Appendix 5

APD Conditions of Approval Data Preparation

In contrast to the EPCA Phase I inventory, Phase II incorporated a large-scale statistical sampling and categorization of COAs and related data for APDs.

The data preparation consisted primarily of the creation of a Federal oil and gas permit/well GIS point data theme. This task was performed by processing legal description data from the BLM's AFMSS against the PLSS dataset collected as described in Appendix 3. Data gathering, compiling, categorizing, digitizing and analysis followed as described below.

1. The initial task consisted of a pilot study to determine more fully the nature of COAs by abstracting information from well files located in BLM's Vernal and Price FOs. The purpose of this initial task was to provide information for the subsequent design and execution of the full-scale statistical sampling in the study areas as shown on Table A5-1. The Montana Thrust Belt study area was not included because it is approximately 97 percent closed to access and has little drilling history. The Florida Peninsula was also excluded given the relative lack of drilling history.

2. Excel spreadsheets were used to collect the COA data during visits to BLM FOs. They included attributes from the AFMSS database identifying lease number, surface location legal description (including footage calls, if

Table A5-1. Study Areas Sampled for COAs

Phase I	Uinta-Piceance Basin
	Paradox/San Juan Basins
	Powder River Basin
	Greater Green River Basin
Phase II	Northern Alaska (NPRA)
	Wyoming Thrust Belt
	Denver Basin
	Black Warrior Basin
	Appalachian Basin

available), surface managing agency, operator name, well name, well number, well type, received date, approval date, spud date, and completion date.

3. All APDs approved between and including the dates of October 1, 1999 and September 30, 2004 were included. Wells on non-Federal minerals within Federal agreements and on Indian lands were excluded. The COAs and related data were collected from approved APDs issued by the BLM FOs (Table A5-2) within the Phase I and II study areas. This well/permit data theme was then spatially intersected with the study area polygons to eliminate points outside of the inventory. The distribution of the resultant APDs was then geographically mapped.

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Table A5-2. BLM Field Offices for which COAs Data Were Abstracted

Administrative State	BLM Field Offices
Alaska	Northern (Fairbanks)
Colorado	Little Snake (Craig), White River (Meeker), Grand Junction, Glenwood Springs, Royal Gorge (Cañon City), Uncompahgre (Montrose), Gunnison, and San Juan (Durango)
Eastern States	Jackson, MS, and Milwaukee, WI
Montana	Miles City, Billings, North Dakota (Dickinson), and South Dakota (Belle Fourche)
New Mexico	Farmington, Rio Puerco (Albuquerque), and Taos
Utah	Salt Lake, Vernal, Richfield, Price, Moab, Cedar City, Monticello, St. George, Kanab, and Grand Staircase-Escalante National Monument (Escalante)
Wyoming	Buffalo, Newcastle, Casper, Pinedale, Kemmerer, Rock Springs, Rawlins, and Lander

Table A5-3. Stratified Random Sampling Guidance

APD Population (FY 2000-2004) within Field Office	Sample Size
0 – 30	100%
31 – 200	30 APDs
201 – 1333	15%
>1333	200 APDs

within the study areas fell below six were generally not visited. Instead, the FO was requested to transmit the COAs to the BLM Washington Office where they were examined.

The abstracted information contained site-specific restrictions or impediments that affect the ability of the permittee and/or lessee to access the underlying lease for the purpose of exploring for and developing oil and gas resources. All abstracted information was restricted to Federal lands and limited to the 13-point surface use plan of the APD and related documents.

4. The above data theme was then randomly sampled to generate a new GIS point data theme. A stratified random sampling method was used with two data strata: BLM Field Office and surface managing agency. The samples from each stratum were weighted by total APDs approved for each Field Office. The resultant total sample was approximately 10 percent of the total population of permits/wells and followed the guidance presented on Table A5-3, as determined during the pilot study.

5. Contractor personnel, accompanied by BLM personnel, visited BLM FOs and abstracted COA and other related information from the hardcopy well files identified by the sampling process. Those offices whose sample count

6. Other relevant information for the study was obtained through interviews held with FO personnel. This information was essential to determine the extent, through a qualitative analysis, of negotiations that occur prior to the submission of an APD, including adjustments at the time of well staking. This included the determination of:
   - Whether applicant-funded surveys (e.g., wildlife or archeological) are a prerequisite to acceptance of an APD as administratively complete (Table A5-4a)
   - The number of APDs not actually applied for because the cumulative effects of lease stipulations and probable COAs were prohibitive (Table A5-4b).

Table A5-4a. Findings from Interviews with BLM Field Personnel – Applicant Funded Surveys

Survey Question: Are applicant funded surveys (e.g., wildlife or archeological) a prerequisite to acceptance of an APD as administratively complete?		
Field Office	**Response**	**Remarks**
Buffalo	Yes	BLM asks companies to plan APD activities from 12 to 18 months prior to the formal submission. This includes meetings to plan activities, supply maps and discuss requirements.
Canon City	No	However, occasionally a survey is required (happened four times in the last fourteen years).
Casper	Yes	
Craig	No	However, without the archeological survey the archeologist usually won't finish their portion of the EA, so NEPA work will not be completed. Applicant funded surveys are encouraged to help speed up the processing of an APD, especially for archeology. Applicant funded wildlife surveys are rarely encouraged because usually the BLM has enough information. Applicant funded surveys are encouraged for special projects. Specialists like to have the surveys completed before the NEPA work is finished. It is unlikely for an APD to be approved and before the surveys are received.
Durango	Yes	
Farmington	Yes	
Glenwood Springs	Yes	
Grand Junction	No	Surveys are typically completed by a contractor. If the operator asks the BLM to perform the survey, long delays may occur as the archeological/cultural staff at the Field Office are quite busy.
Jackson	No	However, if a survey is required, it must be received prior to APD approval.
Kemmerer	Yes	
Lander	Yes	
Meeker	No	However, rather than waiting for the BLM to do the surveys, operators have paid a private consultant to perform them. Generally speaking, the survey comes in after the BLM has received the APD and is already processing it.
Miles City	Yes	
Milwaukee	No	Not automatically required. BLM tries to identify if any survey will be needed during the leasing process, and if so, places a notice on the lease parcel to that effect. Normally the required surveys are archeological.
Moab	Yes	
Newcastle	Yes	
Pinedale	Generally yes, but see remarks	Archaeological surveys can performed after permitting, but must be received before drilling (frozen ground is an issue).
Rawlins	No	However, lack of a cultural report will often delay approval of the APD. Except for a few black footed ferret surveys, wildlife surveys from the applicant are seldom required. These are generally done in house as part of the NEPA process
Rock Springs	Yes	Surveys are required to be in the Environmental Assessment.
Vernal	Generally yes, but see remarks	Because the specific wildlife presence may not be determined and may change over time, some APDs have COAs that call for routine wildlife surveys after the permit is issued.

Table A5-4b. Findings from Interviews with BLM Field Personnel – Prohibitive Lease Stipulations/COAs

Survey Question: Are there any known cases where APDs were not submitted because the cumulative effects of lease stipulations and probable COAs were deemed prohibitive by the operator?		
Field Office	**Response**	**Remarks**
Buffalo	No	
Canon City	Yes	One case in the mid-nineties
Casper	No	
Craig	No	
Durango	No	
Farmington	No	
Glenwood Springs	No	
Grand Junction	No	However, there was one case where the operator chose to look for another site on the lease that did not have an NSO stipulation.
Jackson	Yes	Occurred rarely. The FO recalls one particular case in which an operator withdrew an APD after finding an archeological site (ancient cemetery) that would have required the well to be moved.
Kemmerer	No	
Lander	No	
Meeker	No	
Miles City	No	
Milwaukee	No	
Moab	No	
Newcastle	No	
Pinedale	No	
Rawlins	No	However, there have been some instances where APDs were withdrawn after field review and/or NEPA analysis indicated the need for intensive mitigation and/or relocation of the well site. A few APD's for coalbed natural gas were withdrawn because the lessee could not reach an agreement with the holder of the coal lease. In these instances, the holder of the coal lease had prior existing rights.
Rock Springs	No	
Vernal	No	

7. COA data were compiled into spreadsheets and spatial displays (GIS, etc.) that can used to assist BLM management in decisions regarding APD approvals. The compilation process consisted of grouping of COAs by class (e.g., wildlife, soils, archeological, construction, sage grouse, etc.), and subsequent assignment of a unique identifier for each type of COA within a class. Only COAs that were more restrictive than (and not merely a restatement of) the stipulations on the underlying lease were considered. A total of 175 unique COAs were identified.

8. These unique COAs were categorized as to their effect on access by the Interagency Steering Committee. The result was that COAs fell either into controlled surface use (CSU) or cumulative timing limitation (TL) categories that correspond with the leasing hierarchy described in Table 2-8. Changes in land access categorization arising from COAs were integrated into the spatial model. This recategorization methodology consisted of first computing for each unique COA the percentage of wells having that COA (% unique-COA) with respect to the total number of wells sampled within a given FO and also within the non-NSO leasable areas as represented by the equation:

$$\%uniqueCOA = \frac{(\# \ Wells)_{uniqueCOA}}{(\# \ Wells)_{Acc. \ Area}} = 10\%$$

where:

$\%uniqueCOA$: Percentage of wells with a unique COA

$(\# \ Wells)_{uniqueCOA}$: Number of wells with a unique COA

$(\# \ Wells)_{Acc. \ Area}$: Total number of wells in the accessible area.

Table A5-5 is a breakdown of the COAs by BLM FO and includes the categorization, number of occurrences, and percentage of the wells in the sample that have that COA.

9. Subsequently this percentage value was extrapolated to the overall leasable area to estimate the change in accessibility. A grid composed of 400 by 400 meter grid (approximately 40 acres) was created for each FO or NF containing a study area. Cells were then randomly selected at the previously calculated percentage rate to create a potential access constraint theme. Figure A5-1 illustrates the process to extrapolate the effects of COAs on accessibility. This is an example for a case where 10 percent of the leasable area is potentially subject to a particular COA type.

10. Once the recategorization was accomplished, the resulting areas and volumes of the undiscovered technically recoverable oil and gas resources and reserve growth affected by the cumulative impact of COAs was computed. The land access categorization was then performed using the method for lease stipulations described in Section 2 and Appendix 9.
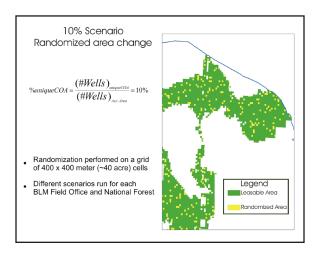

Figure A5-1. Example of Extrapolating the Effects of COAs on Accessibility

Table A5-5. COA Statistics by Field Office

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
Rio Puerco	48	30	4
archeo002	CSU	2	7%
noise001	CSU	2	7%
Buffalo	5077	200	69
archeo002	CSU	2	1%
cultur001	CSU	2	1%
cultur002	CSU	2	1%
hydro001	CSU	4	2%
hydro005	TLS	1	1%
plover002	CSU	3	2%
plover003	CSU	4	2%
plover004	CSU	3	2%
plover013	TLS	1	1%
plover032	TLS	3	2%
raptor002	CSU	15	8%
raptor003	CSU	3	2%
raptor004	TLS	1	1%
raptor006	TLS	1	1%
raptor007	TLS	17	9%
raptor018	TLS	1	1%
raptor023	CSU	1	1%
raptor024	CSU	1	1%
raptor027	CSU	2	1%
raptor029	CSU	2	1%
roads001	CSU	2	1%
roads002	CSU	1	1%
sagegr001	CSU	5	3%
sagegr003	CSU	9	5%
sagegr005	TLS	10	5%
sagegr008	TLS	5	3%
sagegr022	CSU	8	4%
sagegr033	TLS	3	2%
sagegr038	CSU	1	1%
soils001	CSU	14	7%
wildlf002	CSU	1	1%
wildlf002	TLS	1	1%

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
wildlf004	CSU	4	2%
wildlf005	TLS	1	1%
wildlf012	TLS	1	1%
wildlf018	CSU	3	2%
Casper	170	30	25
archeo001	CSU	1	3%
constr001	CSU	2	7%
constr008	CSU	18	60%
constr014	TLS	1	3%
cultur002	CSU	2	7%
plover030	TLS	1	3%
raptor003	CSU	1	3%
raptor007	TLS	2	7%
raptor019	TLS	1	3%
raptor023	CSU	19	63%
raptor029	CSU	2	7%
sagegr005	TLS	1	3%
soils001	CSU	21	70%
sslope001	CSU	18	60%
wildlf003	CSU	18	60%
wildlf004	CSU	2	7%
Farmington	2713	200	74
archeo001	CSU	1	1%
archeo002	CSU	14	7%
bgame008	TLS	10	5%
bgame011	TLS	1	1%
bgame012	TLS	1	1%
bgame014	TLS	1	1%
constr004	TLS	10	5%
noise001	CSU	7	4%
pipel002	CSU	19	10%
pipel008	CSU	19	10%
raptor017	TLS	1	1%
roads001	CSU	1	1%
soils001	CSU	64	32%
wildlf003	CSU	1	1%
wildlf004	CSU	3	2%

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Table A5-5. COA Statistics by Field Office (continued)

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
Glenwood Springs	349	53	16
archeo002	CSU	1	2%
bgame003	TLS	1	2%
bgame007	TLS	3	6%
bgame017	TLS	1	2%
bgame019	CSU	2	4%
constr001	CSU	1	2%
constr003	TLS	2	4%
constr007	TLS	1	2%
constr009	TLS	2	4%
pipel002	CSU	1	2%
pipel008	CSU	1	2%
vrm001	CSU	3	6%
wildlf001	TLS	1	2%
wildlf006	TLS	1	2%
Grand Junction	40	30	22
bgame003	TLS	19	63%
bgame017	TLS	1	3%
pipel002	CSU	1	3%
roads001	CSU	1	3%
wildlf006	TLS	2	7%
wildlf017	TLS	1	3%
Kemmerer	96	30	22
archeo002	CSU	1	3%
bgame002	TLS	8	27%
bgame015	TLS	6	20%
pipel008	CSU	2	7%
plover009	TLS	5	17%
plover035	TLS	7	23%
raptor033	TLS	1	3%
sagegr018	TLS	3	10%
sagegr036	TLS	4	13%
soils001	CSU	17	57%
wildlf003	CSU	1	3%

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
Lander	11	11	7
archeo002	CSU	2	18%
bgame002	TLS	1	9%
constr001	CSU	1	9%
pipel004	CSU	1	9%
plover009	TLS	1	9%
raptor007	TLS	2	18%
soils001	CSU	4	36%
Little Snake	63	30	23
bgame003	TLS	1	3%
constr002	CSU	2	7%
erosio001	CSU	8	27%
raptor006	TLS	10	33%
sagegr009	TLS	7	23%
soils001	CSU	8	27%
sslope002	CSU	1	3%
wildlf016	TLS	1	3%
Miles City	93	30	30
bgame007	TLS	1	3%
bgame008	CSU	26	87%
bgame013	CSU	25	83%
constr013	CSU	25	83%
raptor003	CSU	25	83%
raptor018	CSU	25	83%
sagegr005	TLS	26	87%
sagegr023	TLS	1	3%
soils001	CSU	25	83%
sslope003	CSU	1	3%
wildlf001	CSU	25	83%
wildlf008	TLS	3	10%
wildlf011	TLS	1	3%
Milwaukee	14	14	2
constr016	TLS	2	14%
pipel008	CSU	2	14%

***Table A5-5. COA Statistics by Field Office
(continued)***

| BLM FO | | Well Population | Sample Size | Sample Wells w/ COAs |
	COA ID	COA Category	Occurrence	% of Sample
Moab		23	23	10
	bgame016	TLS	1	4%
	bgame020	TLS	4	17%
	constr001	CSU	3	13%
	pipel001	CSU	3	13%
	raptor007	TLS	1	4%
	raptor016	TLS	2	9%
	soils003	TLS	1	4%
	soils004	TLS	1	4%
Monticello		9	9	3
	paleo002	CSU	2	22%
	pipel008	CSU	1	11%
Newcastle		76	30	8
	archeo001	CSU	1	3%
	archeo002	CSU	2	7%
	constr001	CSU	1	3%
	noise001	CSU	1	3%
	sagegr031	TLS	1	3%
	soils001	CSU	2	7%

| BLM FO | | Well Population | Sample Size | Sample Wells w/ COAs |
	COA ID	COA Category	Occurrence	% of Sample
Pinedale		710	107	72
	archeo002	CSU	10	9%
	bgame002	CSU	49	46%
	bgame006	TLS	2	2%
	bgame015	TLS	7	7%
	constr001	CSU	4	4%
	cultur003	TLS	3	3%
	pipel003	CSU	5	5%
	pipel004	CSU	2	2%
	pipel008	CSU	3	3%
	raptor005	TLS	1	1%
	raptor007	TLS	14	13%
	raptor011	TLS	3	3%
	raptor021	TLS	4	4%
	raptor028	CSU	2	2%
	raptor034	TLS	2	2%
	sagegr002	TLS	12	11%
	sagegr004	TLS	3	3%
	sagegr007	TLS	5	5%
	sagegr010	TLS	4	4%
	sagegr011	TLS	3	3%
	sagegr012	TLS	13	12%
	sagegr013	TLS	25	23%
	sagegr015	TLS	1	1%
	sagegr017	TLS	7	7%
	sagegr019	TLS	1	1%
	sagegr021	TLS	2	2%
	sagegr030	CSU	15	14%
	sagegr034	TLS	2	2%
	sagegr035	TLS	9	8%
	sagegr037	TLS	1	1%
	soils001	CSU	43	40%
	vrm001	CSU	1	1%
	wildlf003	CSU	1	1%

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Table A5-5. COA Statistics by Field Office (continued)

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
Rawlins	714	107	50
constr001	CSU	3	3%
constr012	CSU	13	12%
plover001	CSU	6	6%
plover009	TLS	15	14%
plover011	TLS	1	1%
plover016	TLS	1	1%
plover033	TLS	2	2%
raptor007	TLS	2	2%
raptor030	TLS	6	6%
roads001	CSU	1	1%
roads003	CSU	3	3%
sagegr009	TLS	14	13%
soils001	CSU	26	24%
Rock Springs	173	30	15
archeo002	CSU	1	3%
bgame002	TLS	5	17%
hydro001	CSU	2	7%
plover007	TLS	1	3%
plover014	TLS	1	3%
plover015	TLS	1	3%
raptor007	TLS	3	10%
raptor009	TLS	1	3%
raptor014	TLS	1	3%
raptor032	TLS	1	3%
sagegr016	TLS	1	3%
soils001	CSU	4	13%
wildlf004	CSU	1	3%
wildlf007	TLS	1	3%
wildlf019	CSU	1	3%

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
Royal Gorge	39	30	23
constr001	CSU	1	3%
constr011	TLS	1	3%
constr015	CSU	1	3%
noise001	CSU	2	7%
pipel002	CSU	5	17%
pipel004	CSU	1	3%
pipel008	CSU	6	20%
plover005	TLS	7	23%
plover006	TLS	3	10%
plover031	TLS	1	3%
wildlf014	TLS	5	17%
San Juan	35	30	22
archeo002	CSU	8	27%
bgame001	TLS	4	13%
bgame003	TLS	4	13%
bgame020	TLS	7	23%
constr002	CSU	3	10%
hydro001	CSU	1	3%
noise001	CSU	13	43%
pipel002	CSU	1	3%
raptor015	TLS	1	3%
sagegr018	TLS	1	3%
wildlf013	TLS	1	3%
Uncompahgre	7	7	7
archeo001	CSU	1	14%
bgame003	TLS	1	14%
bgame010	TLS	2	29%
bgame020	TLS	1	14%
constr002	CSU	1	14%
constr013	CSU	1	14%
noise001	CSU	2	29%
pipel008	CSU	2	29%
roads001	CSU	2	29%
soils001	CSU	2	29%

Table A5-5. COA Statistics by Field Office (continued)

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
Vernal	861	130	35
archeo002	CSU	1	1%
bgame009	TLS	2	2%
constr001	CSU	2	2%
noise001	CSU	10	8%
paleo001	CSU	1	1%
paleo002	CSU	5	4%
pipel001	CSU	1	1%
pipel002	CSU	7	5%
plover007	TLS	2	2%
plover008	TLS	2	2%
plover010	TLS	2	2%
plover012	TLS	3	2%
plover034	TLS	3	2%
raptor002	CSU	2	2%
raptor008	TLS	2	2%
raptor009	TLS	6	5%
raptor010	TLS	2	2%
raptor012	TLS	2	2%
raptor013	TLS	4	3%
raptor016	TLS	1	1%
raptor020	TLS	2	2%
raptor022	CSU	4	3%
raptor025	CSU	2	2%
raptor031	TLS	2	2%
raptor032	TLS	3	2%
sagegr009	TLS	3	2%
sagegr020	TLS	5	4%
sagegr033	TLS	2	2%
soils001	CSU	5	4%
wildlf002	CSU	4	3%
wildlf003	CSU	2	2%
wildlf004	CSU	2	2%

BLM FO	Well Population	Sample Size	Sample Wells w/ COAs
COA ID	COA Category	Occurrence	% of Sample
White River	320	48	22
archeo002	CSU	1	2%
bgame003	TLS	2	4%
bgame005	TLS	1	2%
constr001	CSU	1	2%
constr002	CSU	1	2%
paleo002	CSU	11	23%
pipel002	CSU	1	2%
soils001	CSU	17	35%
wildlf008	TLS	1	2%
wildlf009	TLS	1	2%
wildlf010	TLS	3	6%
wildlf015	TLS	1	2%