you want to call them from surface run
21 off, probably the best 208 would be to have a healthy
22 agricultural economy in the country to begin with, and
23 not see the massive plow out and land break out and this
24 type of thing. I know the 1985 farm bill deals specifically
25 with the conservation title or Sod Buster title, and maybe

1 that element is a good way to have water quality protection.

2 MS. BIRD: Let me follow up just briefly
3 on that comment. In Kansas City last Saturday it seemed
4 to be the concensus of the farmers who were there that the
5 problems of agricultural chemigation were kind of part and
6 parcel of the American farm policy, which had been over
7 production basically. Is that the view of the Farm Bureau
8 as well?

9 MR. CHRISTIANSON: Could you repeat the part
10 you said for over production?

11 MS. BIRD: The emphasis on production--that it
12 had caused not only economic problems, but that as a
13 result farmers used too much pesticides and too much
14 fertilizers and probably more than they needed to, even
15 on the advice of the land grant colleges and the
16 Extension Service and so forth.

17 MR. CHRISTIANSON: Agricultural problems have
18 always been over production. Our over efficiency has led
19 to some of our problems. One farmer can feed 80 people
20 today. The natural behavior of a farmer is to produce as
21 much as possible. Now, individually, that is what a farmer
22 wants to do. Collectively, it is devastating when you put
23 all the farmers together, and when they all try to produce
24 as much as possible; the economics of it are there is not
25 the demand there. It is a real problem and a real dilemma

1 for us.

2 MRS. HESTER McNULTY: I am Chairwoman of the
3 Colorado 208 State Policy Group. What became evident
4 there is that too much money was thrown in the metro
5 areas that might have been right to do in the east, but not
6 in the west, and very little money for the whole big part
7 of the rest of the state. I think the state did a very good
8 job with the little funding they had, so if you are going
9 to look at this, at least in the west, don't throw all the
10 money at the metropolitan areas, but throw more of it at
11 the state government so that they can really do a good job.

12 I have been traveling around in some of the rural
13 areas of the state, and to my surprise, 208 is still alive
14 and well in the state as Tad said, and some municipalities
15 do fund it, so it has not been a total loss, because some of
16 the consultants got rich in Colorado, Paul Frohardt and a
17 lot of other people by suddenly becoming 208 consultants and
18 getting the big contracts, and I would not like to see that
19 happen again.

20 Now, can I pose a question? Paul and I served
21 together on the Ground Water Quality Advisory Group, and
22 we tangled before. It seems to me that industry, and the
23 Clean Water Act has been passed in 1972, how many, 14 years,
24 the rest of them are coming on being 10 years old, you are
25 asking for 15 more years to see how they work. Don't you

1 think industry can get their act coordinated, and what will
2 happen if you wait 15 more years and what additional holes
3 will be dug in the ground water. As I said in the
4 Committee, this is people's drinking water that we are
5 talking about.

6 MR. FROHARDT: I think the Clean water Act
7 is a good example, Tess, because that has been in place for
8 15 years, and I think that now has become a fairly well
9 established regulatory program and we are now in that
10 program able to move to a great level of sophistication
11 and consider further refinements. However, the majority of
12 the programs, both federal and state that regulate ground
13 water quality are much more recent in their implementation,
14 and in fact, you find as people have commented today
15 that EPA is just now developing the expertise internally to
16 implement these programs. The implementation of those
17 programs needs to go forward. It is happening now, and I
18 think that as Colorado is doing, it is very appropriate for
19 states, even now, to be looking for specific gaps in
20 regulations where there may be problems that aren't
21 adequately addressed and start addressing those. My comment
22 was that I do not think it would be productive overall
23 for the federal government to undertake a new legislative
24 initiative at this time, the primary result of which I
25 think is going to be a lot of debate about what that

1 means and how it should be implemented, diverting our
2 private resources and Max's resources away from people
3 going out in the field and spending time finding out where
4 industries are complying with their requirements under
5 current laws and making sure that those are being complied
6 with and the problems are being resolved.

7 MS. McNULTY: So you wouldn't have a federal
8 role for Colorado? Well, let me start over and try to
9 restate that better. Okay? You wouldn't have a federal
10 role for a recalcitrant state like Colorado might turn
11 out to be.

12 MR. FROHARDT: No, I didn't say that. I
13 specifically said that after we have a little more
14 experience with what states do, then it is very appropriate
15 to continually re-examine the appropriate federal role over
16 time. However, I think in most cases states, and
17 Colorado is certainly a prime example, are at a phase
18 in their implementation that it is too early to have the
19 federal government start second guessing at the adequacy of
20 that effort today.

21 MR. JIM WARNER: As person whose profession
22 is ground water, I am very concerned about ground water
23 contamination problems. On the other hand, I spend enough
24 time overseas, and I am very appreciative of the great
25 standard of living we have in this country from our

1 manufacturing society and from our farmers. One consequence
2 of this high standard of living is we have chemicals to
3 dispose of and we seem to be unable to with any certainty
4 dispose of these chemicals without polluting the ground
5 water system. I would agree with Dan Luecke's statement
6 that mining companies have been artful dodgers. I have seen
7 this practice; they have been barbaric in the past. I
8 think we have passed a lot of laws. On the other hand, I
9 look at the mining industry and see them in a state in
10 which they are in total retreat, that they are moving
11 overseas to avoid our environmental laws, and we pay a
12 price for that through our balance of trade payment.

13 The question came up as to who is liable, who pays
14 for this type of thing. I think it was your statement
15 that the polluters should pay for the other society, and I
16 would guess that my feeling would be society always pays for
17 it. That is done through higher prices. Somehow that is
18 going to be the ground water contamination problems
19 being transferred back to the individual consumer,
20 who will pay the higher prices.

21 I am concerned about agriculture. I think that maybe
22 we are putting agriculture out of business and causing
23 them to bolt and move overseas where they are going to go.
24 On the other hand, I think they need to pay a liability
25 for their action, for somebody has to have the liability.

1 I am going to address my question to Ray Christianson
2 here. He spent a lot of time saying that the farmer, I think
3 should not be liable if he follows the directions as outlined
4 as far as pesticide application and what have you.

5 On the other hand, he did not say who would be liable.
6 Is the chemical company -- are we going to be in the
7 process of putting them out of business -- or the federal
8 government to be liable with a two hundred billion deficit.

9 MR. CHRISTIANSON: That is a loaded question,
10 especially when we are in the liability and tort reform,
11 and the insurance and a whole bunch we are facing here in
12 Colorado as to who is liable. Obviously, it has got to
13 be a partnership. We got to work up some reasonableness
14 in the system. Farmers need to use the chemicals and
15 manufacturers need to be able to produce the chemicals,
16 and we have to have, I suspect, some government regulations
17 to try to say which chemicals are environmentally safe and
18 yet effective aid to plant growth.

19 The liability question is certainly a debate this year
20 I did state that farmers can't be totally exempt from
21 liability, but I just raised the question, because, you
22 know, how can you blame the farmer if he reads those
23 directions and follows them to the letter, because of
24 manufacturer's directions. I just don't see how we can fault
25 whoever applies those pesticides according to the label,

1 but the liability question, certainly insurance companies
2 are dropping clients left and right. The insurance
3 premiums are going up so ungodly high we are not going to
4 be able to insure anyway. I don't know. In our legislation
5 we somehow need to create some reasonableness and
6 limitations on where the liability question lies.

7 MR. LUECKE: The comment on the concern about
8 standards of living reminds me of a joke that I saw one
9 time. It was probably in the New Yorker. There were a
10 couple of gentlemen standing on a curb in their hand
11 tailored suits, and their camel hair coats, and their
12 paisley ties, and expensive shoes, and they are in the
13 city where foul air is swimming about and there is trash
14 in the gutters. One of them turns to the other and says,
15 well, there are trade offs you know.

16 To maintain the standard of living we have got to
17 sacrifice a little quality of life, and I think that is
18 what is being suggested here -- the private material
19 well being that we are so concerned about, or the quality
20 of life in the community as a whole. And further, I
21 wouldn't direct this only at the agricultural community,
22 but at all users of dangerous substances. When regulations
23 are established, when statutes are written and then those
24 regulations are established, you can be sure that those who
25 would be regulated are in there trying to make those statutes

1 those regulations as lax as they can.

2 To make the argument then that because the regulations
3 are lax and therefore application can lead to problems
4 should release the user from any liability, I think is
5 very very self serving. I don't mean to place the burden
6 on the agricultural community. I think it is the sort of
7 practice that is very widespread.

8 Finally, when it comes to costs to the consumer,
9 I think the consumer ought to get the message too in terms
10 of cost of products, as to what those things are made
11 from or what kinds of external effects they generate.
12 If it is pollution of one sort or another, then that ought
13 to be incorporated into the cost of that product, because
14 that affects the plan and that affects the activity that is
15 in the ultimate source of pollution.

16 MR. DAVID KIMBALL: I guess my question is
17 directed to Mr. Luecke. I came here, like many others,
18 with the expectation of hearing some practical solutions.
19 After the discussion by Mr. Luecke, I am somewhat concerned.
20 How do you truly perceive beyond a reasonable doubt the
21 non-degradation standard as a practical solution. I wonder
22 how you can prove beyond a reasonable doubt that any
23 activity will not impact ground water. Has your organization
24 done any independent studies or have independent consultants,
25 that have analyzed the practical impact of that type of

1 solution, or what impact it would have on society or a
2 community?

3 MR. LUECKE: My organization has not done a
4 study to determine the impact of such a standard of proof
5 on the activity, but I would say that we have, as a
6 society, conducted a number of natural experiments on
7 standards that were considerably less stringent, and the
8 price tag that we face as a society is extremely high.
9 Cleaning up the mistakes is something that none of the
10 private activities are prepared to take on. As a society
11 we are trying to figure out how we are going to take it
12 on. So, I would say that in suggesting such a burden of
13 proof it is not a question of those who make the suggestions
14 establishing that it doesn't have an adverse economic impact.
15 I would say if we could even come to the point where there
16 is a balance between the economic impact, a direct economic
17 impact associated with the contamination and a new standard
18 for future activities, we would be moving in the right
19 direction.

20 MR. KIMBALL: Have you given much consideration
21 as to whom such a burden of proof would be applied to? Does
22 it apply to everybody's activities or do we restrict it to
23 certain commercial activities or just certain industry
24 activities, or should this be applied across the board?

25 MR. LUECKE: I think as a general principle

1 it ought to be applied to all those activities that have
2 the potential for polluting ground water. We are talking
3 about something other than surface, other waters. I am
4 certainly not saying that any kind of activity that leads to
5 pollution, you would want to do this. I would put ground
6 water in a different category just because of the problems
7 associated with cleaning up past mistakes or living with
8 our past mistakes, but I would say that all of the
9 activities, or those entities that do so should have that
10 burden of proof.

11 Now, I wouldn't be opposed to some sort of caveats
12 for some special activities, but don't ask me to mention
13 what those might be.

14 MR. KIMBALL: What activities are you aware
15 of that don't have the potential of impacting the
16 ground water?

17 MR. LUECKE: I am not aware of, that is the
18 problem.

19 MR. FROHARDT: May I follow up with a
20 specific situation, because I have been curious every since
21 Dan made his comment at the outset. We represent a
22 number of mining companies, who undertake new mining
23 projects. When you have a mining project that involves a
24 tailing impoundment, there is an evolving technology in
25 that area, and typically, the state requirements will require

1 a carefully engineered facility that is going to minimize
2 seepage, in an attempt to collect any seepage to ground
3 water, so that it does not leave the immediate vicinity of
4 the impoundment. But in my experience, when you look at
5 natural liners or artificial liners and the types of
6 rigid environment where you find mines, even given the
7 most aggressive consult I have come across, I don't know of
8 any who would be willing to state that you could avoid
9 any seepage, and therefore avoid all degradation of all
10 groundwater beyond a reasonable doubt.

11 I am curious then where Dan would take the position
12 that we should have no new mining projects or would in fact
13 allow an exemption for limited degradation in the immediate
14 vicinity of the impoundment?

15 MR. LEUCKE: I would say that there well might
16 be some circumstances where one would want to say, if it
17 cannot be established beyond a reasonable doubt, when you
18 must establish a contingency that makes sure that if your
19 design does not perform as it is advertised, that you are
20 going to be able to catch and control that contamination,
21 or that you are going to accept full liability for any
22 damage that is done in association with that contamination.
23 I think that we are nowhere near that sort of position right
24 now.

25 To go back to your previous question, can I identify

1 for you one activity, one economic activity that doesn't
2 lead to ground water pollution of some sort. I would
3 suggest perhaps professional sports, but I can't think
4 of anything beyond that. I am not even sure of that.

5 MR. KIMBALL: They play on a field.

6 MR. LUECKE: Artificial.

7 PROFESSOR CAULFIELD: Let's get on to another
8 question. I plan to call this meeting to a close at 20
9 minutes of four; we got five speakers left. We have
10 concluding remarks to make, and so we have about 17 minutes.

11 MR. OWEN DELONG: We have written a number of
12 articles in the current issue that we are showing today,
13 dealing with the farm situation and pesticide and
14 herbicide and fertilizers in particular in the general area
15 of Kansas, but in the midwest in general.

16 My question is, directing this to Mr. Christianson,
17 but also to Dan Luecke's remarks, that is to say, we
18 talked with many farmers throughout the State of Kansas on
19 the question of liability and related matters. What
20 we think keeps coming up with that is more a question of
21 responsibility than liability, in the sense the farmers
22 are showing a greater and greater desire to take
23 responsibility for everything they are doing in terms of
24 their way of life. Those that are not are coming under
25 some pressure from other farmers to take a wider look at what

1 the effect of the chemicals which we are using is on the
2 environment in which they are all living, and in which
3 their wives are living and which their children are being
4 raised and so forth.

5 Someone spoke of a practical solution. My question
6 to you is this: the land grant universities have not been
7 teaching very much about alternatives to the current
8 chemical and petrochemical methods of farming, and yet,
9 many farmers have found that using much smaller quantities
10 than are recommended by the fertilizer companies, or are
11 recommended on the labels, will still make it possible
12 to make the same kind of money, even if they produce less
13 crops, because they are using much smaller quantities of
14 the chemicals that have been costing them so much. Does
15 the farm Bureau have any programs of its own which are
16 encouraging farmers to make these kinds of experiments, or
17 at least to investigate the possibility that there are
18 alternative ways of doing the same kind of work and still
19 come out economically.

20 MR. CHRISTIANSON: To answer your question
21 briefly, I think the market economics basically will tell
22 you as an individual farmer what is best for your manage-
23 ment plan and for your particular farming operation.

24 At the Farm Bureau, we have no programs, we have more
25 or less discussions. We have conferences that deal with

1 natural and environmental program policies and issues. We
2 tend to try to bring our farmers together to discuss all
3 these operations with staff from the Environmental
4 Protection Agency, and with staff from various agricultural
5 departments and extension service and it is a continuing
6 thing. We strive for efficiency.

7 I can say that farmers are guided by their own
8 efficiencies and what works for the individual and what
9 hits them in the pocketbook in the long run is what we will
10 strive for.

11 Now, the farmer is concerned about his own community.
12 I think that it would behoove a farmer in an area overlying
13 say an aquifer, that it is not going to do any good for
14 one guy to put a check valve on when the rest of them don't.
15 They have got to be responsible for their actions, no
16 question about that. It is tough to get farmers to
17 necessarily agree on anyone particular plan, but I think we
18 just have to strive for more education, the key to it.

19 MR. DELONG: That is the question; are you
20 engaged in extensive educational activities. As we have
21 found out anyway quite a failing of the land grant
22 institutions, perhaps because of some connection with the
23 chemical companies themselves, is all we can figure out at
24 this point to provide this education to the farmer because
25 they are still getting it from the extension service, but

1 now the present administration wants to get rid of the
2 Extension Service under the budget cuts. Who is going to
3 be left if the Extension Service is out of it, and the land
4 grant universities are not providing it?

5 MR. CHRISTIANSON: Definitely there is a role
6 for the Extension Service and a role for the Soil
7 Conservation Service. They are the two primary and most
8 locally affected federal government agencies that I know of
9 that at least work directly with agriculture. It is very
10 important to us that these two agencies have the ability
11 that are redirecting their priorities to these particular
12 areas.

13 MR. DON CASTLE: I am Don Castle with the
14 Wyoming Outdoor Council in Cheyenne.

15 My question I suppose most logically would be
16 answered by Ray or Dan, but they have been getting most
17 of the exercise lately; maybe the others would like to
18 answer or comment on it. The gentleman from Kansas
19 anticipated my question, which has to do with organic
20 farming. Nobody has said that yet, and it is curious to
21 me why in a conference of this sort, which has been focusing
22 on agriculture and mining, it is only within the last 20
23 minutes of the conference that this consideration comes up.

24 To just point out a couple of things that are obvious
25 I am sure to all of us, organic farming would eliminate most,

1 if not all of the contaminant at their source, and it
2 would address itself to a special clientele, a special
3 market, which I think has been demonstrated is willing to
4 pay a premium price for crops that are grown that way.
5 Why isn't this relevant? Why isn't there more discussion
6 of organic farming at this point? Why isn't this a part
7 of some kind of solution?

8 PROFESSOR CAULFIELD: Any volunteers?

9 MR. CHRISTIANSON: Let me answer part of it.
10 I believe organic farming, there are people trying it. I
11 don't believe right now that we would be able to produce
12 nearly what we can produce if we went to organics.

13 MR. CASTLE: We are burdened with surplusses.

14 MR. CHRISTIANSON: Well, that is true. It is
15 our natural behavior to be that way. We need more.

16 MR. CASTLE: To behave irrationally?

17 MR. CHRISTIANSON: What we need are more
18 Refrigerator Perrys around. We do have some people who are
19 experimenting with organic farming. You might have
20 watched the NBC nightly news last week with a member of
21 the Farm Bureau from Saguache, Colorado. He has produced
22 chemically free beef. Now, we are getting into fully
23 another subject here, I think, but he is setting a standard,
24 and we will see what the marketplace will determine.

25 MR. DON BEAKEY: I am Don Beakey from the

1 agricultural community in Burlington. If we are to meet
2 your schedule, we will have to have one big question and
3 a one minute answer.

4 PROFESSOR CAULFIELD: Right.

5 MR. BEAKEY: Ray, what can rural Colorado
6 cities do in connection with agriculture to help protect
7 this ground water that our cities use and our farmers pump
8 on to the crops?

9 MR. DAHL: I think that Ray has already said
10 one of the tough things is getting farmers to agree together.
11 One of the things is making sure that there is a sense of
12 community, and that is the farm community and the city
13 itself. It would seem to me that one thing rural
14 communities could do out there is the rural areas really
15 don't have that many opportunities to get together. It
16 seems to me that a role for what the local government
17 could do is to host these kind of public meetings and
18 encourage the kinds of education that Ray is talking about.

19 I only will answer half of this question that Ray
20 is saying his people are so anxious to have. I would say
21 then that is fine. Municipal government has got the
22 facilities available, set up the meetings, bring in the
23 people from the Extension Service and have the information
24 available and take them up on their promise.

25 MR. GREG LYONS: I can also tell you by virtue

1 of my experience and the politics of these issues, specifically
2 ground water quality is perhaps more discomfoted by this
3 specter that it is, and I don't mean to slant anyone of
4 the gentlemen on the panel, because I am unacquainted with
5 each and everyone of them, but it is necessarily the same
6 folks who would argue against a strong federal role by
7 maintaining the states can do it who also appear in the
8 courts or in the state legislature arguing against those
9 very programs by which the states could do it. The history
10 of environmental programs in this country, I think, is
11 consistent with my interpretation, and that is, in very
12 few areas that states have taken the initiative in the
13 absence of the federal pressure. Most of the vast majority
14 of the environmental programs and vast majority of the
15 states were the results of federal pressure.

16 Some on the earlier panel and this panel have extolled
17 the virtues of my statement of the Arizona Ground Water
18 Act which goes to the issue of water quantity, enacted
19 only under the pressure of the cut off of the CAP Funding.
20 We are currently looking to rectifying the inadequacies of
21 the ground water law, to prompt three attorney general
22 opinions over a number of years pleading to the legislature
23 to do something about it. In each and every instance those
24 pleas were ignored, and now this session we may do some-
25 thing with the prospect of the citizen initiative.

1 Another gun aimed at our heads. So while
2 conceptually and theoretically I would agree with these
3 gentlemen, I would specifically agree that the availability
4 of the resources and willingness to enforce is at least as
5 important as the strength of the law, but the point is, I
6 do not share the same degree of confidence that the states
7 will, and can move in this area.

8 PROFESSOR CAULFIELD: The Chair will take
9 that as a comment and not a question.

10 MR. JOHN ROLD: I am John Rold, Colorado
11 State Geologist.

12 I heard quite a bit of discussion about how we are
13 going to regulate this, and the question has been on my
14 mind every since this morning. Do we have enough infor-
15 mation, enough scientific information that we can do a
16 reasonable and fair job of regulation? Only one person
17 all day today has mentioned the word hydrology or lack of
18 information. Dan Luecke and I have a real concern that
19 we don't have enough about the underground aquifers and
20 we don't know enough about the movement of the fluids
21 within those aquifers. We don't know enough about the
22 geochemical changes, natural as well as man made, to those
23 fluids, to really do a good fair and reasonable job of
24 regulating. I don't say we shouldn't do regulation, but
25 I would say as we regulate we should keep in mind there

1 is a considerable lack of information and a need for
2 information and design those regulations so that they will
3 take that into account.

4 Farmers can do one thing over the Pierre Shale
5 with no problem at all that may cause great problems
6 over the Ogallala Aquifer. Now, if anybody on the panels
7 thinks we do have enough information to do a reasonable job
8 of regulating, I would like for them to speak out and why.

9 PROFESSOR CAULFIELD: Let's take that as a
10 comment.

11 MR. DAHL: I think it is important, of course;
12 you want to have the best information you can. The
13 Denver Water Board watching that stuff coming down from
14 Martin Marietta approaching within feet of their wells
15 probably would take the position that, as you said, you
16 got to wait until you have the best information possible
17 before you get started, and if that is your point, I very
18 much agree with you. At the same time, I don't think you
19 can allow problems to develop that you can't at least make
20 a stab at. I am certain the Water Department is
21 making whatever stabs it can at that issue, and it would be
22 very remiss of them not to, because that is a chunk of
23 Denver's water supply that is being threatened, so I very
24 much agree you need the best input you can get. I also
25 agree really down on the learning curve about how that

1 stuff operates and the examples you give are good ones.
2 At the same time we have some water supplies really being
3 threatened and I don't think you are saying walk away from
4 it until we are completely ready. I guess I am saying
5 you got to do both things at the same time and in a reason-
6 able fashion.

7 A VOICE: I don't know whom to ask, Max, Dan or
8 Ray, but I will give it a shot. This ground water
9 contamination, what kind of acreage are we talking about?

10 MR. DOTSON: I didn't get the question. Could
11 you repeat it?

12 A VOICE: Whenever the DEA goes in and
13 destroys a marijuana crop, wherever they are growing it at,
14 is there any type of ground water contamination resulting,
15 and if so, how many acres are we talking about? Maybe
16 another question: is EPA giving standards or whatever to the
17 Drug Enforcement Agency to destroy crops?

18 MR. DOTSON: I am not aware of any involvement
19 of EPA in that particular activity. Are you talking about
20 the defoliation activity?

21 A VOICE: Right.

22 MR. DOTSON: The only comment I would make, it
23 is a herbicide, so there is a distinct possibility it could
24 be impacting not only on ground water but surface water
25 as well. I don't know if there has been any kind of

1 comprehensive evaluation of that impact.

2 A VOICE: If so, does the Federal Government
3 take responsibility?

4 MR.DOTSON: Yes. It is a good question. You
5 might ask some of our pesticide people what is going on.

6 PROFESSOR CAULFIELD: Thank you very much.

7 MR. CHRISTIANSON: I read in the papers just
8 the other day that marijuna crop is the largest cash crop
9 in America It is replacing corn and wheat, but I don't
10 know what the exact acreage of it is. I don't think anybody
11 knows.

12 PROFESSOR CAULFIELD: The last two questions
13 and then I have a question.

14 A VOICE: I don't know whether it is appropriate
15 for me to speak following the comment you just made. I am
16 a farmer. I don't farm marijuna. I am not from Colorado,
17 which is unique. I am from Texas. I am from the high
18 plains.

19 I sat here and listened to the farmers. I thought
20 Ray was certainly a minority in this thing. I come from an
21 area where we do irrigate. We don't have much sprinkler
22 irrigation. We have no problems so far as I know in regards
23 to your detoxification to the control valve into the
24 aquifer. In the first place, our aquifer is not that big,
25 and our wells are not that big. I come from an area with a

1 different problem and I want to say to you, as you plan
2 for anykind of federal regulations, that I believe it is
3 paramount that you legislate from a state and local level,
4 and not from a federal level. I think the application of
5 the incentives from the federal level is very appropriate.
6 The application I cannot understand. I have enough problems
7 I live in the panhandle of Texas and we are step children.
8 It is so far from Austin that I come to Denver easier.
9 But we have enough problems with the state, and we
10 certainly don't want the thing to get out of control.

11 Now, in regards to the federal agency, we have talked
12 about methods of contamination here today. We are facing
13 one of the greatest concerns, and those of you who drink
14 water from the Ogallalla should be advised that the
15 Department of Energy proposes to store high level nuclear
16 wastes in the midst of the Ogallala Aquifer with holes
17 from 12 to 22 feet in diameter, and a mined out 2,000 acre
18 salt dome and store also above ground in that area, and if
19 you live anywhere close to Amarillo, you know the wind
20 can blow and does blow in Amarillo. I believe that we must
21 expect from our federal agencies, and I got to take a shot
22 at the EPA, and I am real sorry to have to do so, but Max
23 already has a disclaimer. Recently under the Nuclear Waste
24 Policy Act the EPA had to release rules and regulations
25 in regards to the location of respositories. The initial

1 draft took a very strong position in relation to potable
2 water progressively through eight working drafts until
3 the final draft. At that point they set up within that
4 some classification systems for aquifers. And ladies and
5 gentlemen, it gives zero protection to rural America. I
6 think it is important that we note that at this point in
7 time, because this is the first attempt that I know of by
8 the EPA to set up classification of aquifers on a national
9 level. I think it is vital that we be concerned about
10 it.

11 I want to express appreciation to Ray. He did a good
12 job for representing agriculture. I want to say to you, we
13 are not a bunch of bad guys, although we have been
14 designated one of these people that can't agree with anybody.
15 I think maybe we can agree on a few things if you come
16 around and talk to us about them. I thank you for this
17 opportunity to comment.

18 MR. LUECKE: May I comment with respect to
19 the liability problem that was mentioned here in terms of
20 storage of high level radioactive wastes; it is directly the
21 result of federal involvement some years ago in the
22 establishment of the limits on liability in the nuclear
23 industry. This was at the time when there was an effort to
24 get commercial reactors underway. The only way utilities
25 would get into it was if there were limited liability, and the

1 Federal Government agreed to limit liability and we now
2 are reaping that harvest. What do we do with all of those
3 spent fuel rods and what do we do with all of those
4 abandoned mill tailing ponds that are scattered throughout
5 the West. It is a wonderful example of what happens when
6 liability for control or contamination of certain very
7 hazardous materials is limited and substantially limited.
8 We often end up with a more serious problem than that which
9 we began with.

10 PROFESSOR CAULFIELD: Thank you.

11 MR. RICHARD HAMILTON: On the 16th of January
12 1980, I petitioned the Secretary of the Interior under
13 Section 601 of the Surface Mine Control Act to designate
14 certain lands in South Park County Colorado as unsuitable
15 for mining. The reason I tried to have the Secretary of
16 the Interior initiate the designation of lands in South
17 Park as unsuitable for mining was a uranium resource
18 that would be in fact solution mining right in the middle
19 of about 45% of the stored and delivered water to the
20 Denver Metro area. It was my concern that the uranium
21 solution mining would move from the ground water regime into
22 the surface water and that the receiving systems, the
23 City of Denver and so forth would chlorinate those uranium
24 oxides making physiological absorption into children's bones
25 very very much enhanced, and would induce significantly more

1 cases of leukemia.

2 The EPA supported the investigation and the Bureau of
3 Land Management did. The Governor of Colorado did not. The
4 Colorado Department of Natural Resources did not. My
5 question basically goes to Max. Max, have there been in
6 Colorado or in Region VIII any Section 601 designations of
7 lands not suitable for mining predicated on the basis they
8 would cause irreparable and distinct human health impacts?

9 MR. DOTSON: Well, as far as I know, in terms
10 of EPA designating any area in the manner that you are
11 indicating, I do not think so. That is not to say that
12 the Nuclear Regulatory Commission or Office of Surface
13 Mining or Mined Land Reclamation folks in the State of
14 Colorado have not undertaken a designation of this type,
15 so in terms of our involvement, I know of no designation.

16 MR. HAMILTON: Do you know of any designation
17 of 601 kinds of lands that would have ever been held
18 unsuitable for mining because of potential impacts on human
19 health or public health concerns?

20 MR. DOTSON: I am unaware of any.

21 MR. HAMILTON: I am unaware of it too. I think
22 it is a sad consequence. If anyone would wish any materials
23 concerning that passage of the Colorado Land Use Commission
24 item, I will be more than happy to submit them. I still
25 wish somehow that that designation hearing would investigate

1 the potential of that uranium impact on the City of Denver's
2 water supply. Thank you.

3 PROFESSOR CAULFIELD: I would just like to
4 bring up one point, because the focus of this exercise
5 has been on the question of what the federal government
6 should do at this time legislatively. I would like to refer
7 back to 1936 and to the principle thereof, which calls for
8 the establishment of legislation which would say each state
9 shall establish numerical standards found in the ambient
10 ground water. There are more provisions implementing that,
11 but I think that I would like to ask the panel very briefly
12 if anybody would like to comment. I think the organization
13 that sponsored this, the Environmental and Energy Study
14 Institute would appreciate getting any written comments
15 that you would like to make after this meeting with respect
16 to that particular provision, because in terms of this
17 rather limited piece of legislation that is before the
18 Congress, sponsored by any number of senators in both
19 parties, that is a key substantive provision which would
20 add to the arsenal of the EPA and the states. So if anybody
21 would like to briefly make a comment on that and would
22 supplement their remarks for the record to the Institution.

23 MR. DOTSON: Well, let me give you a little
24 background, and I think it will hopefully answer your
25 question. In terms of establishing a standard, let me

1 reflect for a minute just on the water quality standard
2 for surface water. EPA developed a basic criteria and
3 then works with a state as they establish and approve
4 the water quality standard. They have eventually come to
5 the EPA for approval and that is the process that has well
6 served, not only the individual states, but EPA and the
7 nation in total. I think a similar approach in ground water
8 maybe as important as it is with surface water. One thing
9 that I would guard against, however, is driving a state
10 towards developing ground water drinking water standards in
11 lieu of a federal mandated or federal promulgated standard.
12 I am not that particularly familiar with the Mitchell/Baucus
13 bill in this area, but as you know EPA has put added
14 emphasis on getting out some numbers so to speak, some
15 maximum contaminant levels, and we have just to this point
16 promulgated a handful in terms of the universe. Vic Keim,
17 the past office director for the Office of Drinking water,
18 refers to the universe as a list of about 600 contaminants
19 in total, and I can foresee a problem if all of those were
20 found in ground water. The states would have to develop
21 standards, and there would be an absolute absence of the
22 federal government guidelines or federal standards, and what
23 state would independently go out and deal with that. I
24 would say that would be major new legislation if that
25 occurred for obvious reasons. Consistency and the cost to

1 the states and something that John Rold mentioned,
2 considerable lack of information from state to state
3 information.

4 PROFESSOR CAULFIELD Anyone else on the
5 panel like to speak to this question?

6 As you know a lot of the state officials are tired
7 of the approach that the federal government establishes a
8 fairly well defined set of parameters within which the
9 states have to work, and if they do, they receive money,
10 and if they don't or ignore it, they are sued. We would
11 like to think that maybe this time, that the approach
12 should be to supplement and strengthen state programs rather
13 than mandate a set of federal standards and guidelines.

14 Is there anyone else who would like to comment?

15 MR. CHRISTIANSON: It is in our proposal for
16 the Farm Bureau in 1986, at least the state Farm Bureau here
17 is addressing the issue of ground water management and
18 ground water quality. We will be taking a look at that
19 this year and seeing what direction we will be working in
20 that area.

21 MR. MURPHY: Since we have run off, I am going
22 to say thank you for your insight and ideas and we hope to
23 bring it back to Washington and make the coming process more
24 rationale and more informed. I want to thank the panelists
25 and speakers and I especially want to thank the three other

1 organizations who made this event possible, especially
2 John Ehrmann of the Keystone Center and Norm Evans of the
3 Colorado Water Resources Research Institute. Thank you.

4 (Conference concluded.)
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