Meeting Notes for the Sustainable Rangelands Roundtable (SRR)
Portland, OR– August 19-21, 2003
Facilitated by Lou Romero, DeLaPorte & Associates, Inc.

Tuesday, August 19, 2003 3-5 pm
Welcome – Tom Bartlett
SRR Orientation and Overview for New Participants Introductions –
Tom Bartlett

Participant self-introductions – led by Tom Bartlett, Roundtable Co-Convener

- Name, organization, position, knowledge of SRR

A list of all participants can be found in Appendix A.

SRR Background – Tom Bartlett (See Appendix B)

Rangelands research relevant to SRR – John Mitchell (See Appendix B)

Panel Discussion on Status of Criteria & Indicator work and Q&A –Tom Bartlett, Steve Borchard, Lori Hidinger, John Mitchell
Q: Support structure of volunteers and who is funding the SRR
A: Base funding of staff and 4-5 meetings per year is supported by agencies and Colorado State University. We support travel for non-federal employees, which separates us from other roundtables (increased non-agency involvement). The SRR was given a small amount of USFS funding to start the rangelands roundtable in the beginning rather than joining in the Roundtable for Sustainable Forests. The BLM, USGS, and now ARS have followed the USFS in funding the SRR through participant engagement and support from within agencies.

Q: What is the involvement with EPA and Savory Holistic Center?
A: There has been little engagement with the Holistic Center. Alan Savory is aware of our process. Ron Shaffer, EPA, has been to four meetings, Eric Hyatt and Toney Ott (of the EMAP project in Denver) have been to meetings and we have briefed EPA in DC. There is some overlap of what SRR does and some of EPAs programs, such as EMAP. We hope to coordinate more closely in the future.

Steve Borchard: We are at a crossroads and will be diving into the indicator development to evaluate and prioritize what we've proposed. We invite you to speak up and participate at this meeting and contribute to our development. Let us know if you have any ideas.
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Tom Bartlett: The goal groups were just formed at the last meeting. Criterion groups were formed about two years ago. Please learn what they are about and contribute to where they are going.

Lori Hidinger: The biggest steps are data evaluation and prioritization. Share your thoughts, please remember that groups have been working on these indicators for two years. We have a data matrix that looks at scale, does data exist?, evaluate data sets that do exist, information on bias and accuracy. Some indicators have well established data sets, but some have no metric.

Q: Is there a list of research priorities?
A: Currently we have no list, but it's a good idea… We've discussed how to shape national research direction.

Review and discuss SRR Phase II organizational structure to allow new participants to select participation level – Tom Bartlett

Wednesday, June 4, 2003

Welcome and self-introductions – Tom Bartlett and Lou Romero
Thank you for the level of support and participation you have shown by your attendance at this and previous meetings. During this meeting we hope to conclude initial C&I identification phase, integrate new participants, focus and sharpen strategic plan and operational tactics, itemize, organize, and prioritize next steps.

New participants introduced themselves, with the following information:

- Name, organization, position, location
- Familiarity with work of SRR
- Interests you represent
- Participation today and tomorrow

SRR Update – Tom Bartlett (Appendix B)

Progress of CEQ Working Group on Sustainability – Ted Heintz (Appendix B)

Review International Rangelands Congress (IRC) presentations and progress and international criteria and indicator evening mixer - Rod Heitschmidt, Paul Tueller, Dennis Child, John Mitchell

Rod Heitschmidt: Posters were very well done. Informally discussed and left materials for people to pick up. There are certainly possibilities for future liaisons.
John Mitchell: John gave an oral talk merging ecology and economics. There was high attendance at this session titled Merging Ecology and Economics, well received and provided an incentive to look at the posters. One goal of attending the conference was to make international contacts interested in the C&I. There was no formal program due to logistical mishaps. However, Dennis Child is interested in working on an effort to bring together this international effort. The next Congress will take place in China and will be a joint meeting with International Grassland Conference and will provide more opportunity for international cooperation, joint C&I efforts. A number of third world countries were asserting that the First World should not be driving the train on how things are reported. They might have different values as to how things should be reported.
Paul Tueller: Many South Africans were also interested monitoring and landscape changes.

Review Ecological Society of America Evening Session – John Mitchell and Lori Hidinger
Lori Hidinger – One question they asked in the session, was whether this process only involves the US? John discussed the IRC. Interesting conversation included prioritization of the indicators, what kind of criteria might be used for prioritization. The time scale that land might respond to management might be used. Metrics- what will be measured, how to standardize

metrics and measuring. Are we measuring against reference sites? Benchmarks? The indicators must have some kind of context in climate and landscape so that differences between two different regions can be considered. How to ensure data consistency?
Sherm Karl – 12-15 people who were very interested in rangelands and at least half of them were very interested in soils. They had good questions about the soil indicators that hadn't been considered.
John Mitchell – Gave a talk on the work of the SRR and attendees were not previously aware of our work. Handed out many four-pagers and got the word out. ESA is interested in our work and has a lot of knowledge that can help us.

Q: Can we work with the rangeland section? A: There will be a place on their website that we might be able to make a link to SRR. We hope to provide information on their website to provide the basis for discussion in next years meeting.

Strategic Plan Delphi Results – Helen Rowe and Tom Bartlett
Criterion group representatives first drafted the strategic plan in a meeting in Phoenix last December. It was revisited in Jackson in July and through two rounds of Delphi. Remember that a strategic plan should be bold, compelling, and do-able. We hope to agree on the strategic plan and move on to the implementation phase.

Discussion of remaining Strategic Plan questions and issues to be resolved, and associated assumptions, concluding with adoption of a final Strategic Plan – led by Lou Romero and Tom Bartlett **(**See Appendix C)

Review and discuss SRR's First Guiding Principle in the context of SRR Phase II - led by Lou Romero with Tom Bartlett, John Mitchell, and Steve Borchard

Guiding Principle #1: Collectively, indicators should guide monitoring efforts to measure rangeland sustainability in the U.S. at the national scale. Where possible, indicators should guide monitoring efforts to measure rangeland sustainability at multiple scales.

Steve Borchard: We need to create continuity between the agencies as we step this down to the local level. We need to convey the importance of the condition of the rangelands. Private rangelands need a way to justify NRCS spending on the resource. This can serve as a template on indicators useable at multiple scales. Some are useful and some are not depending on the scale. We need to identify research needs. The efficacy of present management on public lands needs to be communicated to the public. Proper monitoring will be a good way to communicate the need for the funding. Evaluation of the efficacy of the current tools that we are using will also come out of this process and will be useful for the agencies.

John Mitchell: Guiding principle #1 was generally accepted as we began this process. We discussed multiple scales at each meeting. There are stakeholders among us who think it's important that these indicators have importance to people on the ground, whether it is a grazing association, managers, or private land owners. It caused us to reassess whether the scale issue has changed. It has not changed. It is national in scope. At a management unit level, there are already others that are doing it. We have been doing this management for 100 years. We do not know about incorporating this broad approach including social and economic aspects. Some approaches start with local indicators and look at how these might be aggregated. We are working the other way.

For notes on the ensuing group discussion, see Appendix D.

Applied Example Delphi Results – Helen Rowe (Appendix B)

Overview tentative Applied Example Working Group tasks and timeline and identify Applied Example Working Group volunteers – Lori Hidinger and Lou Romero
All examples do not have to be relevant to the local scale. These examples are stories to explain why we are investing so much effort into these indicators. SRR would like a suite of these stories. We need volunteers to write or recruit writers to write these examples.
Volunteers for this group: Dick Loper, Rod Heitschmidt, Bob Welling, Stacey Katseanes, Bob Breckenridge, John Tanaka

Outreach, Coordination, and Research Goal Groups meet to:

- Finalize goal working group leaders for Phase II.
- Sharpen Strategic Plan tactical components, by prioritizing and detailing tasks with timelines, budgets, task leaders, necessary core staff support, and volunteer personnel commitments.
- Prepare August group status reports with specific needs for October meeting.

Report on:

1. Changes made – goal, objectives and tactics. Did you finish?
2. Linkage of your changes to objectives and tactics under primary C&I goal?
3. Any needs for October meeting?
4. Leaders selected?

Changes to the strategic plan from this session can be seen on appendix E. The following notes reflect changes reported to the group.

Coordination Goal Group – *Duncan Patten*

- Changed goal: added an “or”
- New objective 1: facilitate development of coordination mechanisms, this goes beyond the roundtables.
- Objective 2 is like original objective 1. Took a tactic from objective 2 that was reworded for objective 2. MOU tactic is from the original objective.
- Objective 4 is new.
- Objective 5 is the original objective 3, but it is shortened. The tasks included pilot projects, but this was taken out and a workshop was included.
- Why were some of these aspects not brought up in the Delphi? It was too much to do in a single Delphi, but a chapter might be easier to undertake in a Delphi.
- There is a certain amount of overlap with the outreach group.

Data Workshop Working Group – *TBA*

Outreach Goal Group – *Lori Hidinger*

- SRR C&I are not the only set of indicators; we toned this down in the outreach section. Made some small language clarification to goal. Added some new sub-tactics and tactics. New objectives explore activities with other roundtable efforts especially the CEQ. Look at possibilities for new models and regional workshops for future work. We might want to develop a method to understand how other groups perceive us.
- Discussed champion and what they will do for us. We changed language to read: existence of a champion to promote C&I.

Research Goal Group – ***Bill Fox***
- Strategic goal: took out initial discussion of priority indicators. Removed implications that SRR will conduct research.
- Objective 1: encourage research funding
- Some tactics of Objective 1 seem bigger than tactics, are they objectives? Consensus is that they all relate to a central theme of research funding for C&I.

Thursday, August 21, 2003
LUCID (Local unit criteria and indicator development) Presentation, including potential utility for SRR – Pam Wright (Appendix B)

Group discussion on indicator prioritization – necessity, structural framework, evaluation factors, and timeline – led by Lou Romero

Premise for prioritization:
1. To get real attention for our guidance to agency's national level report
2. Doing data sets – long run

First report – priority where we have existing data
1. Importance for assessing sustainability & critical rangeland issues
2. Wide geographic significance
3. Useful at multiple geographic scales
4. Data available or potentially available
5. Clear to average citizen
6. Related/consistent with other indicator programs
7. Ranked important by stakeholders
8. Cost

Overall process ideas for prioritization from the discussion above:
1. Use a Data Gaps approach; 2 lists: data available and easy to get and not available, difficult and costly
2. Use a Delphi prioritization process
3. Don't prioritize; just provide guidance to others on how to use the 64 indicators
4. Duncan's idea: A systems approach: "represents a suite of system processes, interrelationships or surrogate for other indicators."

For notes on the prioritization discussion, please see Appendix F.

Five Criterion Groups meet to:
- Integrate new participants.

- Finalize criterion group leaders for Phase II.
- Continue JRM planning and manuscript preparation.
- Prepare August group status reports with specific needs for October meeting.
- Try a prioritization of your indicators; tell us how you did it

Reports at the end of small group work today:

- Leader?
- Progress and plans-indicator data sets? Prioritization approach?
- JRM preparations?
- Needs for October?

Groups decided there needed to be further discussion on the Criteria & Indicator Goal before moving ahead. See Appendix G for text from each group on suggested changes. See Appendix H for notes on the ensuing group discussion.

Two major differences emerged amongst the Criterion groups concerning Goal 1:

1. SRR writes the report or SRR facilitates the national report (See Appendix H for notes on this discussion.)
2. If we are going to JRM as a special issue. Are our reports good enough to go forward to publish without more external review?
    - John Mitchell will look into making sure there is a good technical edit for the JRM articles. One person needs to read the report as one entity in two weeks.

Steering Committee has requested a big picture geospatial data revegetation status/progress. FGDC update will be given by Ralph Crawford.

Ted Heintz: "Systems concept"

The Sustainable Water Resources Roundtable has been discussing how systems concepts can be used in developing indicators. Similar consideration may be useful in the SRR.

Both ecology and economics use systems concepts, although the terminology differs. In ecology, systems are delineated in terms of Drivers, Stressors, and Responses as they occur in various components of an ecosystem. Components include those addressed by the SRR criteria such as water, soils, plants and animals. The economic system is usually delineated in terms of the factors of production – land (natural resources, materials and energy), labor and capital – and the primary sectors of the economy – production, consumption, finance, and government. These concepts can be generalized to provide a systems perspective that encompasses both the ecosystem and the socio-economic system. The systems diagram I showed in the Powerpoint presentation summarizing the work of the CEQ Indicators Working Group illustrates terminology that could be used.

Two distinctions are made in this system diagram. First is the distinction between the capacity of the system's resources, capital, and institutions and the current output and current effects of the system. Second is the distinction between effects on humans and effects on non-human elements of the system.

One concept of sustainability that seems particularly useful for performing assessments is capital or capacity maintenance. Sustainability is achieved to the extent that economic, environmental and social capital is maintained. This concept would focus the development of indicators on measures of capacities, measures of processes that directly affect capacities, and measures of the changes in capacities that result. Systems concepts from rangeland ecology, economics and sociology could be used to identify the various components, processes and factors that determine the various capacities of rangelands and related socio-economic systems. The indicators in the SRR's set could then be associated with the corresponding systems elements. This would show which system elements are covered by the indicators and which are not. It would also suggest relationships among indicators that might be important to consider in using them to perform an assessment.

Review Agenda for October Meeting – *Lou Romero and Tom Bartlett* (See Appendix I).

Appendix A: Portland Participants

1. Hugh Barrett, Bureau of Land Management
2. Tom Bartlett, Colorado State University
3. Herby Bloodworthy, NRCS
4. Steve Borchard, DOI-Bureau of Land Management
5. Larry Brewer, NRCS
6. Larry Bryant, USDA-Forest Service
7. Ralph Crawford, USDA-Forest Service
8. Virgil Denny, Shoshone Bannock, Idaho
9. Justin Derner, Agricultural Research Service (ARS)
10. Gary Evans, s e4 consulting, inc
11. Bill Fox, Texas A&M University
12. Stan Hamilton, National Association of State Foresters (NASF)
13. H. Theodore Heintz, Jr., U.S. Department of the Interior
14. Rod Heitschmidt, ARS
15. Lori Hidinger, Ecological Society of America
16. Linda Joyce, USDA Forest Service
17. Sherm Karl, DOI-Bureau of Land Management
18. Stacey Katseanes, NCBA
19. Robert Klink, Bureau of Indian Affairs
20. Nancy Lankford, Mt. Hood National Forest
21. Mark Lawrence, Public Lands Foundation
22. Dick Loper, Rangeland Consultant
23. Kristie Maczko, Colorado State University
24. Dick Mayberry, DOI-Bureau of Land Management
25. Dan McCollum, USDA-Forest Service
26. John Mitchell, USDA-Forest Service
27. Duncan Patten, Big Sky Institute
28. Doug Powell, BLM/SRM
29. Lou Romero, DeLaPorte and Associates
30. Helen Rowe, Colorado State University
31. Ronald Shafer, EPA
32. Lawrence Strong, Northern Prairie Wildlife Research Center
33. Lou Swanson, Colorado State University
34. John Tanaka, Eastern Oregon Agricultural Research Center
35. Doug Tedrick, Bureau of Indian Affairs
36. Paul Tueller, University of Nevada
37. Bob Welling, Ridley Block Operations
38. Pamela Wright, USDA Forest Service, Rocky Mountain Research Station

Appendix B: Speaker summaries

SRR Overview and Update - Tom Bartlett
The purpose of the Sustainable Rangelands Roundtable (SRR) is to identify indicators for sustainable rangelands. The SRR process was initiated to bring focus on rangelands as a counterpart to the Roundtable on Sustainable Forests. These C&I should provide a common framework for monitoring and assessing progress towards sustainable rangeland management, expand the understanding of rangeland sustainability, and enhance the quality of debate about rangeland management issues. We include ecological, economic, and social aspects of sustainability. We hope that the C&I will improve the coordination, efficiency and quality of monitoring and data collection on our nation's rangelands. SRR gains from links with other indicator efforts, such as the Heinz Report, Roundtable on Sustainable Forests, Sustainable Minerals Roundtable, and others. The process values and respects all opinions and contributions of members and is intended to be open, positive, future focused, and dynamic.

In December 2002, the Steering Committee and at least one representative from each criterion group met to develop an ambitious strategic plan to map the future of SRR. The five goals for the SRR include 1) a continuation of criteria and indicator development and refinement including data sets, 2) coordination, 3) enhanced outreach, 4) sustainability research, and 5) funding and support.

The SRR has held four meetings in 2001, five in 2002, and has five planned for 2003. Our next meeting will be in Boise, ID, October 20-22, 2003. We have over 100 members from over 50 organizations including Federal, state and local agencies, representatives from 16 universities, non-governmental groups & organizations. The group determines the outcomes; our meetings are facilitated and interactive. A Delphi process is used to continue collaborative decision-making between meetings. SRR organization includes a Steering Committee, 5 Criterion Groups, 4 Goal Groups, working groups (scale, definitions, examples), ad hoc groups based on specific events or needs, and SRR staff.

SRR organization:

- Steering Committee: Tom Bartlett, John Mitchell, Steve Borchard, Lori Hidinger, Dennis Thompson, Larry Bryant, and Paul Geissler
- Criterion Groups for five criteria:
    1. Conservation and Maintenance of Soil and Water Resources
    2. Conservation and Maintenance of Plant and Animal Resources on Rangelands
    3. Maintenance of Productive Capacity on Rangeland Ecosystems
    4. Maintenance and Enhancement of Multiple Economic and Social Benefits to Current and Future Generations
    5. Legal, Institutional, and Economic Framework for Rangeland Conservation and Sustainable management
- Goal groups for each goal:
    1. Continue criteria and indicator development and refinement, including data sets
    2. Coordination
    3. Enhanced outreach
    4. Sustainability research
    5. Funding and support (by steering committee)
- Working groups: scale, definitions, and examples (of how criteria work).

- Ad hoc groups for special events, such as conference presentations and workshop planning.
- Roundtable staff: Tom Bartlett, John Mitchell, Lou Romero (facilitator), Kristie Maczko, Helen Rowe.

Our greatest support has been the time and effort of all individuals and organizations participating. Actual support is given by USDA Forest Service, Colorado State University, BLM, ARS, and USGS; additional partners are being sought. The SRR has worked hard to get outside feedback on our work through symposia (SRM annual meeting, 2002) and workshops (ESA 2002, Society for Natural Resources International meeting 2002; SRM annual meeting 2003). The SRR published a report on Criteria and Indicators for US Sustainable Rangelands in May 2003.

Past, present and future SRR Outreach Efforts:

- Presentation, NCBA, Denver, August 2001
- Symposium at Society for Range Management, Kansas City, Jan. 2002
- Washington, DC Briefing, May 2002
- Panel at NCBA, Reno, July, 2002
- Indicator Workshop at Ecological Society of America, Tucson, August 2002
- Tradeshow, American Farm Bureau, Tampa, Jan. 2003
- Workshop on Data Sets at Society for Range Management, Casper, Feb. 2003
- Booth, American Farmland Trust, Monterey, March 2003
- Meetings, Seminars, Luncheon, Reception, Washington DC, May 2003
- International Rangeland Congress, Durban, South Africa, July 2003
- Evening Session, Ecological Society of America, Savannah, August 2003
- Presentation & Tradeshow, Grazing Conference, Nashville, Dec. 2003
- Posters and/or Tradeshow, Society for Range Management, Salt Lake City, Jan. 2004

Future meetings:

- October 20-22: Boise, ID
- January 20-22: Fort Myers, FL (possibly will move to previous week)
- March 23-25: Spokane, WA
- June 15-17: Portland, ME
- August 17-19: Eugene, OR

Sustainability Research for Rangelands - John Mitchell
Research questions for the 21st century: Does the indicator assess the criterion? At what scales are the indicators valid? How do we come up with thresholds? How do we integrate the criteria?

The relationship between bare soil and erosion has been shown to be significant at multiple local scales; however, its utility as an indicator of the conservation and maintenance of soil and water resources of rangelands is still not shown. Other indicators also require research to show that they assess their associated criterion at regional and national scales. The importance of better understanding these relationships is manifested in how the social and economic group has defined some community-level indicators; i.e., those that “might be relevant” to sustainability. The indicators include value produced by agriculture and recreation as percent of total economy, land tenure, land use, ownership patterns by size class, and population pyramid and population change.

The SRR must consider sustainability in terms of ecological, economic, and social measures at multiple scales. When trying to incorporate multiple scales in relation to indicators of sustainability, it is important to understand limitations imposed by hierarchy theory. Three important scale-dependent attributes of data are grain, extent, and frequency behavior. These attributes explain, in part, why it is infeasible to aggregate site-specific data to a national level. Nonetheless, some indicators are comprised of nested hierarchies, and can be aggregated across multiple scales. Remotely-sensed data can also be evaluated at different scales, depending upon its grain and accuracy of classification.

Research on benefits to management in the field can target scale and interactions among indicators. SRR has produced example sheets explaining the application of C&I to fire and drought, and plans to prepare additional examples of how multiple indicators can have utility at local levels to address issues such as invasive species and exurban development.

Thresholds are discontinuities where the state of a system changes abruptly in response to continuous change in some driving variable. Understanding thresholds is difficult; none have been measured with certainty. Thresholds related to sustainability include the role of biodiversity in both ecosystem resilience and productive capacity. Further, at a certain threshold, fragmentation and invasive species can significantly alter biodiversity. Likewise, erosion can permanently alter a site once a threshold of bare soil has been exceeded.

Ecological, social, and economic criteria can possibly be synthesized in terms of various forms of capital. Capital has investment value and sustainability is attained when combination of investments provide for future needs of society. Different forms of capital (human, natural, social, financial) may provide a common currency to assess overall sustainability across the criteria. Ecological systems are more researched than the interrelationships of social and economic indicators as they interact with rangelands. What data can we retrieve from MODIS satellite data? What are the relationship between these indicators and social and economic indicators? Robert Washington-Allen has proposed a multi-discipline research study to investigate possible relationships among biophysical, economic, and social indicators using remote sensing technology.

Toward a Framework for a National System of Natural and Environmental Resource Indicators, Profiling Existing Indicator Projects – Ted Heintz

In the feedback loop, we showed the use of feedback on actions, interactions and consequences. The systems perspective allows us to identify the processes and components of important systems in which they arise. These concepts provide a basis for systematically identifying and organizing indicators. To improve our feedback we need indicators of consequences, both to humans and to the non-human elements of the biosphere, our natural resources and our environment.

Much of our capability to report indicators of such consequences exists in numerous separate organizations. We have statistics on economic effects from the departments of Commerce and Labor, on health effects from HHS and CDC, on natural resources from Interior, Agriculture and NOAA, and on environmental quality from EPA. Even at this level of simplicity, we have unlinked reporting. The most direct factors causing effects on humans are the goods and services they use and the experiences they have. The most direct factors affecting resources and environmental conditions are the extraction of resources from the environment and the discharge of residuals into the environment. Landscape change is also an important factor affecting the environment.

Systems concepts link to consequences and processes of interaction about which we want feedback. It provides one way to identify categories for indicators. It shows the two types of consequences of human actions and interactions in and within natural systems: Effects on Humans and Resources and Environmental Conditions. The Underlying Processes occur in the environmental, social and economic systems. They result in outputs that are used or experienced by humans that affect the satisfaction of human needs and wants. Underlying Processes also give rise to Driving Forces, processes that change Resources and Environmental Conditions.

The same indicator categories are a part of a multi-period model. This is consistent with the concept that decision/action processes are iterative. It does not show the roles of information and decision making, but the arrow coming in from the left suggests that the initial resource conditions are the result of decisions, actions and processes in earlier times. The initial resource and environmental conditions provide the starting point for, and the inputs to, the underlying processes. The arrow exiting to the right shows that the resource conditions that result from processes in the current time period are passed along to the next time period.

Underlying Economic Processes draw inputs from natural and environmental resources in order to produce and distribute goods and services which have effects on humans. Economic processes involve both extraction of resources and discharge of wastes which affect Resource Abundance and Environmental Quality. Not shown are the Environmental Services produced by environmental processes, which link Environmental Quality and Effects on Humans.There are several relationships between potential indicator categories involving Underlying Environmental Processes. Environmental Services are produced by these processes, which link Environmental Quality and Effects on Humans. Environmental Processes also include resource growth in renewable resource systems, which affects Resource Abundance. Environmental processes also include processes through which wastes are absorbed, dispersed and become resident in the environment. Such processes affect Environmental Quality.
The basis for Indicator System Profiles includes: Intended users, Intended uses, Forms of information included, Systems addressed, and System-based categories covered.Intended Users can be at the Geographic Level (International, National, Regional, State, Local), Institutional Type (Governmental, Business, Households, NGOs, Citizens), and Functions (Policy Making, Strategic Planning, Program Formulation, Resource Allocation, Program Management, Program Evaluation). Intended Uses of Indicators may be assessment, diagnosis, prescription, research, and education. Forms of Information involve interpretations (stories), criteria or core indicators, indicators, data from measurements, scales at which information is displayed or accessible, systems addressed, natural or environmental systems (ecosystems, physical systems), social system, and economic system. System-based Categories Covered are resource or environmental conditions or capacities, outputs, effects on humans, factors causing changes in resource or environmental conditions, and underlying processes.

SRR Q&A:
Q: Have you considered a matrix approach to see overlap and commonalities?

A: There are multiple dimensions and we would each pick different ones, hard to display as a matrix.

Strategic Plan Delphi Results – Helen Rowe
The purpose of Delphi 19 and 20 were to involve SRR in revising the strategic plan in between meetings. The strategic plan was created in December 2002 at a meeting in Phoenix with representatives from each criterion group. At the last meeting in Jackson, goal groups formed and recommended changes to the plan. Participants requested that the subsequent draft be passed through the Delphi process. Most revisions in each round were incorporated either in the text or by comments in the plan (see Delphi 20 results). Some objectives were moved to different goals to better define the work of each goal group and to reduce overlap. Some feedback expressed concern that the plan is too ambitious, examples of concern:

- Should we tackle both the tactical aspects of the C&I (identifying data sets and initiating research) and strategic implementation of the C&I by agencies?
- Should we emphasize local applicability in the pilot study, given our national level indicators?
- Should we be tackling the research ourselves?
- The workshop should be supported by the SRR, but can the work and budget be pursued by external sources?

Participants agreed that the C&I needed to be prioritized first and then the data gaps and research questions could be pursued. There is some overlap among goals. Goal 1 is to identify data gaps that need more research and provide input to the research goal. The research goal identifies and publicizes a prioritized list of needed research.

ESA and Examples Results, Delphi 21 – Helen Rowe
The purpose of Delphi 21 is to to better represent SRR at the ESA meeting and to elicit ideas for new example topics. As the outreach coordinator, Lori Hidinger led a SRR workshop at this year's ESA meetings. Delphi was used to define the feedback SRR needed at this meeting. We asked for knowledge or data gaps or other issues. Lori incorporated this feedback in the ESA discussion.

Two examples of indicator use have been drafted by the SRR for use in outreach efforts. We asked participants to list some ideas for future examples to be considered by an example working group (to be formed). The following suggestions emerged:

- Riparian and wetland health < versus condition >, watershed management and watershed health
- Systems at risk or threatened by future impairment
- Social science examples (population loss in the Great Plains, suburban encroachment)
- Rangeland conversion, urbanization on rangelands
- Recreational use on rangelands
- Historical impacts of irrigation projects
- Implications of protected/managed rangelands on rangeland uses
- Non-forage plant materials

Sustaining the contexts that sustain us: Sustainability monitoring at the FMU Scale. The LUCID report - Pam Wright

LUCID is a tool to establish a dialogue on sustainability and improve management on the ground at the Forest Management Unit (FMU) Initiative level; it hopes to inform Community Forest Initiatives as well as national scale C&I.

Why FMU scale monitoring? Forest monitoring is designed to help measure progress towards plan objectives and plan decisions, provide information to assist in, and inform, forest management, increase focus on the broader goal of sustainability within an adaptive ecosystem approach to management. This scale also allows managers to move away from compartmentalized, input/output monitoring (focus on progress towards desired conditions), and take a systems approach to monitoring that recognizes the complexity of forests/grasslands.

Developing monitoring C&I requires identifying the relationship between the C&I framework and the construct of sustainability. Many choices in frameworks that may be more or less appropriate depending on the context, scale, and questions of focus. For the FMU scale and with a focus on answering questions related to the sustainability of an LRMP we choose a framework to allow us to monitor the condition of the subsystems of the joint production system.

If the manager has the responsibility for the trajectory of an FMU, we need to monitor its sustainability – not just certain aspects. Each subsystem that operates at FMU scale needs to have one or more indicators of its sustainability measures (no fixed number) that address the expression of the specific subsystem component in that FMU.

Defining the scope – Forest Management Unit (FMU) is an area approximating a national forest in its local ecological, social and economic context. It has a flexible definition that is variously scaled because it's a mix of both the administrative land management unit and a collage of social, economic and ecological polygons that are relevant to the management of the unit. Focus is not defined based on the vegetation type/plant community – for example, many National Forests contain a mix of forested and non-forested environments – intent is to address it in its entirety. Focus is on monitoring for assessing progress towards sustainability consistent with questions asked at the scale of an LRMP.

LUCID project objectives:

- Test feasibility of monitoring and assessment of sustainable systems at the forest management unit scale.
- Develop and test a suite of indicators to assess sustainability.
- Explore methods for synthesizing information about sustainability.
- Examine relationships between scales.
- Develop a strategy to implement C&I monitoring for national forests and grasslands.
- Identify further development and research needs.
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Methods:

- Revise and modify a draft set of FMU-scale C&I developed within a systems framework and adapt them to the unique conditions of each forest regardless of vegetation type/plant community.
- Develop and design measures and reference values for each indicator.
- Perform a field test of the suite of C&I.

- Explore approaches and techniques for analysis and synthesis – for integrating across indicators.
- Conduct a relative sustainability assessment not an absolute determination.

Lessons Learned:

- Sustainability is about the complex whole – the parts and their interactions.
- Collectively build understanding of how the whole, the forest in context, works.
- Puts the focus on interpreting the indicator in its context – it adds meaning.
- Frames monitoring of key forest attributes and inter-relationships.
- Better define critical items for monitoring.
- Identified a process & set of tools to take a systems approach and a common ecological & socio-economic systems framework.
- Identified a *core suite of systems-based FMU-scale* criteria and indicators recommended for examination by National Forests.
- *Flexibility* in selection, measurement and assessment is needed to adapt the indicators and develop measures to the contexts and management issues for each National Forest.
- Core suite of C&I adaptable to the specific conditions of a forest – within systems framework (16/58).
- Key elements of joint production systems that are common across forests – but broad concepts.
- Treat as a suite but still just a starting point.

For more information, see the PowerPoint presentation on the Portland page of our website, http://sustainablerangelands.cnr.colostate.edu/portland.htm.

Pilot study at the Mount Hood National Forest - Nancy Lankford
Ms. Lankford spoke about the application of LUCID for decision making. It has been used as an organizational framework to store and use data. It is a reference standard to measure how the forest is meeting sustainability and is useful in dialogue with others.

Mount Hood in their pilot project has a partnership with OSU to look at ecological, social and economic aspects of sustainability. LUCID has been used for the recreation initiative to describe the values of the community. What does Portland want for Mt. Hood?

Sustainability provides a good way to discuss values. C&I gives the USFS a tool to process information other than solely ecological data. For the recreation initiative, they are populating data in the zone of influence and trying to include sources such as census data. Taken together, these data define stories/themes about Mt. Hood. The timber debate is heavy, but water is perhaps more significant. The indicators show change in the major use from timber to recreation. LUCID also helps develop methodologies for looking at inter-relationships. The monitoring report has been a functional report to look at from a systems based approach.

Q: Stakeholders were involved, how does this work?
A: Varied participation. Some worked closely with county commissioners and with the public to chose which indicators would say we are sustainable. The FS goes back and looks to see which indicators they influence and then engage the other parts of the community that might have influence over the other aspects.

A. Worked with Portland University - they build relationships in the Portland community to extend the conversation on sustainability. There has not been a big public dialogue with the whole set of indicators. Working with the state of Oregon, looking at the recreation aspects of Mt. Hood. The dialogue with Warm Springs will use C&I as basis.

Q. How do you get the expertise?

A. Participation exhaustion, there were too many pilots going on. Encourage them to use the universities so that there is a databank of people –a university can work as a neutral party. Our forests can use case study applications written by the university. These case studies can act as a university consultation, even if there is no local university.

A. Portland University is acting as the neutral body for the recreation initiative in Mt. Hood.

Appendix C: Discussion of remaining Strategic Plan questions and issues to be resolved, and associated assumptions, concluding with adoption of a final Strategic Plan – led by Lou Romero and Tom Bartlett

- Our job is to focus on the indicators and refine them or is our focus to have them implemented?
- Arrogant to assume we have the indicators that should be adopted.
- There is merit to proceeding on both fronts. SRR should retain the rights to maintain control of those indicators, suggestions can be incorporated, but we maintain control. We have both relationships with agencies and we have proposed the indicators so we should continue on both.
- SRR has taken on a life of its own and we have taken on doing these. We need to have buy-in from the agencies. We cannot only represent ourselves. Agencies need to move forward or we will have made no progress.
- We will need hired labor if we are to proceed. Fund people to do the work that we think needs to be done. Focus on the strategic. Change language and delete some objectives.
- We stay strategic (facilitate institutional change to incorporate sustainability), but we hire folks to work on the tactical needs.
- The Forestry Roundtable acted as the coordination committee, but there were many personnel (mostly agency) working on the intensive effort to identify and assemble data. MOU was a mechanism for getting this work done. This might have some coordination challenges that are different from the FS charter.
- Forest health is assessed by USFS, which is different from rangelands which has multiple agencies charged with assessments.
- There is a legal mandate for SFR to get the work accomplished, but no budget or rationale for funding SRR at this point. We are a volunteer effort. We are a catalyst to promote this kind of work. We either do it ourselves or we work as a catalyst. There needs to be a recognition in this country that rangelands are as important as forests for us to be funded at the same level of SFR. We don't have the funding at present to hire people for the technical aspects of our work. We need to redefine and prioritize our indicators, but we also have to continue outreach and coordination.
- We need to streamline and continue to improve our indicators, but we still need to outreach so that people understand the importance of (and fund) our work.
- We don't have buy in from the agencies, stakeholders, even SRM. We need this backing before we can see progress.
- SRM has seen diminished membership and concern for rangelands. If SRR can do this outreach better than SRM, all the better. We need to look at how we can change these opinions.
- Summary: We need to change the plan conceptually and it needs to be scaled back. It should strengthen the objectives to get buy in.
- Research goal: do we need to separate core vs. non-core indicators? Research would be emphasized, but we would not conduct research ourselves.
- We want research on sustainability of rangelands, we should not limit ourselves to any core set of indicators.
- It may be unnecessary to focus on core indicators first. Delete this bold statement.
- Research goals need to look at priorities.

- If we are doing the research, we would want to look at the priorities, but if our goal is to be a broad catalyst, then we shouldn't list. We should encourage research on rangeland sustainability and encourage research on whichever sets researchers might chose.
- Goal 1 will still focus on prioritization.
- Initiating pilot projects: participants are initiating research, such as Robert Washington-Allen, but do we want to keep this wording that implies SRR will do such research?
- We are trying to influence processes. Research funding comes through federal research funding from top down, guidance from the agency to program leaders. On the other side is through the University from bottom up, funded through research grants. Neither will be strongly affected by SRR. We need to present the highest research needs to influence researchers in the long term.
- Those here on the research goal can work on changing this goal.
- EPA health monitoring uses a road mapping approach that might be useful for SRR. Lay road map out for where we want to get in terms of research gaps and needs. Helps to pull together some of these issues. Objectives or tactics can be added.
- Accepting this strategic plan. It is still so broad with these budgets. Do we need to focus it?
- We would agree on the general conceptual framework. This afternoon we would scale back and make it more do-able given the feedback of this session.
- The budget variation reflects the confusion of issues such as whether we will be doing the research or acting as the catalyst.
- In regards to defining our role as a group, how do other indicator efforts view our group? This might be a specific tactic in coordination.
- It might be an interesting exercise for EPA and also CEQ to give us feedback on this question for SRR response.

Appendix D: Group discussion of SRR's First Guiding Principle in the context of SRR Phase II - led by Lou Romero with Tom Bartlett, John Mitchell, and Steve Borchard

Group discussion:

- There is a clear relationship between the scale of indicators and how they are used. A multi-centric approach can affect action through national, regional, and at local levels. We do have to address all levels as occurs in the economic system. Economic information system provides information in all different contexts over centuries of work. We all use prices in various ways. There is consistency in the information used in all different levels in economic systems. In principle, the natural systems must achieve the same level of power in the system or it will always be subjugated by the economic system. It will have to be multi scale to have the same power. To sell any product it has to be useful in its early form. Its early form of information is often more useful at the local scale than in the national scale where the actions are taking place that affect the resource. When we are assembling at the national scale, we need to be able to show the effectiveness of the information for both local and national levels. Need grassroots and national level support. It is very difficult, but we must address it as we go forward. Every bit of information comes from a specific place at a specific time. Our data systems can use this context.
- Emphasizing a scale and making cascading interpretations is a good approach. What are the tactics that will be used? Is it actually data or is it the discussion that is the most important contribution? Sustainability questions differ at different scales. Common measures and identifying relationships between scales is important. Economic accounting still leaves out some values, such as a good quality of life. Broader scale can contribute to help find out what indicators are specific to their scale. At the scale of the grazing unit, ecological and economic considerations are equally important. We need a dialogue about what we need to measure at that scale. USFS blanket applies measures at every scale, but does not work.
- Evaluation criteria of indicators has included whether we can measure our indicators at multiple scales.
- Is there a hang up of using "Measure rangeland sustainability"? Ted will suggest alternatives to "measure".
- Our indicators do not measure sustainability, they measure attributes of rangelands that then can be used to assess sustainability. If we cannot show how our indicators are helping people on the local level, then that's an important shift.
- Educate those that ask questions about what questions they ought to be asking. More questions about miles of fence, miles have been inventoried, not about the water quality.
- With a set of national indicators, some indicators might be the wrong ones. Our suite of indicators can be used at a number of different scales. We might find there are different ranking systems depending on the scale.
- How will it affect the landowners? Is it useable in the early form to them?
- Ranchers cannot take these indicators tomorrow and use them. This is a project with long term goals.
- Wording change: Assessing or provide data to characterize.
- We don't necessarily have to show local relevance for every indicator, but we do need to show relevancy.
- Relevancy to the local manager may be a greater awareness of existing problems.

- Gives context that x number of rangeland areas are in this condition. It does not prescribe ranch level action.
- Local is stratified within itself.
- For a national assessment, you need to know what is going on within regions. You need to know what is going on at the local level or you have no context for the data. Thus there is overlap in the continuum to show conceptually how these relate to each other.
- We will keep guiding principle and substitute “assess” for “measure”.

Appendix E: Revisions to Strategic Plan

B. Coordination Goal

Objective 1. Facilitate development of coordination mechanisms across resources systems toward a national indicator strategy.

Tactic 1. Discuss the institutional arrangements with other roundtables at next Roundtable Network meeting or conference call.

Tactic 2. Utilize the Roundtable Network and ECQ to bring corresponding roundtable criterion groups together to establish linkages using prioritized indicators.

Objective 2. Facilitate the establishment of institutional arrangements to assemble existing data to populate Rangeland C&I.

Tactic 1. Ask federal agencies to establish a formal agreement that describes roles and responsibilities contributing to the implementation (i.e., data assembling) of the SRR C&I. An appropriate starting point could be an arrangement similar to the MOU on Sustainable Forest Management Data.

Tactic 2. Plan, coordinate and hold a workshop to identify available data sets, data sources, data gaps, data incompatibilities, institutional gaps and data quality in order to build future SRR efforts and to populate SRR C&I.

Objective 3. Coordinate development of national rangeland monitoring system (not this phase of the SRR strategy).

Objective 4. Facilitate development of a cross-walk among the several rangeland indicator sets developed by agencies, NGOs, etc. with the goal of promoting future integration of rangeland indicators by using common definitions and protocols.

Tactic 1. Organize a workshop for this purpose after completion of the SRR report.

Objective 5. Continue to provide a forum over the next 3 years for dialogue among stakeholders addressing acceptance and use of Rangeland C&I at the national, regional and local scales.

Tactic 1. Identify prospective stakeholders and their monitoring/C and I issues.

Tactic 2. Develop topics and materials based on stakeholder issues for discussion at a SRR meeting.

Tactic 3. Invite stakeholders to participate in a workshop to evaluate use of rangeland C&I (post Rangeland C&I report).

C. Outreach Goal – The SRR will conduct bold and aggressive outreach and marketing initiatives, resulting in the recognition of the importance of sustainable rangelands and the wide acceptance and use of ecological, economic, and social C&I for rangeland sustainability. By June 2005, SRR will be recognized as a knowledgeable source of sustainable rangeland information. Successful outreach will be evidenced by: (1) increases in the number of publications that recognize/incorporate the SRR C&I concepts and associated applications; (2) education entities embrace the values of SRR C&I and incorporate C&I concepts into their curricula; (3) government agencies, environmental organizations, industry, and researchers use of C&I to assess rangelands and associated human communities; and (4) existence of a constituency that effectively promotes (champions) SRR C&I.

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Objective 1: Finalize Outreach Plan and associated audience/activity master matrix by October 2003 meeting and revise/update as move forward (staff and Outreach Working Group volunteer time).

Tactic 1: Complete audience and activity matrix—work on at August meeting, have complete by October 2003.

a. Integrate audience and activity matrices into a master matrix including approach/activity + funding for each audience.
b. Characterize groups by mission/vision and person contacts by October 2003.
c. Identify relevance of SRR C&I and activities to various audiences/ stakeholders.
d. Identify relationship between each group and SRR mission/vision by October 2003.
e. Identify best method to reach each group and potential SRR contact(s)/point person(s) by October 2003 (still need consistent message across groups even with varying approaches).

Tactic 2: Prioritize efforts (October 2003 and on a regular basis).
Tactic 3: Identify budget needs for each activity (October 2003).
Tactic 4: Review of Outreach Plan and master matrix by full SRR following in mid-September .
Tactic 5: Have comments on Outreach Plan and master matrix from SRR to Outreach Working Group by end of September.
Tactic 6: Revise Outreach Plan and master matrix by October 2003 meeting.

Objective 2: Implement Outreach Plan

Tactic 1: Implement Outreach Plan by assigning appropriate SRR members to tasks and allocating funds as appropriate.
Tactic 2: Steering Committee and Outreach Working Group inform all SRR members of outreach activities before they occur so they can inform their organizations and help identify any hidden issues that may be problematic and opportunity to provide guidance/input for dealing with them.
Tactic 3: Develop a process for SRR participants to inform each other as to their activities on behalf of SRR (e.g., outreach efforts, discussion of C&I in classes, etc.).

a. Develop a web-based form/log to keep track of contacts and activities by January 2004 (approximately $1000).—add a report to presentations on website?
b. At each meeting during the introductions, have regular reports from SRR representatives on what they took back to their agencies/organizations from the previous SRR meeting and what they did to further SRR goals in their organization.

Tactic 4: Encourage environmental, scientific, academic, and producer groups to champion the importance of ecological, social, and economic sustainability of rangelands in the U.S.

a. Periodically assess who is not involved now that should be brought into the process as champions (such as state agricultural directors, Western Governors, Sportsmen’s Caucus and Foundation, etc.)—See Tactic 8 below.
b. Constantly encourage SRR participants to work with their leadership to be champions of the SRR C&I and rangeland sustainability.

Tactic 5: Meet individually with agency heads and relevant Congressional staff once a year (approximately $10,000/year).

a. Follow-up on previous year’s activities.

b. Identify appropriate activity/level of effort based on accomplishments and desired outcomes for each year.
c. Identify relevant/appropriate agency leads and Congressional staffers with whom to make appointments two months before meetings.
d. Identify SRR representatives to attend meeting two months before meetings.
e. Identify "wish list" of what SRR is asking for two months before meetings. Have constituencies briefed and ready to support "wish list."
f. Send out letters requesting meetings one month before meetings.
g. Schedule meetings two-three weeks before meetings.
h. Work with relevant SRR agency representatives to provide background information prior to meeting.
i. Attend meetings.
j. Follow-up with thank you letters and materials to address questions/offers.

Tactic 6: Meet annually with NGO leadership (tie into agency/Congressional meetings – approximately $5,000 per year).

a. Decide forum 3 months before.
b. Identify "wish list" of support we want from them (especially supporting us when called upon by agencies and Congressional staffers).
c. Make logistical arrangements 2-3 months before.
d. Identify invitees 2 months before.
e. Identify speakers/SRR participants 2 months before.
f. Send out invitations 1 month before.
g. Send reminder emails 2 weeks before.
h. Work with relevant SRR NGO representatives to provide background information prior to meeting.
i. Conduct activity.
j. Follow up as necessary.

Tactic 7: Promote greater utilization of government and institution communication capacities for educating the "interested" public (or appropriate organizations) on SRR C&I.

a. Add educational institutions (NASLG, organizations of Deans, etc.) to the master matrix and identify as such.
    i. Including education arms of agencies, societies, environmental groups (need to identify which of those are appropriate to work with).
b. Identify appropriate approaches to and materials for working with these groups.
c. Inform public education entities about the existence of the C&I – need to "grow" researchers and managers to do the monitoring and analyses of indicators
    i. Educate groups who will use information on behalf of the public, training current and future researchers and managers.
d. Provide appropriate SRR materials (see Objective 3) to government and educational institutions to drive education of interested public through groups listed in audience master matrix.

Tactic 8: Continue to monitor and revise Outreach Plan and master matrix over time.

a. Monitor client environment (audiences) overtime.
    i. Have a dedicated part or full-time staff person to track audiences and keep tabs on what doing in terms of when best times for us to interact with them; would also serve as point person for SRR members to contact in regard to activities. Salary, benefits, infrastructure - $50-75K

b. Add outreach and communication activities to address other SRR activities as they are developed (link to activities of other Goal Groups).

Objective 3: Develop suite of materials for different constituencies and stakeholders by 2004.

Tactic 1: Identify materials available, under development, and needed in master matrix for outreach to various audiences.

a. Available:
    i. December 2002 *Rangelands* article
    ii. First Approximation Report
    iii. Executive Summary
b. Under Development:
    i. One-page examples (drought, fire, invasive plants)
    ii. *Journal of Range Management* articles
    iii. Article on research needs to support C&I and rangeland sustainability for *Frontiers in Ecology and the Environment*
c. Needed:
    i. Additional examples
    ii. Materials which explain the connection between national/regional indicators and local decision-making
    iii. Report on national status and trends of US rangelands
    iv. Articles in various organization publications
        1. Article in *Land and Water* (Department of Interior Newspaper)
        2. Articles in trade publications (Farm Bureau, NCBA, etc) and private land organizations (High Plains Journal, FencePost, etc).
        3. Articles in environmental organization publications
        4. others
    v. Others to be identified
        1. Outreach Goal Group will identify appropriate needed outreach materials on a regular basis and will capitalize on opportunities as they present themselves

Tactic 2: Finalize materials under development and develop additional needed materials.

a. Examples (approximately $1000 each)
    i. Form an Example Working Group with volunteers from criteria groups and others at August 2003 SRR meeting.
    ii. Refine existing examples by October 2003.
    iii. Identify other possible examples (such as native vegetation, T&E species, fish and wildlife, clean water, water quantity, etc.; at local and other scales) via a brainstorming activity by SRR (in Delphi) by August 2003.
b. *JRM* articles ($19,000)
    i. Flow edit, June 2003
    ii. Criteria groups complete manuscripts by October 31, 2003
    iii. Technical edit November 2003
    iv. Submit in late fall 2003
    v. Possible publication fall 2004
    vi. Purchase extra copies/reprints for use in outreach activities.
c. *Frontiers* article (Bill Fox, John Mitchell, Mark Brunson; submission winter 2003/2004)

d. “Relevance” materials for various stakeholders as appropriate - TBD
e. Identify other outlets for briefing pieces/news releases in master matrix and develop pieces as appropriate

Tactic 3. Develop a library of SRR presentations/posters/materials for use by SRR participants in their presentations on the SRR to various audiences

a. Post all presentations given by SRR members on SRR on the website so they can be accessed and downloaded (include reports on the activities used to provide context as described in Objective 2, Tactic 3).
b. Work with Research Goal Group to make the information in their research database available for use in outreach presentations and during outreach efforts ask audience about their relevancy issues in terms of what they view as research needs

Tactic 4: Develop a read-only trainer’s/teacher’s CD on rangeland sustainability and SRR C&I with a standardized presentation, supporting text, and other supporting materials (FAR, examples, etc.) by Fall 2004 ($10,000-30,000 depending on level of “sophistication” and staff support available/used).

Objective 4: Explore possible coordination of outreach activities with other sustainable resource roundtables and other related C&I efforts (especially CEQ).

Tactic 1: Work in conjunction with Coordination Goal Group and Roundtable Network
Tactic 2: Identify outreach activities of other Sustainable Resource Roundtables to see which may be joint activities or models for future SRR activities

Objective 5: Develop a method/approach for measuring how we are perceived in conjunction with the Coordination Goal Group.

D. Research Goal: SRR will promote research to assess ecological, economic and social sustainability of rangeland ecosystems and their interrelationships.

Objective 1: Encourage research funding organizations to have defined, stable and long-term program emphasizing sustainable rangeland C&I research.

Tactic 1: Develop a national database (data matrices) of rangeland indicator protocols and indicator research projects from existing sources to supplement comparable private sector information sources.

Tactic 2: Develop conceptual framework for assessing the appropriateness and value of indicators and suites of indicators leading to prioritization of researchable questions related to SRR indicators while encouraging a shift of rangeland research to provide understanding requisite to this goal.

Tactic 3: Encourage national assessments of rangeland sustainability from which criteria and indicators can be advanced through critical assessment for their validity, reliability and relevance.

<u>Products</u>
National Database
Facilitate the development of a national rangeland assessment (Does this belong here?)

Scientific review papers
Increase funding of C&I research

Budget estimate for objective 1 - $100,000 (1 post-doc for 1 year)

Objective 2: Facilitate a national forum for periodic review of C&I research.

> Tactic 1 – Once a year, bring stakeholders together to discuss developments within C&I research over the previous year.

Products
Annual published proceedings of C&I research

Budget estimate for objective 2 - $150,000

Appendix F: Group discussion on indicator prioritization – necessity, structural framework, evaluation factors, and timeline – led by Lou Romero

- Can we base priorities based on systems approach? Around conceptual models of systems and interrelatedness of indicators. How do these systems interact?
- What's driving the need for prioritization? Where to concentrate the work over the next year.
- Three major parts use what we've done already. Look at different approaches and see if others are looking at these issues. Have workshops to get feedback from scientific community.
- Looking at all indicators in a system approach. Groups of indicators are used in different situations with the LUCID indicators. If we drop off some, those might be the only useful ones in a certain circumstance.
- Indicators might be very good in long term or short term.
- We have not sat down and assessed our whole set of indicators as a group, but we might all agree on about 80% of them.
- Don't set priorities. This is a good first set. They shouldn't be on the sheet if they are not prioritized. The challenge should be an annual report on all these indicators. We need to do more on expert panels. Over time it will become an authority. Not precise, perhaps, but consistent. Continuing on this prioritization track might bring you around in circles.
- Like the format of the orange sheet, it is clear. Information on data availability, cost, and importance can all be ranked. Some indicators might not be as important, but it might only take ten minutes to get.
- Qualitative note of caution. Data sets are important for certain indicators.
- Some people might disagree about the importance of the indicators. Which are the best that we have information for, that we can turn the information around right away and have a product. Many can agree that soil organic matter is a good indicator, but we don't have the information. There might be reason to have two lists. One with the ready to go indicators and the other indicators that are important regardless.
- If we show the 64 indicators, it is hard to sell because people will feel they cannot fill it.
- If you have indicators that you can display in a meaningful way at all three levels, can have better mechanism for gaining support for our process. We would like a list like this so that we can use it in our outreach efforts. The systems approach is a separate issue.
- Why we need to set priorities. Help organizations buy into these C&I and use it to report on these indicators.
- C&I goal: SRR's primary goal continues to be criteria and indicator development and refinement. Additionally, the SRR will expand efforts to identify data sets and data needs for indicators and develop cross-roundtable events. Tactically, this leads to identifying where indicators fall within the coordination and research goals.
- Each working group hammered through and prioritized along the way. This has already been done.
- We have to start somewhere, so that is one reason for prioritization. Folks will have different priorities depending on the system. Future task might be helpful guidance- how people can make priorities for their specific application. People either just take them all, or take the one there's data for or the data they have always measured. People need to have a prescription for their circumstance.

- We chose our 64 for a reason. What kind of information do we have? On sustainability what are then national priorities that we have? How to roll up what the local people think are important to national sustainability.
- Might be helpful to have a list of those indicators for which we have data for Tom's needs.
- Have a Delphi in which we identify what we think are the significant indicators as a group.
- But what about the national level? From a reality standpoint, those left in the group will work on the ones they feel like working on. They are all priorities. For the social economic group it is meaningless to prioritize without this systems approach.
- Maybe prioritization will happen at a higher level of integration than this roundtable.
- In Washington DC, they were overwhelmed by our 64. But like the idea that we give guidance on how to chose the set they might want to tackle.
- What is the reason for prioritization? Where do we dedicate our energy first? Delphi responses have mentioned it as well.
- We can't do all 64, then we need to focus on what "doing" means? We may need to develop prioritize actions, instead. There are different kinds of data gaps. The data needs to be diagnosed and figure out what needs to happen for each data set to fix it. Then we can prioritize the actions.
- Part of the difficulty is we didn't put on the charts why we are prioritizing. One premise is if we want to get on with providing guidance for the national level report of sustainability, the agencies are going to perceive the 64 as a wish list. How do we provide guidance to the agencies who are going to put together the national level report. We want to spur the agencies on to do the report.
- The long run is building the monitoring program. Baseline can be 2003, have to look at indicators that have associated data.
- For the first national report we should look at indicators that have data. The first report is not going to have everything we want, but moves us along the road. By doing this we can see what some of the shortcomings are.
- Providing information is the end goal. Help define the indicators and how they can be monitored.
- With a long list, some will get sorted out. How do we as a group see priorities in where we want to go. Can we do it today?
- There is a split between indicators that will go into the first national report and those that are not ready yet. That is a clear way to prioritize the list.
- For Duncan's suggestion of a system, we need to have group discussion. (Duncan's suggestion reads, "represents suite of system processes, interrelationships or surrogate for other indicators".)
- Needed to come up with baseline conceptual models, ecological models for 12-14 indicators. Can provide this; it would be a good place to start.
- Pam Wright can easily give the tools that were used for LUCID.
- We need to display the system. BLM recognized a hierarchy close to the ground. Did prioritize it, but recognized that the physical function, biological function, social, then economic must be taken into consideration in that order.

Overall process ideas for prioritization from the discussion above:

1. Use a Data Gaps approach; 2 lists: data available and easy to get and not available, difficult and costly
2. Use a Delphi prioritization process
3. Don't prioritize; just provide guidance to others on how to use the 64 indicators.
4. Duncan's idea: A systems approach: "represents a suite of system processes, interrelationships or surrogate for other indicators."

Appendix G: Notes from each Criterion Group on desired changes to the Strategic Plan Criteria & Indicator Goal

Plant and Animal group:

- **SRR's primary goal continues to be criteria and indicator identification, development and refinement as they relate to sustainability. To bring this about, SRR will facilitate the development of a report on the sustainability of U.S. rangelands.** *Do we need to re-organize and have a C&I working group separate from others?*

What is the timeframe of Phase II??

Objective 1: remains the same

-Tactic 1 – stays the same……is there more data available

-Tactic 2 – complete (What does "complete" mean?) the data matrix with new sources identified

-Tactic 3 – synthesis is looking at matching disparate data sources…can it be done

Products

We have a full data matrix.

What is the feeling of developing a journal article – what is the state of the data available on the status of rangelands?

Need to have buy-in from the other groups…basically 1 article covering the 5 criteria groups.

Suggest that objective 2 be removed

Suggest that objective 3 be removed – coordination group has this built into two of their objectives

New Objective 2: Develop a framework for the interrelationships of indicators within and across criteria as they address sustainability

- Tactic 1 – development of conceptual models that will be used as guidelines for cross-stepping between criteria groups.
- Tactic 2 – scoping activities at national level on how we view sustainability with multiple stakeholder groups working in this arena.

Products

-Publication of the conceptual model that is developed by the group

-Results of the scoping activities

New Objective 3: Facilitate the development of a report on the sustainability of U.S. rangelands based upon SRR C&I.

- Tactic 1 – Develop the plan of how such a report would come into existence.
- Tactic 2 – Find resources and cooperators to participate in development of the report.

What are thoughts for Oct. meeting?

Groups data matrices will be refined and brought to Boise.

At Boise…discuss what information needs to go into matrices…what level is enough to be considered complete in a acceptable form?

Our group will focus on the manuscript between now and October.

Social and Economic Group

proposed for changes to goal A

Obj1: Develop a conceptual model

Tactic 1: Initiate a small group to develop draft by Boise

Tactic 2: At Boise begin discussion on improving the model

Tactic 3: Forum for evaluating relevance of indicators to model

Obj 2. Provide a forum for evaluation of definitions and protocols for data sets

Tactic 2: Delete phrase "test in field."

Objective 3: Provide a forum for discussion of issues relevant to a national report on sustainable rangelands

Tactic 1: Hold workshops

Tactic 2: Ensure interaction among groups to fill in gaps.

Conservation of Soils and Water Resources

Discussion on Goal 1, Objectives and Tactics

Goal: include text that SRR will produce a national-level report assessing the sustainability of US rangelands (data availability, research needs)

Goal statement does not focus on end result of a national report, needs to be incorporated into goal statement. SRR members need to write the report.

- assembling data
- quality of data
- mechanics of reporting on each indicator
    - conceptual model could be implemented here to provide readers a "so what?" answer
    - 'stories' about clusters of indicators
- could details of persons from agencies be used to provide lead writers?
    - Buy-in from all needed agencies?

Objective 1: Assess data availability and quality

JRM publication of SRR papers as a package group – publish as a special issue.

Get draft of paper to John Mitchell by December 1 for review, or final deadline of January 9th to John Mitchell

Narratives can be beefed up, information on data sets will be included as a CD insert on the inside cover of the special issue.

Tactic 1: Expand on external review.

ARS external review mandatory on articles with ARS authors prior to journal submission, will need to accommodate this into schedule.

(potential reviewers)

Bill Platts, Alan Franzleubbers, Curtis Talbot, Ken Tate, Larry Schmidt, Matthias Candoll, Chuck Slaughter, Ken Spaeth, Mark Weltz

Sherm will talk to Dave Pyke about any need for external review requirement for USGS.

Tactic 2: already taken out
Tactic 3: don't know what this means
Tactic 4: won't have the indicators prioritized prior to review of JRM article

Product 1: complete for all indicators, not just "core" indicators
Product 2: Phase 3 of SRR

Objective 2: Use conceptual model to classify "core" and "developmental" indicators. First national report will have to proceed forward with indicators that have available data sets, subsequent reports can address/incorporate other indicators as data becomes available.

Hugh will get conceptual diagram information to Sherm by mid-Sept. (see box-arrow diagrams on floppy disk)

Tactic 1: move to Objective 3, seems to be a better fit (Research group has proposed funding for a post-doc to complete database with regards to this topic), temporally it is not in the same ballpark as the Report

Tactic 2: temporally it is not in the same ballpark as the Report

Tactic 3: temporally it is not in the same ballpark as the Report

Tactic 4: temporally it is not in the same ballpark as the Report

Products: temporally it is not in the same ballpark as the Report

Objective 3: OK
Tactic 1: insurmountable task, temporally it is not in the same ballpark as the Report

Objective 4: **YES, Highest priority for SRR**

Objective 5: needs to be re-worked, similar to/overlap with Objective 1. Objective 1 is short-term, Objective 5 is longer-time. Workshop should be in the objective, annual review of C&I research proposed by Research group.

Productive Capacity
Objective one: foster an assessment on data availability and quality.

Tactic 1: Do we need this to expand on the external review, decision matrix, if available is it easy or costly to get? This can be updated easily.
Tactic 3: Do not understand
Tactic 4: Data matrix updated as data is available.
Products for Objective 1, second bullet: relevance?
Objective 2: We couldn't clarify in the short time available, look at the conceptual models first.
Objective 3: Tactic delete "and test them in the field."
Objective 3 products move to new Objective 1.
New Objective 1 (revised objective 4): Promote agency role in developing a report on the national status and trends of U.S. Rangelands
Objective 5: This is an objective that is at least two years out. We do agree to start a process through an organization for data acquisition. Delete Initiate and insert "support and lobby for". This cannot be completed in two years.

Appendix H: Discussion concerning Goal 1, Objective 1: Should SRR write the report or should the federal government write it?

- NRCS and USFS: two federal agencies required to produce national assessments on rangelands. They are on a 10-year cycle. Promote these assessments by providing background information.
- The roundtables are viewed as an open forum for people from other levels of government agencies and NGOs. There might be important FACA considerations. If Federal participants were to take on writing the report, the SRR will be a useful intermediary where issues can be discussed. This is the track gone by the RSF. Can SRR do certain things to get the Federal agencies to write the report? We have already discussed the MOU in the Coordination section, but it presumes that the primary focus of work on data review, assembly, and drafting is all within the Federal agencies. Should it involve others? It can't.
- Writing this report, getting all the data together, statistical analysis interpretation, presenting—in what time will we accomplish this. Unless we hire people to do this, we will have to write the report on volunteer hours.
- Management requirements, significant even if we follow on as we have, we will still be a supporting organization to get policy makers to agree to make the report. At this point there is no mechanism requiring this report to be done. There is still much work for us to do.
- About 6 people are in support of SRR writing the report. The SMR is working on the first approximation, but they do have some data.
- If the federal agencies are in support of doing it, are there people who still believe that the SRR should still do it.
- If we had the Federal government write the report, it might not be written as we want it written.
- We think the SRR participants will be charged to write the report. Non-agency people will not be doing the writing; they will be reviewing the interim products.
- What happens to private rangelands? Either in the data or not, we might only have data on the Federal lands, but NRCS has some of the best data.
- This is a data driven exercise. We will make no assessments on indicators without data.
- NRI will cover all private land. Indian lands or defense lands or BLM…
- Are there enough federal agencies to represent the writing of the report in this room? In some criterion groups there are only one or two federal employees.
- Federal agencies would fund the writing of the report.
- If SRR is a reviewer and the Federal agency writes the report, it removes the FACA considerations. But there might be issues with FACA otherwise about public input.
- It seems limiting to assume that if the Federal Agencies took up the report writing, that the people to write the report would be limited to the people in the room. Seems there are plenty of personnel out there who would be qualified. The staff time writing the RSF far exceeded the time put in by those RSF members. For a serious product, it needs to have serious personnel.
- If the government writes it, what is the role of the universities and NGOs? The Feds should submit the products to SRR periodically for our review at meetings.
- This report is an ambitious undertaking. Those that want SRR to do it probably want to do something ambitious. We should think about how we would write this out. What would we need to write a report? SRR does not have the resources to write the report.

We need to tap into data resources to write the report. Perhaps those proponents of writing the report should define what would be needed to write the report.

- The workload with assembling the mechanics of writing such a report is an enormous amount of work. The desire to write the report is to describe what the data tells us. We may be overestimating how much time it takes to put the data together. The federal agencies might do that grunt work and bring it to our group and it would give us a continued input into the shaping of the report. Staffing necessary to get the data might be secured through an MOU. The story will probably become a political football that the agencies probably want to control.
- Who's the target of the report? Is it a congress or public at large? Many would not place credibility on a Federal report. How do we get it out to the targeted audience? Perhaps through CSU.
- Option from the Jackson was essentially $1million for a pilot, so maybe $2 million worth of post docs to collect the data.
- There is a major difference between SRR and RSF. RSF had an international agreement to determine the sustainability of forests and had significant funding because of that. How long does it take to get a MOU to write a report on rangeland sustainability? In the interim, the SRR might be completely forgotten if we wait for that level of support.
- Shorten the MOU to be considered, by shortening the indicator list to show which one should be the focus of the report. It might spur the federal agencies to move on. We may describe what data should be used.
- We need to take the lead as to how the agencies should look at sustainability. The first suggestion would be writing the report. What would keep C&I in everyone's mind to support continued work? Is there a middle ground? Maybe we can look at the how one would look at sustainability on rangelands. Take a conceptual framework to look at. Agencies do have these assessments, look at these assessments and look at how we could bring the agencies together cooperatively. Keep the goal of having a complete report out there ahead of us.
- We should let the criterion group leaders reword the goals, objectives, and tactics.
- We could identify a level above the folks that are in the room and bring them together for a discussion. We can present the ideas and see if support the work that needs to be done to get the report out?
- BLM has to report on the status of range condition, but no requirement on time frame for reports. Perhaps the BLM, FS and NRCS could have an informal agreement to write an update on range condition. May not need an MOU, but could even do it informally amongst report writers. This could be facilitated by SRR. Update in 2005 for RPA assessment (USFS). Conducting reports jointly would facilitate even greater collaboration..
- Federal agencies have to think about how we can actually lay this out. What is needed in terms of resources?
- How about writing a recommendation report on what a report should look like.
- The criterion group leaders will rewrite the primary goal C&I and send to Helen to send out for general input in a Delphi before the Boise meeting.

Appendix I: Draft Agenda

Sustainable Rangelands Roundtable

Boise, Idaho

October 20-22, 2003

Objectives:

1. Finalize indicator progress plan and timeline.
2. Understand systems approach (conceptual model) for C&I refinement.
3. Obtain feedback on and acceptance of SRR communication plan.
4. Integrate new participants.

Monday, October 20, 2003

9:00 am	Steering Committee Meeting
1:00 pm	**Lunch**
3:00 pm	SRR Orientation and Overview for Local Stakeholders and New Participants; Introductions – ***Tom Bartlett***
3:15 pm	SRR background – ***Tom Bartlett***
3:45 pm	Rangelands research relevant to SRR – ***John Mitchell***
4:15 pm	Panel Discussion on Status of Criteria & Indicator work and Q&A – ***Tom Bartlett, Steve Borchard, Lori Hidinger, John Mitchell***
4:45 pm	Review and discuss SRR Phase II organizational structure to allow new participants to select participation level – ***Tom Bartlett***

- Criterion data group participants
- Goal group participants

5:00pm	**Adjourn**

3:00 – 5:00 pm *Note that as travel permits, space can be made available for the Criteria and Indicator Group (currently composed of Criterion Group Leaders) to meet to coordinate work on revising the primary goal of indicator refinement.*

Tuesday, October 21, 2003

8:00 am	Welcome and self-introductions – ***Tom Bartlett and Lou Romero***
8:15 am	SRR Update – ***Tom Bartlett***
8:30 am	CEQ Indicators Working Group Update – ***Ted Heintz***
8:45 am	FGDC Update ***– Ralph Crawford***
9:00 am	Review of Strategic Plan Modifications – ***Tom Bartlett***
9:30 am	**Break**
10:00 am	Goal groups meet to identify time and personnel commitments required to accomplish Strategic Plan tactics.
11:00 am	Whole group discussion to agree on SRR Phase II structure and process to achieve goals – led by ***Lou Romero and Tom Bartlett***
12:00 pm	**Lunch**

1:00 pm Outreach, Coordination, and Research Goal Groups meet to work on Strategic Plan tactical components, in accordance with timelines (**includes afternoon break*****)***

3:30 pm Group reports and needs for January meeting – led by Lou Romero

4:00 pm Presentations on Systems Approach/Conceptual Model for SRR:

- LUCID Crosswalk Models – ***Pam Wright or John Mitchell***
- Interagency Working Group Example ***- Ted Heintz***

- EPA Range Assessment Example **- *Bob Breckenridge***
- BLM Rangeland Health Example **- *Hugh Barrett***

5:00 pm **Adjourn Day 1**

Wednesday, October 22, 2003

8:00 am Communication Plan Delphi Results & Final Communication Plan Overview – ***Helen Rowe and Lori Hidinger***

8:30 am Working Group Activity Reports:

- Example Working Group – ***Lori Hidinger***
- Scale Working Group - ***Paul Geissler***
- Definitions Working Group – ***Paul Geissler***

9:00 am Whole group discussion on Systems Approach/Conceptual Model for SRR – led ***Lou Romero***

10:00 am **Break**

11:00 am Five original Criterion Groups meet to:

- integrate new participants;
- continue ongoing indicator work, data set identification, and evaluation;
- finalize JRM documents for October 31 submission; and,
- prepare group status reports with specific needs for January meeting identified (*includes lunch and afternoon break*)

3:30 pm ***Criterion Group reports, including needs for January meeting – led by*** Lou Romero

4:00 pm Review Accomplishments, Next Steps, potential Delphi topics, and Agenda for January Meeting – ***Lou Romero and Tom Bartlett***

4:30 pm **Adjourn Day 2**