Appendix C – General Monitoring Plan

GUIDELINES FOR PROJECT IMPLEMENTATION

The BLM will consider appropriate methods as described by the Council on Environmental Quality (definition below) to avoid, minimize, rectify and reduce impacts when implementing projects consistent with law and agency policy.

- **Avoidance** is defined as those measures that result in a potential impact not occurring from the outset by not taking a certain action or parts of an action. The RMP alternatives identify a range of potential avoidance measures. Examples of avoidance measures are withdrawn areas, closures, and exclusion areas.
- **Minimization** occurs through limiting the degree or magnitude of the action and its implementation. The RMP alternatives identify multiple potential minimization options for a variety of projects and land uses. Examples of minimization are facility placement, timing of activities, facility design, and interim reclamation.
- **Rectification** is the repairing, rehabilitating, or restoring of the affected environment. This approach is more action-specific. An example would be the reclamation of the abandoned quarries.
- **Reduction** of impacts involves preservation and maintenance operations during the life of the proposed project to be mitigated. This approach is more design-specific. An example might be a phased development and reclamation project design or a similar approach to a related impact on the landscape.

The RMPA prioritizes the avoidance of impacts, followed by minimization techniques, which generally include rectification and reduction.

ADAPTIVE MANAGEMENT

The RMP will be implemented using adaptive management processes. Under adaptive management, decisions, plans, and proposed activities are treated as working hypotheses rather than final solutions. For the purposes of this plan, adaptive management is a process that tests, evaluates, and adjusts the assumptions, objectives, actions, and subsequent on-the-ground results from the implementation of RMP decisions. Used effectively, adaptive management provides resource managers with the flexibility to respond quickly and effectively to changing resource and user conditions. Changes in management actions are based on site-specific resource monitoring and evaluation. Adaptive management is not static but instead is an iterative process of monitoring, evaluation and adjustment. General monitoring objectives are identified below. Specific objectives will be determined as part of the implementation plan after baseline monitoring has been completed.

The intent of adaptive management is to allow future management actions, as applied through resource management guidelines, to fully incorporate the knowledge and experience gained up to that time from monitoring, evaluation, and experimentation. However, adaptive management does not relieve managers of their responsibilities to consider the effects to the human environment of actions proposed under the guise of adaptive management. Managers would still be required to comply with the provisions of NEPA and other applicable laws, regulations, and policies before such actions are applied. Certain actions proposed as adaptive management techniques may require an amendment to the RMP before they could be implemented.

The adaptive management process is a continuous cycle through the following four phases:

- **Planning:** Management guidelines, actions, and objectives are developed. Monitoring techniques and adjustment thresholds are designed based upon available information, past monitoring information, and current scientific information.
- **Implementation:** Objectives, guidelines, actions, and constraints developed and identified during planning processes at all scales are applied as on-the-ground management.
- **Monitoring:** Monitoring includes all efforts to document the current state of implementation, the resulting resource conditions as measured through indicators, and the effectiveness of the implementation. Monitoring is derived from existing data and techniques, is outcome based, technically feasible, affordable, and operationally attainable. Two types of monitoring occur:
  - o Implementation monitoring: Determines whether the decisions and proposed actions developed during planning are actually being implemented.
  - o Effectiveness monitoring: Determines whether implemented decisions and actions have changed resource condition indicators. If so, determines whether the changes in the indicators are consistent with meeting the objectives.

When additional monitoring is required to fill information gaps, standardized monitoring techniques will be used where available before new techniques are developed. The BLM staff will be responsible for developing monitoring and adaptive management protocols and ensuring that documentation is sufficient to facilitate feedback into the adaptive management process.

- **Modification Evaluation:** The part of the process through which specific objectives, actions, monitoring thresholds, and even resource condition indicators may be modified to better meet the goals of the plan.
- **Timing Evaluation:** Determines the need for and time frames during which changes to planning, implementation, and monitoring should occur. The BLM staff will also be responsible for ensuring that monitoring results and other new information is compiled and evaluated in accordance with the two evaluation phases.

Monitoring

Monitoring will determine whether or not planning objectives are being met and ensure that BLM meets the commitments made in the plan. The information developed through monitoring will feed the evaluation process that may alter decisions or the timing of decisions, change implementation or maintain current management direction. The key step in developing a monitoring strategy is to define the questions that must be answered to evaluate the attainment of broad-scale management goals and objectives in the RMP. These questions will be used to focus monitoring on appropriate issues and avoid gathering irrelevant information. Focused monitoring also helps to keep costs within agency budgets. The first step is to select key monitoring elements and indicators that can be effectively sampled and can provide desired data at a reasonable cost. An example of such indicators is provided in the table below. A standard set of core data elements will be collected. Core data, including data necessary to evaluate achievement of the applicable Land Health Standards, are the minimum set of variables to be collected at all scales. Photomonitoring points will be established prior to project activities to determine where additional data should be collected.

Standardized measurement and reporting protocols will be developed in an Implementation Level Monitoring Plan because the need for consistency is essential. To the extent practicable, the Assessment, Inventory, and Monitoring (AIM) program will be incorporated into the implementation level monitoring plans (Toevs et al. 2015) and relevant data will be collected such that it is consistent with AIM methodology

BLM IM 2016-139. Where possible, monitoring protocols will be designed to integrate existing monitoring efforts and will address multiple questions. Also, the design will have the flexibility to add data elements required to answer new questions raised during subsequent site-specific planning. Determining the specific monitoring approach for any question requires knowledge of detailed information on existing conditions. For example, trend assessment first requires gathering baseline or status information. Just a few of the projects that have occurred or will be anticipated during implementation of the RMP include: Landscape scale vegetation assessments; overviews for paleontology, history and archaeology; planning area-wide surveys for special status species; and visitor use inventories. Data from these projects will be vital to monitoring trends. A monitoring strategy must also identify the techniques needed to acquire a complete picture of the structure and pattern of a resource (i.e., remote sensing, sample-based studies, modeling).

A monitoring system requires the development and use of indicators and thresholds based on guidelines. Thresholds are measurable indicators of when a change in management needs to be made. For example, the specific amount of resource impacts that would be tolerated before a trail would be closed to public use and rehabilitated is a threshold. The development of indicators and thresholds will occur during the early part of plan implementation. Until these measures are in place, evaluations may not be completed. Indicators and thresholds will be periodically evaluated to assure that they remain appropriate for the Planning Area.

Monitoring Plan Indicators

Major Uses and Resources	Indicators to be Monitored
Land Health	- Ground Cover by Type and Plant Species - Evidence of Soil Erosion, Loss of Soil Depth - Riparian Functional Condition - Water Quality - Species of Concern Monitoring
Recreational Use	- Trail Condition - Numbers of Recreational Conflicts - Numbers of Search and Rescue Incidents - Erosion/Resource Damage Associated with Trails – See Land Health - Occurrences of New Trails - Evidence of Human Waste and Garbage - Vandalism - Area of Impact – See Land Health, Fish & Wildlife, & Spec. Stat. Sp. - SRP Stipulation Requirements - Visitor Experience
Cultural Resources	- Evidence of Looting/Vandalism

Major Uses and Resources	Indicators to be Monitored
	- Changes in Site Integrity - Unauthorized Use of Historical Facilities
Paleontological	- Evidence of Looting/Vandalism - Changes in Site Integrity
Vegetation	- See Land Health Indicators
Livestock Grazing	- See Land Health Indicators -Residual Dry Matter
Wildland Fire	- Fuel Characteristics - Burn Area Recovery - Rehabilitation Success
Fish & Wildlife	- Population Numbers/Trends - Impacts to Habitat – See Land Health Indicators
Special Status Species	- See Land Health Indicators - See Fish & Wildlife - See Water Resources
Visual Resources	- Changes in Visual Quality - Changes to Visual Intrusions/Contrast - Uses comply with VRM Class
Water Resources	- See Land Health Indicators - Flows and Rates for Anadromous Fish
Soils	- See Land Health Indicators
Public Information/ Visitor Services	- Brochure Distribution - Adequacy of Information - Visitor Satisfaction - Demand for Facilities - Numbers of Search and Rescue Incidents - Numbers of Law Enforcement Incidents

RMP EVALUATION

Evaluations are the mechanism that reviews implementation of the RMP at several levels to see whether management goals and objectives are being met and determine whether management direction is sound. Evaluation examines management actions to determine whether they are consistent with thresholds established for the achievement of the objectives. If they are not, evaluation identifies the reasons. The conclusions are then used to make recommendations on whether to continue current management guidelines, to make changes in management practices to meet plan goals and objectives, or to amend the plan objectives or decision to better meet the capabilities of the land and the intent of the legislation.

Reviews of the evaluation process will be periodically scheduled to ensure that:

- Monitoring data is gathered sufficiently in advance to be used effectively in the evaluation process.
- Evaluations are conducted at intervals that allow for adjustments to be made in management direction before crises develop. RMP Evaluations made too frequently will not detect changes in ecosystems because cost-effective monitoring systems cannot detect changes at this scale. On the other hand, if plan evaluations are delayed for too long or are not conducted at all, irreversible changes may take place without detection. RMP evaluations will be conducted every five years to assess the progress toward achieving broad-scale objectives and desired future conditions.

The evaluation process will review progress toward RMP implementation as well as new, scientific research, monitoring data, and other information on changed resource or social circumstances that that needs to be considered in future management. The evaluation may conclude:

- Management actions are moving resources toward the desired objectives. In this case, management actions are affirmed and may not need to be adjusted.
- Further research needs to be initiated or that actions must be adjusted to more efficiently achieve objectives of the Plan. If new information or research demonstrates better ways to achieve plan objectives, changes in activity planning and project implementation may be made.
- The objectives should be altered based on the new information. If the new information indicates that plan objectives should be reconsidered, a plan amendment may be required that will reexamine desired future conditions and ways to reach those conditions.