SLIDES: Energy by Design: Possible BMP for Mitigation Planning

Dave Gann

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Energy by Design:
Possible BMP for Mitigation Planning

Dave or Megan - TBD – October 14, 2009
Objective: no net loss for priority species and vegetation
Dramatically improve mitigation; reduce negative impacts and deliver no net loss or in some cases a net gain for nature

Follow “mitigation hierarchy”
Avoid, minimize, restore and then offset

Better “early warning” and planning
Reduce development-conservation conflicts

More effective use of offsets
Conservation actions that compensate for residual, unavoidable harm to natural resource values
Degree of impact mitigation using avoid → minimize → restore → offset

“Early warning” & planning: development projects and conservation priorities

Biodiversity breakeven point (Zero impact; No net loss)

Anticipated Impact (net loss)

Avoided impacts

Residual Impacts (net loss)

Avoidance only

Avoidance + Min/restore

Avoided impacts

Residual Impacts (net loss)

Minimize/Restore

Avoidance + Min/restore + Offset

Offset

Minimize/Restore

Avoided impacts

Adapted from Kiesecker et al. 2009


### Sample projects

<table>
<thead>
<tr>
<th>Location</th>
<th>Mitigation Emphasis</th>
<th>Industry partner</th>
<th>Potential Application</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO - Hiawatha Field</td>
<td>On- and offsite</td>
<td>Questar</td>
<td>Hiawatha EIS</td>
<td>In progress</td>
</tr>
<tr>
<td>CO - Southwest</td>
<td>Offsite</td>
<td>BP</td>
<td>Wildlife Mitigation Plan</td>
<td>In progress</td>
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<tr>
<td>WY - Jonah Field</td>
<td>Offsite</td>
<td>BP</td>
<td>Expenditure of mitigation $</td>
<td>Complete</td>
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<tr>
<td>WY - Continental Divide – Crestone Field</td>
<td>On- and offsite</td>
<td>BP</td>
<td>EIS</td>
<td>In progress</td>
</tr>
<tr>
<td>UT – Uinta Basin</td>
<td>On- and offsite</td>
<td>Questar</td>
<td>?</td>
<td>Planned</td>
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</tbody>
</table>
Sample targets

- Greater sage-grouse
- Ferruginous hawk
- Wyoming pocket gopher
- Elk seasonal habitats
- Many others
<table>
<thead>
<tr>
<th>Task</th>
<th>Name</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Assemble a Team of Experts</td>
<td>Michael A. Smith</td>
<td>U of Wyoming</td>
</tr>
<tr>
<td>ID Target Species &amp; Systems</td>
<td>Rhen Etzmiller</td>
<td>BLM</td>
</tr>
<tr>
<td>ID Spatial Extent of Project</td>
<td>Debbie Johnson</td>
<td>BLM</td>
</tr>
<tr>
<td>Gather Spatial Data for Targets</td>
<td>David Simons</td>
<td>BLM</td>
</tr>
<tr>
<td>Examine Development Scenario</td>
<td>Mary Read</td>
<td>BLM</td>
</tr>
<tr>
<td>Determine Impacts &amp; Goals</td>
<td>Eldon Allison</td>
<td>BLM</td>
</tr>
<tr>
<td>ID “On-site” Sensitive Features</td>
<td>Andy Warren</td>
<td>BLM</td>
</tr>
<tr>
<td>ID Offset Portfolio</td>
<td>Cheryl Newberry</td>
<td>BLM</td>
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<tr>
<td>Determine Offset Valuation</td>
<td>Tim Woolley</td>
<td>WY G&amp;F</td>
</tr>
<tr>
<td>Approach</td>
<td>Greg Hiatt</td>
<td>WY G&amp;F</td>
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<tr>
<td></td>
<td>Scott Smith</td>
<td>WY G&amp;F</td>
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<tr>
<td></td>
<td>Joseph Kiesecker</td>
<td>TNC</td>
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<tr>
<td></td>
<td>Holly Copeland</td>
<td>TNC</td>
</tr>
<tr>
<td></td>
<td>Amy Pocewicz</td>
<td>TNC</td>
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<tr>
<td></td>
<td>Steve Moore</td>
<td>Consultant</td>
</tr>
<tr>
<td></td>
<td>Douglas A. Keinath</td>
<td>WYNDD</td>
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<tr>
<td></td>
<td>Jason Sutter</td>
<td>Hayden-Wing</td>
</tr>
<tr>
<td></td>
<td>Dick Loper</td>
<td>Consultant</td>
</tr>
<tr>
<td></td>
<td>Don Schramm</td>
<td>Rock Springs Grazing Board</td>
</tr>
</tbody>
</table>
Assemble a Team of Experts

**ID Target Species & Systems**
- Basin Grassland
- Black-footed ferret habitat
- Burrowing Owl
- Ferruginous hawk
- Greasewood Fans and Flats
- Great Basin spadefoot habitat
- Juniper Woodland
- Mixed Desert Shrub
- Mountain Big Sagebrush-Mixed Mountain Shrub
- Mountain Plover Habitat
- Mule deer crucial winter
- Mule deer migration corridor
- Nelson’s milkvetch
- Nelson’s milkvetch habitat
- Northern leopard frog
- Northern leopard frog habitat
- Penstemon gibbensii (Gibben’s penstemon)
- Playa
- Pronghorn crucial winter
- Pronghorn migration corridor
- Pygmy Rabbit
- Pygmy rabbit habitat
- Riparian-Wet Meadow
- Rorippa calycina (Persistent Sepal Yellowcress)
- Sage-grouse breeding areas
- Sage-grouse severe winter locations
- Sage-grouse severe winter habitat
- Saltbush Fans and Flats
- Vegetated Sand Dunes
- Wyoming Big Sagebrush-Basin Big Sagebrush
- Wyoming pocket gopher locations
- Wyoming pocket gopher habitat

**ID Spatial Extent of Project**

**Gather Spatial Data for Targets**

**Examine Development Scenario**

**Determine Impacts & Goals**

**ID “On-site” Sensitive Features**

**ID Offset Portfolio**

**Determine Offset Valuation**

**Approach**

**Validate Model Results**
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continental divide - crestone mitigation analysis
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**Development:**
40 acre spacing

**Potential Impacts:**
22,867 acres of Pygmy Rabbit habitat

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22,867 acres of Pygmy Rabbit habitat
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2. ID Spatial Extent of Project
3. Gather Spatial Data for Targets
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5. Determine Impacts & Goals
6. ID “On-site” Sensitive Features
7. ID Offset Portfolio
8. Determine Offset Valuation
9. Approach
10. Validate Model Results
## Offset Accounting Framework

<table>
<thead>
<tr>
<th>Hectares of impact = Goal</th>
<th>2000 ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offset portfolio</td>
<td>Site A</td>
</tr>
<tr>
<td>Hectares of suitable habitat</td>
<td>3000 ha</td>
</tr>
<tr>
<td>Conservation action</td>
<td>Protection</td>
</tr>
<tr>
<td>Expected background rate of loss (res dev)</td>
<td>10%/yr</td>
</tr>
<tr>
<td>Probability of success</td>
<td>90%</td>
</tr>
<tr>
<td>Timing (yrs to conservation maturity)</td>
<td>0 yrs</td>
</tr>
<tr>
<td>Actual offset hectares</td>
<td>1659 ha</td>
</tr>
<tr>
<td>% of goal</td>
<td>83%</td>
</tr>
<tr>
<td>Offset to impact ratio</td>
<td>1.8 to 1</td>
</tr>
<tr>
<td>Cost per hectare</td>
<td>$1,500/ha</td>
</tr>
<tr>
<td>Total cost for offset</td>
<td>$4.5 million</td>
</tr>
<tr>
<td>Cost per offset hectare delivered</td>
<td>$2,700/ha</td>
</tr>
</tbody>
</table>
EBD: Goal-based, science-based, systematic, transparent, multi-stakeholder

Potential application to industry planning, EISs, Wildlife Mitigation Plans, Comprehensive Drilling Plans, etc.

Best practice for mitigation planning? TBD