Climate Change, Adaptive Management and NEPA

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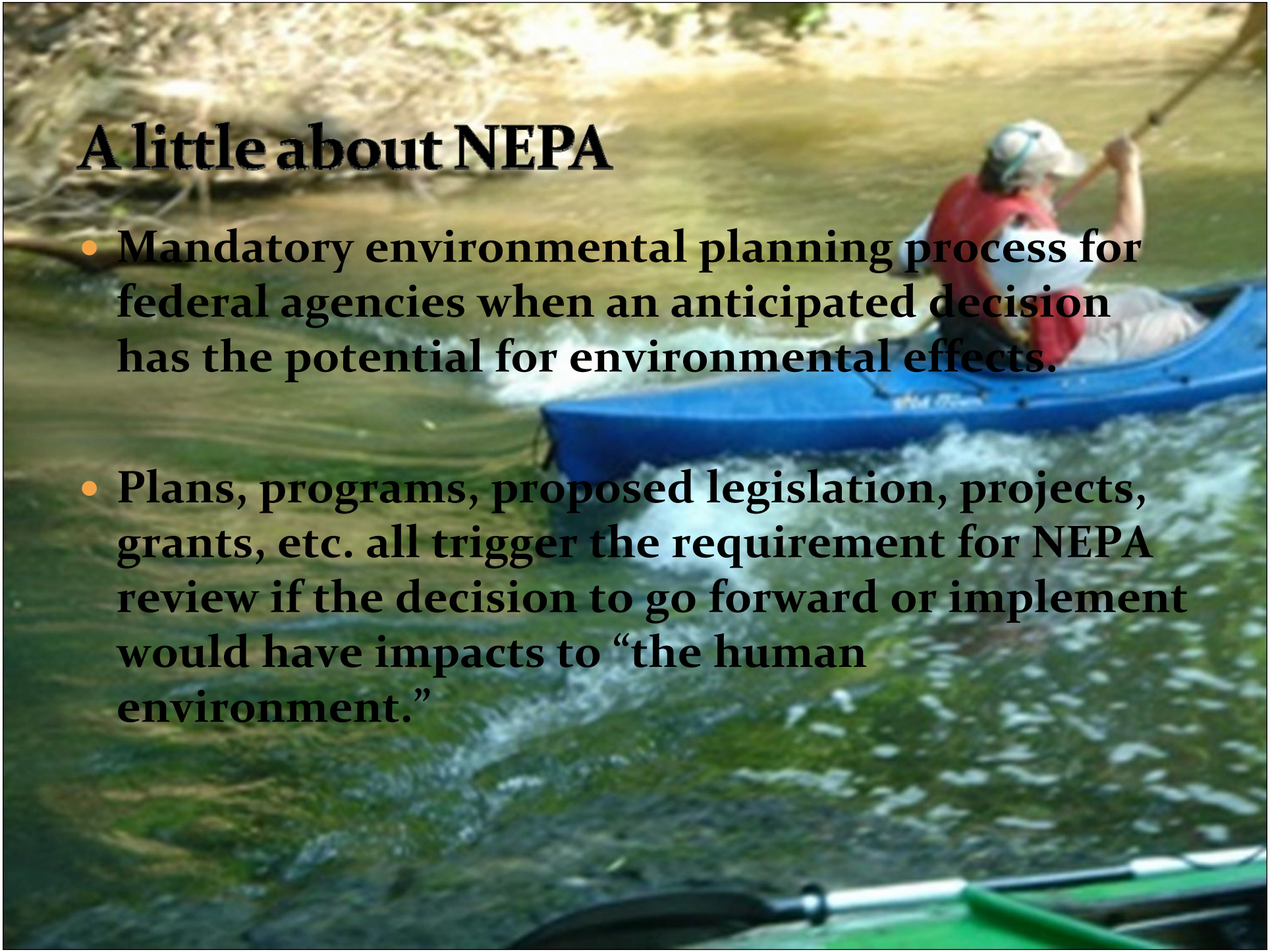
Total Quality NEPA

Objectives for Today

- Understand the features of NEPA planning that are relevant to effectively and legally incorporating adaptive management and climate change
- Present the most recent and/or informative info on climate change and NEPA; adaptive management and NEPA (CEQ, DOI)
- Draw conclusions about how the 3 can be integrated to make NEPA work for you – that is, to help in your planning and allow for quick responses to changing conditions.

Status of Federal Guidance

- The agency that "manages" NEPA (Council on Environmental Quality or CEQ) has released reports or memos on Adaptive Management and NEPA (2003); Climate Change and NEPA (2010)
- This conference is an example of work on climate change and adaptive management
- But very little (one sentence) guidance or direction exists on combining all 3- Adaptive Management, Climate Change and NEPA



A little about NEPA

- Mandatory environmental planning process for federal agencies when an anticipated decision has the potential for environmental effects.

- Plans, programs, proposed legislation, projects, grants, etc. all trigger the requirement for NEPA review if the decision to go forward or implement would have impacts to "the human environment."

Once NEPA is Triggered..

Agencies have discretion once they enter the "NEPA process."

Many actions that have no potential for "significant" impacts and that are named in an agency's NEPA regulations can be excluded from all but the most minimal record keeping requirements ("categorically excluded")

If it is unknown whether there is the potential for significant impacts, an environmental assessment (EA) is prepared

When impacts may be significant

- If internal scoping, public comments, screening forms, past experience etc. indicate that implementing a decision (e.g. a project, permit, plan, giving a grant, etc.) may or is likely to result in significant environmental impacts, an EIS (environmental impact statement) is completed.

Relevant features of NEPA

- Objectively inform the agency decision maker and the public about the likely adverse and beneficial impacts of a proposal (proposed action and its alternatives).
- Information and analysis need to be high quality and reliable, but standard may be less than "best available" because decisions need to be made.
- Document is candid- reveals assumptions, gaps in data

Relevant NEPA

Analysis can be broad, ecosystem level in a programmatic NEPA document, such as for a general management plan or refuge management plan, but *must be site specific before implementing the plan* (e.g. dirt is turned)

This means more than one NEPA document may be needed to move from concept to project through a process called "tiering," where the focus is on those decisions considered "ripe"

Reasonableness

NEPA regulations, court cases, etc. often point to the "rule of reason" as overarching.

Alternatives must be reasonable

Mitigation must be implementable and effective

Analysis of an issue should be commensurate with its importance in decision making

Relevant NEPA

An EIS takes 2-4 years to complete

The process is front-loaded; it requires all issues, alternatives and agency actions to be identified and analyzed BEFORE a proposal is initiated.

Many procedural requirements to make sure the public is fully involved

No requirements for follow-up, monitoring, evaluating mitigation or alternatives, impact levels, etc.

NEPA Errors

- Using a programmatic document to implement a project
- Assuming an adaptive management plan means no NEPA or no new NEPA is needed
- Assuming management in response to climate change or other outside forces will be an emergency and be exempt from NEPA

NEPA and Adaptive Management – Similar Goals

- Despite the lack of flexibility and required follow-up, NEPA is an existing and well-used environmental planning and public involvement process
- It's purposes are to minimize impacts to and maximize protection of resources and to effectively involve the public in agency planning
- Also, mitigation and monitoring plans, which are a part of adaptive management, are often strongly suggested by EPA in their review of NEPA documents.

Advantages of Using NEPA

- Integrates and summarizes what is known and identifies information gaps
- Includes both impacts and management actions so it can be both informational and problem solving.
- Requires a look at alternatives so it works well for a scenario planning approach
- Can be effective in involving the public, as well as serve as a “teachable moment”.

NEPA and Climate Change

- CEQ has issued a draft memorandum (Feb 2010) on NEPA and climate change
- It discusses GHG emissions *from* agency projects, cumulative GHG emissions and analyzing climate change impacts *on* agency proposals.

From agency projects

- CEQ proposes 25,000 tons CO_2 equivalent per year as the minimum emissions a project would need to have for an agency to consider a quantitative analysis of this issue.
- It is clear that this is not considered a significance threshold, but rather an indicator that this is even a topic for discussion in an EA or EIS

GHG emissions

- CEQ also notes that, should the proposal emit more than 25,000 tons CO_2 equivalent per year, the amount of time, space, analysis should be proportional to the importance of the issue in decision making.
- Agencies should "recognize the scientific limits of their ability to accurately predict climate change effects…and not devote effort to analyzing wholly speculative effects."
- "Disclose limitations of knowledge in this regard."

Climate Change Effects *ON* an Agency Proposal

Given the group in attendance, it is more likely that the impacts of your proposals will not exceed a GHG threshold, but rather that you are concerned about your ability to react to changes *from* climate change on the resources you manage.

Particularly, we want to look at how to maximize NEPA's planning advantages in anticipating climate change without sacrificing the flexibility or agility you need to respond to unknowns or rapid changes in weather, precipitation, storm events, droughts, etc.

Climate Effects on an Agency Proposal

- NEPA includes both actions and impacts. Actions are the management steps in a proposal or alternative. Impacts are the effects of these actions on the resources in your refuge or park.
- Because adaptive management is both a response to a potential impact and *an action* itself (or series of possible actions), the *effects of adaptive management actions need to be analyzed*.

Actions and Impacts

- So, first we will look at impacts of climate change
- If the impact analysis suggests significant unknowns that are best treated by adaptively managing, how can NEPA both provide insights and keep management flexible.

Analysis of Unknowns in NEPA

- NEPA practitioners have historically used a section in the CEQ regulations that requires looking at a "reasonable worst case" to evaluate either actions or impacts that are somewhat unknown. This section (1502.22) says "Reasonably foreseeable impacts-including those that have catastrophic consequences-will be included…if such analysis (1) is supported by credible scientific evidence, (2) is not based on pure conjecture, and (3) is within the rule of reason."
- We also use "ranges" of impact to capture the upper and lower intensity of effects.

Analysis of Climate Change Impacts To Your Proposal/Resources

As an example of how to use this section of the regulations in analyzing impacts from climate change to your park or refuge resources:

- Identify upper and lower range of relevant climate change factors- e.g. sea level rise, precipitation changes, drought, water level as your assumption. Identify the sources of information and the reliability of that information (gaps, assumptions, methodologies)

Analysis of Climate Change (2)

- Analyze impacts of these outside forces on resources (water resources, soil moisture, coastal habitat, etc.) which are BOTH affected by your proposal and by these climate related changes. In other words, "relevant" climate change forces are only those where there is a "nexus" or intersection with resources.
- Example: Your proposal is to restore a freshwater wetland inside park boundaries which is 10 feet above sea level. Sand movement, salt water intrusion and submergence of salt marsh habitat are all issues in your coastal park; do you include these forces and their impacts on park resources in your EIS?

Analysis of Climate Change Impacts (3)

CEQ also instructs agencies in their evaluation of impacts from climate change as follows:

- Assess impact on resources in the detail relevant to decision making (e.g. impacts from drought on water supply may be more relevant and analyzed in more detail than other topics in the freshwater marsh restoration example)
- The obligation to discuss particular effects depends on "a reasonably close causal relationship between the environmental effect and the alleged cause."
- Only need to analyze impact over the lifetime of the plan or proposal.

Where to put climate change analysis in a NEPA document

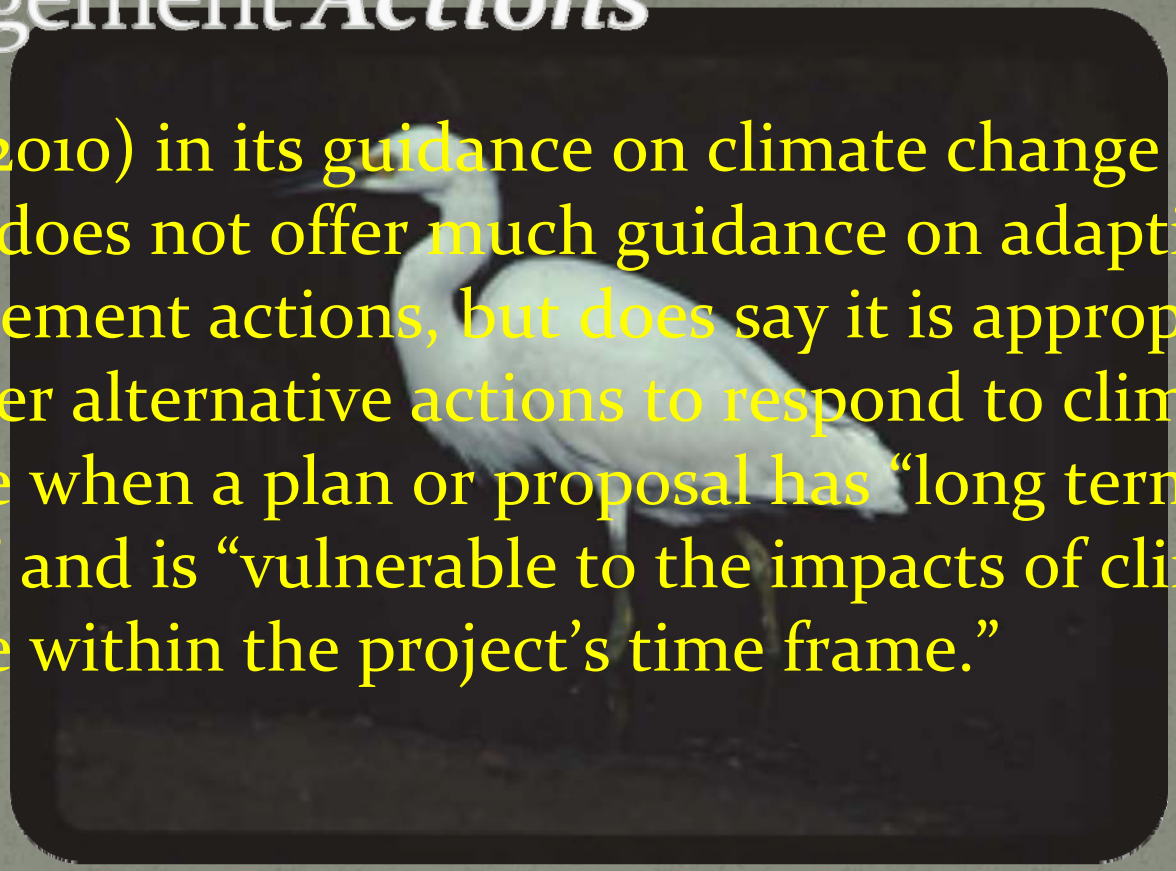
- Because they come from an external source (and not your proposal) and have additive effects on agency resources, they may be considered cumulative effects.
- However, this information can also be part of the affected environment (current status information), included as a projection in impacts of No Action, or be its own section (CEQ 2010)

Analysis of Climate Change

- So, be reasonable
- Admit what you don't know
- Analyze in proportion to the importance of the topic in decision making
- Make sure there is a nexus with resources your proposal would affect

Following these guidelines will create defensible analysis of climate change impacts.

Climate Change and Adaptive Management *Actions*



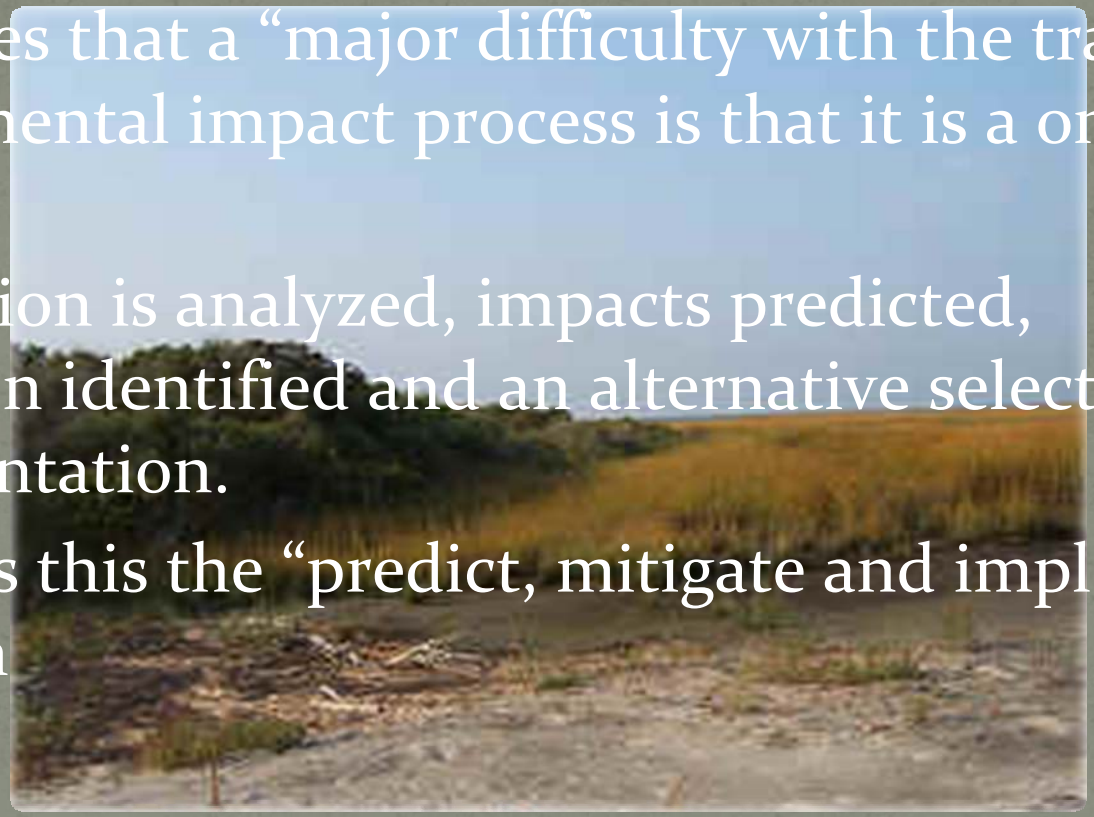
- CEQ (2010) in its guidance on climate change and NEPA does not offer much guidance on adaptive management actions, but does say it is appropriate to consider alternative actions to respond to climate change when a plan or proposal has "long term utility" and is "vulnerable to the impacts of climate change within the project's time frame."

CEQ Adaptive Management

- So, we turn from insights on climate change to guidance on Adaptive Management and NEPA
- References for further information include 2003 "Modernizing NEPA Implementation," prepared by The NEPA Task Force, and
- The U.S. DOI Technical Guide on Adaptive Management updated in 2009 (product of the Adaptive Management Working Group)

Adaptive Management and NEPA

- CEQ notes that a "major difficulty with the traditional environmental impact process is that it is a one-time event"
- Information is analyzed, impacts predicted, mitigation identified and an alternative selected for implementation.
- CEQ calls this the "predict, mitigate and implement" approach



CEQ Adaptive Management

- "There is a need to incorporate the 'predict, mitigate, implement, monitor and adapt' model into the NEPA process."
- "This would allow for mid-course corrections, *without requiring new or supplemental NEPA review*."
- Additionally, the traditional "predict, mitigate, implement" model implies a high degree of certainty in the accuracy of the prediction step that often does not exist."

CEQ Adaptive Management

- "To successfully use the 'predict, mitigate, implement, monitor and adapt' model in the NEPA process, the potential impacts of the proposed adaptive actions must be considered before implementation."
- "When the actions or new conditions exceed the scope of the original analysis, new or supplemental NEPA review is necessary."

Courts and Adaptive Management

- NEPA requires a supplemental EIS if "an agency makes changes in the proposed action that are relevant to environmental concerns; or there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (CEQ 1502.9c)."
- In other words, if monitoring indicates impacts are beyond those in the EIS or that actions to manage resources beyond those anticipated in the EIS are needed, a SEIS is prepared.

Courts and Adaptive Management

The Yellowstone Bison Management Plan/EIS Adaptive Management Plan is currently under litigation with plaintiffs alleging a SEIS is needed because (among others):

1. the objectives of the original plan cannot be met given new information (slaughter may increase brucellosis in the herd; brucellosis may not be transferred to cattle by bison, but rather by elk; therefore management of bison will not achieve the objective of a class-free status for Montana cattle, etc.) ,

Courts and Adaptive Management (2)

2. the agencies cannot rely on the Adaptive Management Plan because it does not "identify how the agencies will measure success or failure," and

3. does not "identify metrics or parameters for measuring how well they are meeting the plan's stated goals."

DOI and Adaptive Management

In an EA or EIS include:

- What success looks likes (objectives, desired futures, thresholds of impact etc.)
- Metrics or parameters (indicators) you will use to determine when action is needed
- As well as actions you will take when they are needed and the impacts of those actions

DOI and Adaptive Management

DOI offers two approach options:

- **Evaluate a site-specific range of alternatives that includes "whatever contingencies are anticipated" in responding to climate change**
- **Use programmatic NEPA to anticipate futures and "broadly cover the likely range of actions," knowing that a site specific document will be needed to implement.**

Programmatic NEPA

- General Management or Refuge Plan level of decision-making.
- Alternatives are broad approaches to meeting stated purpose and objectives
- EA or EIS can talk about trends it will monitor and what certain outcomes are likely to mean in terms of a selected approach
- When the data are more clear and a site specific decision is “ripe”, a new EA or EIS begins. The alternatives in this site specific document are limited to ways of implementing the selected approach.

Site-Specific NEPA

- As noted above, the adaptive management actions you anticipate will need to be part of the impact analysis.
- This can be on an alternative-by-alternative basis or
- Can be common to all alternatives or
- A separate adaptive management plan (appendix, for example)

Adaptive Management of Climate Change Impacts

In either case, the more you are able to conduct effective "scenario planning" to lay out "if, then" options, the more useful and flexible your NEPA document will be in anticipating the unknown and preventing the need for additional "compliance" when time is better spent acting.

Example of Adaptive Management Planning in NEPA

- The proposal is to update your resource or refuge management plan and the area includes substantial freshwater wetlands.
- Water is diverted upstream for a number of agricultural and municipal uses as per interagency agreement; some of the stream flows on refuge property
- Precipitation and storm events are both predicted to change substantially in the next 50 years, with longer droughts and more severe storms.

Example (2)

- Your plan will direct management for 15-20 years.
- Because this is an update of the refuge plan, the range of affected resources may be more comprehensive that in a site specific project and the nexus with climate change factors likewise quite broad. In other words, drought may not just affect wetland water levels, but vegetation, aquatic habitat and wildlife, visitor experience and recreation, etc.

Example (3)

- Analyze the impacts of relevant climate change factors on affected resources, devoting more time, space, analysis on climate change factors and/or resources that would be more substantially affected or are more important to your agency or public.
- Decide where to place this information and analysis in the document (affected environment, impacts of No Action or continued management, cumulative impacts etc.)

Example (4)

- You MAY wish to extend the time frame of this analysis longer than the lifetime of the plan to anticipate and plan for very long change.
- You MAY wish to consider options for management (solutions) under different scenarios, e.g. do we renegotiate the interagency agreement, consider in-stream storage (ponds), structural solutions like storage tanks; or do we pursue fundamental system changes, such as replacing vegetation after storms with hardier, more drought resistance native species? *If so, when*? What data do we collect to help us make these decisions?

Example (5)

- You may not be ready to commit to a particular direction, but will be able to identify indicators you will monitor and how the information will be used.
- A programmatic approach can just identify phases you plan to implement (negotiate agreement, if that doesn't work then check dams to create natural storage, etc.) or general approaches and discuss impacts broadly.
- Need to prepare a site-specific NEPA document when data suggest action is needed.

Example (6)

- Whether site specific or programmatic, ask:
- What is the monitoring protocol? Where would we collect data and how often, for how long? Do we just need precipitation, or also water levels, vegetative health, species abundance? Who will evaluate the data? At what intervals?
- What are the thresholds for action and what would those actions be at each threshold? Are there interim thresholds that would help keep you from reaching the “ultimate” threshold?

Example (7)

- If you want this refuge plan document to “cover” all of your NEPA needs through implementation, you will want to look at detailed scenario planning, either as phases where you “ramp up” protection or as alternatives.
- If so, analyze factors such as where you are likely to place water storage facilities (physical locations rather than criteria as you might in a programmatic approach), access, materials, etc.

Benefits of Including Adaptive Management Plan in an EIS or EA

- If the EIS is programmatic, evaluating adaptive management strategies will give you time to compare, plan, anticipate future events
- If the EIS is site specific, evaluating adaptive management actions and their impacts will meet NEPA requirements, prevent successful lawsuits, and allow you to take immediate action if needed.

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In sum..

NEPA is a useful and required process that can readily be used for scenario planning, and that will prepare you for reasonable alternate futures, will involve the public at the stage where they can effectively comment, and will maximize your agency's flexibility in protecting resources in the face of impacts from climate change.

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