

Appendix B

**ExxonMobil Corporation's 2009 Piceance 3D Seismic Project:
Work Plan for 2009 Cultural Resource Investigations,
Rio Blanco County, Colorado**

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INTRODUCTION

Metcalf Archaeological Consultants, Inc., (MAC), in consultation with Petros Environmental Group (Petros), ExxonMobil Corporation (XOM), and the Bureau of Land Management White River Field Office (BLM WRFO), has prepared this work plan for cultural resource investigations to be conducted beginning in the spring of 2009 for the proposed ExxonMobil Piceance 3D Seismic Project. A significant amount of cultural resource work has been done during the 2008 field season for this project by MAC (Elkins 2008; Elkins and McKibbin 2008). Concurrent work by SWCA, Inc. on two separate projects overlapping the XOM project area has covered another substantial portion of the project area (Reed et al. 2008; Schwendler et al. 2008). MAC and SWCA, with the acceptance of their respective clients, have worked cooperatively in sharing needed data for the areas common to both consultants' project areas.

This work plan covers three main tasks that will occur immediately prior to or during seismic exploration work next season. First, the plan is offered to provide a way to expedite the time between completion of new inventory and the point at which XOM and their seismic survey contractor Global Geophysical (Global) can proceed with seismic work in the area. Second, the plan discusses methods for flagging of cultural resource avoidance areas. And third, the plan discusses options for monitoring, should BLM impose that as a stipulation, as is anticipated.

The need for this work plan, as opposed to simply proceeding with the standard cultural resource investigation process of inventory, reporting, BLM review, and BLM approval to proceed, is driven by time constraints at both the beginning and end of the project's field schedule. Start-up for cultural resource clearance survey will likely be mid-April to early May based on snow melt and weather. The cultural resource clearance survey will coordinate with XOM/Global's GPS point survey and hazard survey which will also start mid-April to early May, weather permitting. The 2009 cultural inventory will be conducted for new areas to be affected by the project and for a few areas that were missed in 2008. The cultural inventory will also coordinate with the spring 2009 raptor survey for active nests that will begin about May 15. The season's active raptor nests will be identified and nest "no surface occupancy" zones (NSOs) will be established for avoidance by seismic survey vehicle and helicopter activity. The need for avoidance of the raptor buffers may cause the movement of facilities such as staging areas and source points to outside the nest buffer and the need for cultural clearance should the new location fall outside of the previously cleared project APE.

The effective end date for seismic field work for the project is dictated to a great extent by weather but also potentially by other wildlife issues; XOM's intent is to have seismic field work wrapped up in mid-November, with the possibility of running into December if unexpected delays occur. This work plan is proposed to minimize as much as possible any delays that might arise because of the known and anticipated need to do additional cultural resource field as the project gets underway and proceeds.

KNOWN AND ANTICIPATED 2009 CULTURAL FIELD INVENTORY NEEDS

The work plan is proposed to handle a small amount of additional cultural field work known now to be required but not completed in the 2008 field season. It is also designed to address field work needs that will arise as the project gets underway. It is known that some work

areas, facilities and activities will need to be moved once the raptor nest NSOs are established and these new locations will need to be inventoried. It is anticipated that a small fraction of other work areas, facilities and activities will need to be moved due to conditions that could not be anticipated or that did not exist in 2008, such as newly constructed well pads or pipelines not related to this project. There may also be need to address facilities moved at the request of the geophysical exploration company to meet their needs for accessing and traversing work areas and maintaining safe operating conditions while in those areas.

In all cases where new inventory will be required in 2009, MAC will first consult with XOM to determine if the work space or facility or activity in question can be moved to an area that has been inventoried. MAC will also conduct a new files search prior to beginning the 2009 field season and will check all potential new inventory areas against up-to-date files search information from the state and BLM to determine if adequate inventory coverage already exists. The quantity of new inventory needed in 2009 will be reduced by these efforts.

Known and expected inventory needs are summarized in the following table.

Facility or Activity	Approximate quantity or size requiring inventory	Comment
Drill/recording staging areas (mini-staging areas)	<39 @ 1 ac or less	Includes staging areas that were not visited or inventoried during the 2008 field season (some may have been covered by other previous inventory and will not require new inventory).
LVL points (2D)	None at this time	Current LVL point array has been sited so that all points are within previously inventoried areas.
2D Line T002	Ca. 3300 linear feet	Follows existing road, most has been covered by previous inventory, ca. 3300 feet has not.
Helicopter safe landing sites	Ca. 37 @ <0.5 ac each	Landing sites TBD in 2009, est. up to 74, though about half will be located within other staging areas.
Source lines	Unknown	Some source points will require moving following final hazards survey in 2009.
Source lines	Ca. 10,000 linear feet	Located in two parcels totaling ca. 160 acres within but not covered by SWCA 2008 block inventory.
Various facilities	Est. 40-60 raptor nests will warrant NSOs in 2009	Quantity/location unknown; in 2008 approx. 50 nests would have required NSOs.
Buggy access routes	Ca. 3500 linear feet	Includes buggy access routes not inventoried during the 2008 field season. May include additional buggy access routes determined necessary in 2009.

In 2008, 168 mini-staging areas were identified to MAC for inventory and most were inventoried in 2008 or found to be within previously inventoried areas or found to be on disturbed ground. Just under 40 had not been inventoried at the time of close of the 2008 field season. Some of these are known to be in previously surveyed areas (other than that covered by SWCA in their 2008 block survey). In 2009, MAC will confirm the adequacy of the previous surveys with BLM, and staging areas within acceptable previous inventory areas will require no further work (aside from staying out of site buffers, if present). Some of the remaining staging areas may be found to be on disturbed ground (well pads, pipeline construction corridors); those will require no further work. The remaining staging areas that do require inventory will be inventoried.

XOM proposes a 2D seismic program to run concurrent with the 3D program. One 2D source line has been inventoried during the 2008 field season. A second 2D source line (T-002)

is newly proposed, as are 21 LVL points (drill holes where both a charge, and a geophone, are placed). The T-002 source line is located along developed gas field roads, the majority of which are covered by previous inventory. However, about 3300 linear feet appears to be outside of any previous inventory area and will need to be inventoried in 2009. At this time, 20 of the LVL locations are in areas that have been covered by previous inventory and require no further work. The 21st is presently located within a site buffer and will be moved. If the new location requires inventory, that will happen in 2009.

Helicopters will be a critical part of the seismic program and will be used to move equipment and supplies, as well as personnel, in and out of parts of the project area where ground access is not feasible or not efficient. Seventy-four helicopter safe landing zones are currently proposed, though specific locations have not been identified for all yet. Many will be on staging areas. All helicopter safe landing zones that have not been otherwise covered by inventory will be inventoried in 2009.

About 10,000 feet of source lines established in 2008 have not been inventoried. These are located in two parcels totaling about 160 acres along Ryan Gulch. These areas were within SWCA's large block inventory that covers most of the western part of the XOM project area, but were excluded from that survey. These will need to be inventoried in 2009.

MAC also anticipates additional new source line inventory for source points that must be moved due to the raptor nest NSOs that will be defined after May 15, and for source points that must be moved for facilities newly constructed since the close of 2008 field work. These new facilities (unrelated to the seismic project) might include new well pads, roads or pipelines, and will be identified during the final hazards survey prior to the start of seismic work in 2009.

The identification of raptor nest NSOs, in addition to causing the need to move source points, may also result in the need to move buggy access routes, staging areas, helicopter safe landing zones, or other project work spaces or facilities. Any of these may require new inventory if not located on previous inventoried or previously disturbed ground.

Finally, a few buggy access routes did not receive inventory coverage before the close of field work in 2008. MAC also anticipates that some new or altered routes may be defined in 2009 once the geophysical company arrives on-project. There may also be new routes necessitated by a switch in source from heliportable drill to buggy when the final source point layout and hazards survey occurs in 2009 prior to the start of the seismic field work.

2009 METHODOLOGY

MAC will follow standard methodologies for field work, including files searches, followed by pedestrian inventory where necessary. Sites will be identified and recorded according to OAHP and BLM standards. Avoidance buffers will be established around all sites and those buffers will be flagged for recognition by the seismic crews and project inspectors.

MAC proposes a deviation from the standard reporting process for the project in order to avoid unnecessary delay to the seismic operations since it is known that a substantial portion of next season's cultural resource inventory work will have to occur as the project gets underway and will continue potentially through the duration of the project.

Files Searches

MAC will re-run the Compass files search for the project. This will happen shortly before the start of field. Results will be compared to the search run for the 2008 field work. MAC will also request new site and survey GIS data from OAHP. The site and survey records at the BLM White River Field Office will also be checked for new sites and surveys recorded and reported since mid-2008 when those records were checked originally for the project. Information on new sites and surveys will be incorporated into MAC's current working GIS files for the project. New sites will be buffered appropriately and that information will be shared with XOM immediately so that they can quickly take appropriate steps to move any facilities or activities out of these avoidance areas.

Field Inventory

Two phases of field inventory are anticipated. The first will involve all areas now known to need inventory, and will begin as soon as field conditions allow. The second will involve inventory required for changes to the project footprint occurring at or after project start-up and after the raptor NSOs are established in May.

Field inventory will follow methods used during the 2008 field work. BLM and OAHP guidelines will be followed for transect intervals and site and isolated find definition. All sites and isolated finds will be recorded on OAHP Colorado Cultural Resource Inventory forms.

Moved source points, where arranged in lines, will be covered by a linear inventory 100 feet wide, extending to 50 feet either side of a line defined by the actual source points. Isolated or single source points will be covered with a 50 foot radius inventory centered on the source point. Buggy access routes and the 2D T-002 source line will be covered by a 100 foot inventory corridor centered on the flagged route or line. Staging areas and helicopter safe landing zones (and any other block areas) will be covered by block inventory and include a 100 foot buffer around the area proposed for use.

Avoidance Buffers and Flagging

All newly discovered sites will be subject to the same avoidance stipulations as defined during the 2008 inventory. These are as follows: All sites, regardless of type and eligibility (and with the exception of some historic roads noted below), will be avoided. Source lines will avoid non-structural sites by 100 feet. Source lines will avoid sites that have structural remains (such as cabins, brush fences or wickiups) or that contain rock art or rock shelters, by 300 feet. Historic roads that have been upgraded to modern gas field or county roads do not need to be avoided by any activity. The avoidance requirements placed on source lines will also apply to all other project activities with the exception of receiver lines. Receiver lines will avoid all sites by 100 feet with the exception of historic brush fences. There is no receiver line avoidance buffer for brush fences, but there are specific stipulations for extending receiver lines across these fences. Receiver lines may be placed across or run under historic brush fences, but the lines must be carried across or under the fence by hand and without dragging across elements of the fence. Vehicles may not cross brush fences, and all pedestrian traffic must find a gap in the fence to cross. Climbing on any parts of any of the fence is not allowed.

Avoidance areas will be flagged prior to entry into the area by seismic crews. Two different flagging schemes will be required to accommodate the two different avoidance buffer widths for receiver and source lines at certain types of sites. MAC will work with XOM to set an agreed-upon flagging scheme. Following all seismic work activity in given areas, MAC will return and remove all cultural resource avoidance area flagging.

Granting Permission to Proceed

The key to this work plan is the provision to allow XOM to proceed with seismic work quickly after MAC crews have completed inventory and flagged all sites (if present) for avoidance and BLM must approve this strategy. Once new inventory is complete and sites, if present, flagged for avoidance, MAC will communicate with XOM and the third party project monitor that seismic work in that area can proceed. If sites are found that cannot be adequately avoided by the moved work space, activity or facility, MAC will inform XOM that another move is required, or the proposed work space or activity must be dropped from consideration. Avoidance of all cultural resources, with appropriate buffers, is required and XOM will be told not to proceed in that area or with that activity if avoidance cannot be accomplished.

Monitoring

MAC anticipates that the BLM will impose cultural resource monitoring stipulations on some of the seismic activities in some areas. MAC will provide archaeologists to monitor as needed based on BLM stipulations and will maintain an on-call capability at all times for the project, whereby an archaeologist, if not already present in the project area, can be at the project later in the same day, or no later than the next morning if contacted late in the day.

All monitoring efforts will be closely coordinated with XOM, the geophysical company, and the project's third party monitors to insure safety of personnel and to make every effort to avoid delaying ongoing work on the project.

If monitoring results in the discovery of impacts to sites or encroachment into avoidance areas, the monitoring archaeologist will take three steps. First, the archaeologist will immediately contact the supervisor of the crew being monitored and inform them that the crew is entering into an area prohibited by BLM regulations and project stipulations and will work with the crew to correct the error. This will be conducted in a non-confrontational manner; MAC's goal in monitoring is to assist XOM and the geophysical company in maintaining compliance with the regulations and stipulations covering the project.

Second, MAC will record what happened and inform the project third party monitor of the incident. This will occur as soon as is reasonably feasible (given location, cell phone service availability, etc.) but within the same day. Third, and at this same time, MAC will insure that the BLM is notified, recognizing that there will be a mechanism in place for communication between the third party monitor and BLM about all project activities. MAC will coordinate with that process.

Reporting and Agency Coordination

MAC proposes a modified reporting scheme for the project to allow for minimization of project delays when work spaces, facilities and activities are changed or moved (most notably

following the establishment of the raptor nest NSOs). A new project-wide files search will have been run prior to commencement of seismic work. MAC will also begin inventory of areas now known to need coverage as soon as weather and surface conditions allow next spring. Once inventory begins, MAC proposes to provide short summary reports of ongoing work to the BLM every two weeks (or at a different interval specified by BLM). Reports will be submitted no later than the Wednesday following the end of the reported two-week interval. These reports will include a tabular listing of new inventory areas including a description of the facility inventoried, summary of results, and maps showing the location of the inventory and any resources found including a description of how avoidance of those resources will be accomplished. If monitoring occurred during the reported interval, that will also be summarized. These reports will be submitted electronically to the BLM via e-mail, in .pdf format.

At the end of the project, MAC will prepare a full Class III inventory report of all work from the 2009 field season. This will be prepared to OAHF and BLM standards and include all site documentation.

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