COLORADO STATE UNIVERSITY IMPACT INFORMATION REQUESTED FROM BAH

A. OVERALL DATA REQUESTS AND STRUCTURE OF BAH RESPONSE NEEDED

1. Structure of Environmental Impacts Needed for Economic Analysis

While the current BAH disaggregated approach of describing the impacts of individual resource by resource, and species by species for each and every management action may be necessary to arrive at the initial impacts, what is needed for an economic analysis (and most environmental analyses and certainly to aid a decision maker in evaluating alternatives—see Loomis, 2002, Integrated Public Lands Management, Chapter 4) **is the net effect or summation of the effects by alternative A, B, C and D on each resource across all the management actions associated with that alternative**. Thus, looking across the areas open to OHV for each alternative, the areas open to oil and gas, seasonal wildlife closures, etc., what is the net effect of **all** of these management actions associated with that alternative on specific multiple use resources such as AUMs, elk populations (or elk habitat carrying capacity), recreation visitor days, oil and gas production or number of wells drilled, etc. BAH has the interdisciplinary expertise to arrive at what the overall or net effect of each alternative has on each multiple use resource. This is what matters for the economic analysis. We don't estimate nor does BLM need a management action by management list of effects, just summarize the overall effect by alternative. The format previously used by BLM, and used by the USFS, USFWS, etc. is easily pictured in a tabular format as:

Resource/Alternative	Alternative A	Alternative B	Alternative C	Alternative D
AUM's				
(% Cattle AUMS)				
Elk/Deer Population				
Visitor Days				
Oil production				
Conventional Wells drilled				
Directional Wells drilled				
BLM Budget (by type of costs)				
Etc.				

If BAH would provide the information in this format, we can perform an economic impact analysis by translating the physical effects into initial direct economic effects and then run these through the input-output model to calculate income and employment including multiplier effects. (I am also sure that NWCOS and the Field Manager trying to use this information for decision-making would appreciate it in this format as well). BAH has the interdisciplinary expertise to synthesize what the net effect of all the management actions of each alternative on the particular category of multiple use resource

2. Estimate of Total BLM budget to implement each alternative

The federal budget for BLM to implement alternatives may generate local economic effects as well. The alternatives vary significantly in number of acres treated, restored, managed, facilities

built, etc. so there must be a corresponding change in the amount of labor and materials BLM would need to do this or contract for to have it done. For example Vegetation Treatments in Alternative C is about 5,000 acres per year while in Alternative D it is 14,000 acres per year. If the cost per acre of these treatments is even $10, this is a substantial difference ($50,000 for Alt C versus $140,000). This is the type of information we need to know for a complete analysis.

3. Clarifications needed in Jeremy Casterson's summary

#12. Minerals. Last sentence of 3rd Paragraph. "The EPCA analysis will attempt to quantify the amount of resource unavailable due to restrictions for each alternative". CSU supports the need for this analysis, for all restrictions, whether wildlife, surface disturbance, ACEC's, and classification of areas open vs closed to oil and gas. We don't need this for each and every restriction, in each and every piece of ground, just the net or cumulative effect of all of the restrictions on oil, gas, and coal resources by alternative.

Also we would add to Jeremy's that if there is additional cost of NSO restrictions that involve directional drilling, it would be quite useful to know what that cost is, both in terms of labor and equipment. These extra labor and equipment spending with higher cost production methods may generate economic effects via our input output model.

#14. Recreation, page 7. The paragraph that begins "For areas not designated as SRMA's in one alternative: Managing the areas as part of the ERMA would not likely meet the recreation demand….a significant loss of recreation opportunities ..could occur in this area"

We need that to be quantified by BAH. Since BAH appears to be able to use professional judgment on other resources, we can provide our revised baseline recreation estimates, and BAH can suggest how that use level would change with the inclusion or exclusion of areas as SRMA's in each alternative.

#17. Transportation and Access
The first bullet states " For areas closed to OHV's: Closing the ACEC to OHV use would eliminate motorized travel in this area. This is a significant impact.
We need BAH to suggest how much OHV visitor use or at least acres would be affected by alternative due to acres open, restricted to existing roads/trails and closed to OHV.

B. CLARIFICATION BASED ON BAH RESOURCE SPECIFIC IMPACT ANALYSES

In the following sections, we try to provide our sense of what the key issues are and areas for investigation by BAH as they try to complete the table shown above. As different members of the CSU team wrote these, and we want to get the ideas in the hands of BAH/BLM during this week of discussions, there is some repetition and formatting differences.

1. SOILS

The general treatment alternatives discussed in the BAH evaluation of impacts to soils are the following:

--allowing surface disturbing activities
--controlling surface disturbing activities
--prohibiting surface disturbing activities

Further, the surface disturbing activities are separated into short-term and long-term effects. In general, CSU needs the net effects of each of these activities for each alternative and the net effects for the short-term and long-term where indicated in the report. In general, CSU will need the associated costs to BLM for the varying alternatives related to impacts to soils.
The specific sectors that are impacted by the soil surface disturbing activities are:

Oil and gas industry: The alternatives that allow or control disturbing activities affect the oil and gas industry. CSU needs the following for the oil and gas impacts:
--Number of acres that are prohibited from drilling and estimated effects on the number of wells drilled
--Number of acres/wells allowed for conventional versus directional drilling
--The number of wells can/cannot be drilled given various restrictions

Grazing/Livestock: The different levels of surface disturbing activities will have an impact on the amount of grazing. Therefore, CSU will need the AUM's allowed to graze on the land and AUM's prohibited from grazing on the land. This will need to be in a per acre basis across each alternative.

Wildlife: The different levels of surface disturbing activities will affect the different levels of wildlife. CSU will need the change in wildlife populations for each level of surface disturbing activity across each alternative, and ideally, the impacts on visitor days these changes might create.

2. WATER RESOURCES

The same requests for soil impacts are applicable water resources, as they both restrict surface use, it's just that the location of the affected land is close to water resources in this case. In addition to the impacts on oil and gas, grazing and wildlife listed in the soils section above, CSU will need the following items to evaluate the impacts to water resources:

--Impacts associated with changes in salinity levels:
    *Change in yield on pastureland or livestock
    *Change in fish population
    *Change in water-based recreation visitor days
--Impacts associated with varying sediment load levels and turbidity:
    *Change in fish population
    *Change in water-based recreation visitor days
--Distance from water for different soil disturbance activities:
    *Grazing
    *Wildlife habitat

*Oil and gas exploration

These impacts will need to be in net effects across each alternative. Also, CSU will need the BLM agency costs associated for each alternative.

3. VEGETATION

As has undoubtedly been mentioned in other sections, the keys are first for BAH to summarize the impacts expected due to the various prescribed management actions under the four alternatives. These impacts need to be improved from broad potential directional implications to specific ecological implications bridged to economic activities, likely on a per acre per year basis.

In the vegetation section there are two broad areas of potential economic concern. They are the costs of treatments per acre-year and the implications on the principal economic activities in the region of the management options. For example, what are the costs (financial, equipment and FTE at least) of prescribed fire treatments per acre-year and who bears these costs? What are the benefits to recreation (via wildlife ppns) and agriculture (via AUMs)?

Similar information is needed for noxious weed treatments, restoration costs, ecological health, and habitat restrictions, for example. If there are habitat restrictions, how much less grazing and drilling and mineral extraction will there be? How does the change in vegetative cover change the carrying capacity for key wildlife species and cattle and what will that mean for the number of hunting licenses and the amount of watchable wildlife activity?

Managing forested lands for sustained yield implies what in terms of saleable outputs, labor, investment capital, etc. per year?

What are the estimated costs and physical and biological effects of land exchanges and/or disposals?

In each and every place where the management actions affect vegetation and these effects on vegetation affect one or more of the principal economic activities of the region, we need BAH to make that specific link in terms of both costs, expected physical and biological effects, by land area, land use alternative, per year and over the project lifetime.

4. FISH AND WILDLIFE

Here again, we can't do anything with "more" or "less." The report is only specific with respect to management actions, not impacts. We need specifics with regard to impacts on the focal areas of economic activities. Management actions lead to impacts and both have costs and benefits. We need BAH to provide summary estimates of what those are in physical terms and in some cases accounting terms (e.g. costs of BLM restoration programs) so that we can translate them into economic impacts. Essentially, the interaction (tradeoff?) between elk and deer populations (and their connection to recreation activities) and other economic activities needs to be made explicit.

What are the estimated implications of seasonal or setback restrictions (or lack thereof) on wildlife populations, and therefore, watchable wildlife recreation and hunting licenses? Similarly, when management changes will increase or decrease the amount of wildlife habitat or disturb it, we need that translated into explicit impacts on wildlife populations (specifically elk and deer), effects on oil & gas, mining, and livestock grazing.

Here again, need to know the costs of treatment per acre-year in terms of labor and supplies and indicating who will shoulder these costs (BLM, local govt, private landholders).

Connection between prairie dog habitat and both oil and gas acres and livestock grazing (AUMs) needs to be explicit.

Costs of rangeland improvement projects need to be explicit. Benefits to wildlife, in connection with estimated effects on consumptive and nonconsumptive recreation activities also needs to be explicit. Effect on carrying capacity and/or costs of livestock management with and without range improvement projects needs to be explicit.

Estimated costs and benefits of proposed compensation plans and protective measures relative to the status quo or counterfactual case should be explicit.

Connection between land restrictions and mineral industry needs to be explicit.

Relationship (tradeoff?) between livestock grazing and wildlife species needs to be made explicit. How many more elk do you get if you have 10 fewer AUMs on the focal lands? Costs and benefits of reducing big game-livestock conflicts.

5. SPECIAL STATUS SPECIES

The effect of OHV designations (open, limited to existing trails/roads, closed) appears critical to the effects of each alternative on special status species (see about page 130 of the rtf file version in the section entitled "Transportation and Access & Travel Management". It appears that BAH is expecting to quantify both the number of acres and percent of LSFO area in the closed, limited to existing trails/road and open (including open for cross country travel we presume). This is information will be necessary not only for special status species but also for recreation economic impact analysis, wildlife, wild horses, etc. So we look forward to seeing those numbers.

6. WILD HORSES

We do not think that the economic impacts across the different alternatives will be significant in this area. Also, the effects will be indirect and require many assumptions, so we will not be undertaking specific economic analyses of this issue, aside from including the differences in costs to BLM (by type of cost) for each of the alternatives. If this seems incorrect, let us know.

7. FIRE

If overall cost of each alternative to BLM not provided, CSU would need to know the cost of forest and woodland treatments in Alternative C and D, and the effect on BLM's fire suppression costs. In particular, about 800 forest and woodland acres are treated in Alt C, and 1200 acres treated in Alt D. What are the labor and materials costs to perform such treatments?

8. CULTURAL RESOURCES

We do not think that the economic impacts across the different alternatives will be significant in this area. Also, the effects will be indirect and require many assumptions, so we will not be undertaking specific economic analyses of this issue, aside from including the differences in costs to BLM (by type of cost) for each of the alternatives. If this seems incorrect, let us know.

9. PALEONTOLOGICAL RESOURCES

We do not think that the economic impacts across the different alternatives will be significant in this area. Also, the effects will be indirect and require many assumptions, so we will not be undertaking specific economic analyses of this issue, aside from including the differences in costs to BLM (by type of cost) for each of the alternatives. If this seems incorrect, let us know.

10. SPECIAL MANAGEMENT AREAS
11. VISUAL RESOURCE MANAGEMENT

The same requests for soil impacts are applicable to the impacts to visual resource management, as they both restrict surface use, it's just that the affected land is probably moiré extensive and in different locations in this case. In addition to the impacts on oil and gas, grazing and wildlife listed in the soils section above, CSU will need the following items to evaluate the impacts to visual resource management decisions:

In addition, CSU will need to know the following:

*Acres of VRM that are allowed and prohibited across each alternative
*Distance from VRM for ACEC, grazing, wildlife and oil and gas exploration
*Need the change in impacts on hunting for different VRM levels via changes in wildlife population and/or number of hunting licenses.
*Need grazing and other agricultural impacts (i.e. acres, yield) related to different VRM levels
*Need acreage associated with oil and gas exploration and the corresponding acreage loss due to VRM areas
*Need visitor days associated with OHV recreation and cross-country recreation affected by different VRM levels

The different measurements will need to be in net effects across alternatives. In addition, CSU will need the corresponding BLM agency costs associated with each alternative.

12. ENERGY AND MINERALS

1.878 million acres are leased for oil and gas/mineral exploration in the RMPPA, with *up to* 3,031 wells estimated to be drilled over the next 20 years under all scenarios except D. This represents one-third of the reasonable foreseeable development, which is estimated in the RFD to take 60 years to extract. The actual surface disturbance is relatively low, at 23,030 acres; however, visual impairment might have a greater impact for hunters and those involved in watchable wildlife.

To examine the economic costs and benefits, we would need to know the following for each of the four scenarios:

What are the total acres leased for oil, gas and mineral exploration, and what is the portion that would have NSO stipulations, or seasonal restrictions affecting drilling (or production?)

What are the estimated total number of wells to be drilled for the various alternatives and how many would require directional drilling (and how many feet, ideally, would be involved)? ‘

For each well drilled, we would need to know the labor required in person-months and the equipment and other capital costs.

What is the total acreage in production facing seasonal restrictions, what might this add to the length of the drilling, and what is an estimate of how much this would actually affect the drilling costs. (You could attach some probabilities to varying levels).

How many acres would be removed from exploration of oil and gas and mineral exploration under the various alternatives?

If only one-third of the area is likely to be developed over the next twenty years, what impacts would restrictions on the area of development have in the different alternatives?

Similarly, Please evaluate the following statement: “Leaving resources in the ground” could in fact be only for this plan period, correct? As two-thirds of the development will occur after 20 years, it is at least possible that these restrictions would have no material impact on the resources that get extracted *during this plan period*, but just where they are extracted. How would this affect costs for the industry?

How might new leases change the pattern of drilling?

How many feet of pipeline might be affected by WSAs or special mgt areas, as it crosses sensitive habitats?

13. LIVESTOCK GRAZING

Here we need to connect available forage, land use restrictions/alternatives, and encouragement or discouragement of alternative economic and non-economic activities with the productivity of the land for livestock grazing. Moreover, if there are changes in per AUM labor and materials costs, due to the management actions, these need to be traced on a per acre-year basis as well.

Need to pay attention to treatment costs, costs avoided (construction) and their distributional implications (e.g., BLM, local government, private landowner) in addition to benefits.

Attention must be paid to potential tradeoffs among focal economic sectors. That is, to what extent does an increase in oil and gas leases, mineral development, recreationists, or managed woodlands imply a decrease in cattle productivity? Quantitatively distinguish among types of recreationists (hunters, OHV, wildlife watchers).

Tradeoffs between wild horses (recreation visits?) and livestock (AUMs).

Effect of livestock harassment/injury on productivity/profitability.

"Conserve livestock forage" and "increase flexibility in range improvements" need to be tied to AUMs.

Pages 59, 70, 71, 109 require careful quantification or at least per acre and number of affected acre estimates.

14. RECREATION

14a. Effect of Wildlife Seasonal closure on opportunities to view wildlife
It would be desirable to quantify what the effect would be on wildlife and visitor days of wildlife viewing for each Alternative A-D.
14b. Wilderness Study Areas such as Diamond Breaks, Cross Mountain, West Cold WSA. It would be useful to quantify Wilderness recreation use expected under Alternative A (designation by Congress), Alt B when open to Multiple use, Alt C with OHV limited to designated roads and trails, and with Alt D management of primitive non-motorized use. Use your professional judgment or the existing literature. If you need help on this one, let me know, we have some ideas.
14c. Wild and Scenic Rivers. What is BAH belief regarding use of the eligible Wild and Scenic Rivers if Alt B were to occur? Would development occur and reduce recreation use? If so by how much of current use (you can look at my range of current recreation use estimates to get an idea of current use levels).
14d. Special Recreation Management Areas, ***Little Yampa/Juniper Canyon***
Need an estimate of the change in recreation use in Alternative B if this area no longer a SRMA but rather an ERMA (we estimate current use associated with Alternative A at around 1,000 to 2,000 visitor days) .
Need an estimate of the change in recreation use BAH expects in Alternative C if this area is expanded by 10,092 acres.
Need an estimate of the change in recreation use BAH expects in Alternative D if this area is expanded by the XXX acres BAH will eventually quantify.
14e. Travel Management: Acreage and percentage of LSFO in each of the three OHV categories (open, restricted to existing roads/trails and closed).
14f. Cedar Mountain. How would Alt A reduce current use in the future? How would Alt B of including Cedar Mountain in a ERMA reduce use from our current estimate of 4,000 to 9,000 Visitor Days? How would Alt C and D of making Cedar Mountain a SRMA affect current visitor

use? A percentage change would be most useful, since we have just begun the process of validating these recreation use numbers through NWCOS and they may likely change.
Would it primarily allow recreation use to continue into the future at the current level or rise with Craig area population?

14g. South Sand Wash. How would Alt A and Alt B of continuing South Sand Wash as a ERMA reduce use from our current estimate of 20,000 to 72,000 Visitor Days? How would Alt C of making South Sand Wash a SRMA affect current visitor use? How would Alt D of making South San Wash a smaller SRMA affect visitor use? A percentage change would be most useful, since we have just begun the process of validating these recreation use numbers through NWCOS and they may likely change.

14h. Developed Recreation Sites
Alternative C and D provide for increase number of interpretive sites and viewing pullouts? How much of an increase in visitor use would this bring about?
Alternative C and D provide additional recreation facilities such as campgrounds, boat launch and picnic sites at SRMA's. How much additional use or percentage change in use would be associated with these new facilities?

15. FOREST AND WOODLAND PRODUCTS

Currently there are 37,600 acres available for woodland products. Are there any estimates of the wood harvest from these areas? What we really need would be the net change in acres available across all alternatives (a net change or percentage increase or decrease) and possibly the changes in potential wood harvest from improved vegetation and woodlands. We would assume that all of the wood taken is for firewood and home heating unless told otherwise.

If it is easier to break this down, then:

Would the restoration of vegetation increase the potential yield of wood from the restored acreage? By what percent (or number of acres) do you estimate? Same for woodland restoration.

For example, what are the increased costs to BLM for restoring 7,540 acres per year versus 3,030 acres for improved vegetation? Page 4. Of the anticipated of woodland restoration?

What are the increased costs to BLM for restoring the higher amounts of forest in Alternative D versus the lower amounts in alternative C?

What is your estimate of the net changes in acreage across the three alternatives (B,C, D) resulting from the policies implanted in regard to restrictions on fish and wildlife habitat, changes in protection of special status species, spatial mgt areas, palentological sites, etc. ?

16. LANDS AND REALTY

Key factors: There are two main differences in the impacts that would need to be separated: (1), if the ROWs are to be limited what kinds of economic activities might be hindered and to what degree? Are there others that might be increased? The percentage change or acres impacted would be very helpful; (2) when siting or design restrictions are imposed, it would be useful to know what type of activity (utilities, Oil and Gas pipelines, road construction) is affected and by how much (acreage or percent of total activity).

Fill in the xx acres, as there are many of them here.

Impacts on wind energy projects by alternative and type of costs?

The difference between this scenario and some of the others is that the narrower type of economic activity present affects economic impacts. The costs will vary by whether road construction is affected versus oil and gas pipelines. Thus it would be useful to know the acres, or miles affected, plus the likelihood of them occurring under the three scenarios.

17. TRANSPORTATION AND ACCESS

17a. Page 1, Assumptions. We would appreciate obtaining more details on what the specific assumption of growth rate in OHV use is in Colorado.

17b. Under **Travel Management, Closed, BAH** lists the areas closed to OHV. This is helpful but we need the acres and percent of LSFO these areas represent in each alternative.

17c. Under **Travel Management, Open, BAH** indicates that in Alternative B that all areas not managed as limited or closed to OHV would be open. What is the acreage and percentage of LSFO open with this alternative? In Alternative C is this the entire current area of the South Sand Wash SRMA that is currently open? We need those acres as well.

For Alternative D, it indicates that a smaller area of South Sand Wash SRMA will be open? How much smaller in terms of acres or percent than in Alt C, and the current condition. This is necessary for the recreation analysis, since Sand Wash is our primary OHV area studied.

If you wish clarification of any of these request please feel free to contact Andy, Steve or John at CSU.