

Forest Plan Monitoring and Evaluation Report

1992-2000

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Manti-La Sal National Forest

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INTRODUCTION

Background

The Record of Decision on the Environmental Impact Statement for the Manti-La Sal National Forest Land and Resource Management Plan (Forest Plan) was signed in November of 1986. Regulations (36 CFR 219.11 (d)) require the monitoring of Forest Plan implementation. This is accomplished on a sample basis. The results may demonstrate needed changes in management direction (36 CFR 219.12 (k)) or in the way direction is carried out on the ground. Forest-wide and site specific monitoring elements are listed in the Forest Plan, Table IV-1 on pages IV-3 to IV-13.

Following the initial five years of Forest Plan implementation the Forest conducted a broad review of plan direction, guidance, objectives and desired future condition. Results of the review are summarized in the 1987-1991 monitoring and evaluation report.

This report builds upon this foundation by presenting monitoring data gathered for each monitoring item listed in Table IV-1 since 1991 and then evaluating trends since 1987. Conclusions and recommended actions are also presented in this report by monitoring item.

Narratives in this report were organized by functional resource area followed by specific items to be monitored as displayed in Table IV-1. Each monitoring item describes the purpose of the monitoring item followed by monitoring methods, monitoring results, a general discussion, synopsis, recommended action(s), and responsibility.

A list of Forest Plan amendments to date is also presented.

Conclusions

Most monitoring identified in the Plan has occurred. Monitoring of individual management activities for compliance with Plan standards and guidelines has been good. Specific areas of concern that were identified as a result of evaluation of the monitoring data are discussed under individual resources. Activity schedules identified in Appendix A of the Plan have been implemented to varying degrees. In some cases, the schedules have been completed and in other cases, rates of implementation have varied considerably from the schedule.

Recommendations

- The objectives listed in Table III-1 on page III-6 of the Forest Plan need to be reviewed and compared against actual accomplishments. This should be accomplished and reported in next year's report. Each of the objectives needs to be reviewed and reaffirmed, changed, extended, or deleted as appropriate. The appropriate time to consider this work is forest plan revision.
- The activities listed in Appendix A of the Forest Plan need to be reviewed and compared against actual accomplishments. This should be accomplished and reported in next year's report. Each of the schedules in Appendix A needs to be reviewed and reaffirmed, changed, extended, or deleted. The appropriate time to consider this work is forest plan revision.

- The tie between monitoring and Forest Plan Objectives and Goals/Desired Future Condition needs to be strengthened. These ties should be better reflected in next year's report. Revision of the forest plan will provide an opportunity to address this issue also.
- There is also a need to increase monitoring and evaluation by groups of specialists several years after project implementation, to assess how the project activity contributed to meeting Forest Plan objectives and moving toward the goals and desired future conditions for the Forest.
- Priorities also need to be established for monitoring elements to ensure that important items are accomplished with available funding.

RECREATION RESOURCE

Developed Site Condition

The purpose of this monitoring is to verify predicted conditions of developed facilities. Monitoring will be conducted in developed recreation sites.

Methods - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and INFRA inventories, conducts routine site inspections, and reviews operation and maintenance plans. The electronic RIM database was discontinued in 1986. It was replaced by the INFRA and MM databases in the late 1990's, which are still under development and will later be merged into a single database. Reporting describes site condition in the context of "Key Measures and Standards" and quantifies the degree to which each is being met. Reporting also identifies, by constructed feature, annual maintenance, deferred maintenance, and capital improvement needs. Data is maintained annually.

Since RIM was discontinued, an average "Reference Percentage" (MM) of ten "Critical National Standards" will be used as a measure of overall site condition. According to the Forest Plan, a RIM Condition Class below 2 is considered "variation which would cause further evaluation and/or change in management direction." RIM Condition Class 2 is roughly equivalent to an average MM Reference Percentage of National Critical Standards of 21-30%. Therefore, sites with a Reference Percentage of greater than 30% are cause for concern. Perhaps more importantly, these sites also fail to meet Critical National Standards.

Results - The Forest has recently completed inventories and condition surveys for most developed sites, including: campgrounds, picnic areas, trailheads, interpretive sites, and angler parking areas. The database will be completed and refined in FY 2001-02. Draft data suggests that there has little net change in the collective condition of developed sites. There are proportionately more sites above Class 2 and none below Class 3. This is an improvement over the previous period. However, 52% of the recorded sites (33) are in Class 2 and another 16% (10) are in Class 3. These sites fail to meet Critical National Standards.

RIM CONDITON CLASS	MM REFERENCE %	DEVELOPED SITES
CLASS 1, SATISFACTORY	0-20%	20
CLASS 2, SUBSTANDARD	21-30%	33
CLASS 3, HEAVY MAINT	31-50%	10
CLASS 4, REPLACEMENT	>50%	0

Discussion - As resources are made available to address deferred maintenance and capital improvement needs, particularly regarding issues of public health and safety and accessibility, developed site conditions are expected to continue to improve throughout the next monitoring period. At the current rate of improvement, all developed sites are expected to be above Class 3 by the end of the next monitoring period. However, a continued and concerted emphasis on monitoring and improvement will be necessary to ensure that all developed sites meet at least Critical National Standards by the end of this period.

Synopsis - There are no longer any sites below Condition Class 3 and there are proportionately more sites above Class 2, which is an improvement over the previous monitoring period. However, 68% of all recorded

sites are in Class 2 or 3 and require improvement to meet Critical National Standards. Furthermore, as some sites have improved from lower classes, others have deteriorated from higher classes. This reflects the need to maintain improvements once they have been made, which resources may not permit. Heavy maintenance and reconstruction projects scheduled during the next few years will continue to shift some sites to higher Condition Classes. Other sites, meanwhile, may continue to deteriorate until they become a higher priority or resources are made available for improvement.

Action - Continue the maintenance of all sites to prevent further deterioration, to the degree possible. Aggressively address deferred maintenance needs, particularly in those facilities in Condition Class 3, with an emphasis on meeting Critical National Standards. Seek innovative ways to meet all Key Measures and Standards at all sites.

Responsibility - Forest and Ranger District Recreation Staffs

Vegetative Management

The purpose of this monitoring is to predict hazardous conditions and evaluate aesthetic conditions at recreation sites and areas. Monitoring will be conducted in developed recreation sites and concentrated use areas (CUA) of general forest areas (GFA).

Methods - The District staff person in charge of recreation compiles field data from site and area inventories and condition surveys, conducts routine site and area inspections, and takes photographs from established photo points. The Code-A-Site campsite inspection program has been discontinued and has not yet been replaced. Field data is currently collected using a form appropriate to the purpose. Hazard trees are identified by visual inspection and increment boring. Aesthetic conditions are described in qualitative terms relative to other locations. Reporting identifies the presence of hazard trees and describes aesthetic conditions in the context of vegetative cover. Data is maintained every three to five years.

Results - Hazard tree evaluations were conducted annually in developed recreation sites and remediation measures were implemented almost immediately. Similar remediation measures have been implemented in CUA's where hazards have been identified, though not as aggressively. Additional remediation is planned for the next monitoring period.

There has been an overall improvement of aesthetic conditions in developed recreation sites. However, there has been a general deterioration of aesthetic conditions in CUA's during this monitoring period. Inspections have been completed and several dispersed campsites were identified as having extreme impact. These sites have either been closed and successfully rehabilitated or developed, as appropriate. Aesthetic conditions have since improved at each of these sites. Additional dispersed campsites are now being considered for closure or development. In many other campsites, methods of mitigating impacts are being aggressively devised and implemented. Twelve-Mile Canyon contains several popular CUA's and is heavily impacted, as are CUA's located on parcels of State land recently added to the Forest. These locations require condition surveys and analysis, planned for FY 2001-02.

Discussion - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in the size and number of CUA's. This growth is particularly pronounced in the use of ATV's, and noticeable impacts to vegetation (loss) in CUA's are growing

proportionately. Since this growth is expected to continue, there is a high potential for further impacts to aesthetic conditions in dispersed areas and a resulting loss of dispersed camping opportunities, if these impacts cannot be mitigated. Maintaining or improving aesthetic conditions in CUA's under increased use and with inadequate resources may prove to be a challenge, and the degree to which this can be accomplished should be monitored closely during the following monitoring period.

Synopsis – Hazard tree evaluations and remediation measures have been completed annually in developed recreation sites and in CUA's where hazards have been identified. Though aesthetic conditions have generally improved in developed recreation sites, they have generally deteriorated in CUA's during this monitoring period. However, several dispersed campsites with extreme impacts have been closed or developed and impacts to many other areas have been successfully mitigated. Aesthetic conditions in these areas have since improved. Condition surveys continue to be completed, but a greater emphasis on monitoring and mitigation will be necessary to address increasing use and associated impacts to visual quality.

Action - Continue hazard tree evaluation and remediation in developed recreation sites and CUA's, where hazards are identified. Maintain or improve aesthetic conditions in developed recreation sites; re-establish vegetation where aesthetic conditions have been adversely affected. Survey and assess aesthetic conditions in CUA's in Twelve-Mile Canyon and on State parcels recently added to the Forest, and identify sites to be closed or developed. Continue to monitor all other inventoried CUA's. Develop methods to maintain or reduce vegetation impacts to protect visual quality and preserve dispersed camping opportunities.

Responsibility – Forest and Ranger District Recreation Staffs

Developed Site Use - Public Sector

The purpose of this monitoring is to verify that the amount of use and degree of social interaction in developed sites is within the range specified for the Recreation Opportunity Spectrum (ROS) Class. Monitoring will be conducted in developed sites.

Methods - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and conducts routine site inspections. The electronic RIM database was discontinued in 1986. Sampling methods include traffic counters, field observation, and concessionaire use reports. Results of the National Recreation Use Monitoring (NRUM) Program will also be added to the monitoring data in FY 2002. ROS social setting criteria are applied to the data. Reporting describes use and identifies the MM Development Scale of each site in the context of "Key measures and Standards" and quantifies the degree to which each is being met. Development Scale approximately correlates to ROS Class as shown in the table below (2000 MM User Guide). Data is maintained annually.

ROS CLASS	DEVELOPMENT SCALE
URBAN	5
RURAL	4
ROADED NATURAL	3
SEMI-PRIMITIVE	2
PRIMITIVE	1

Results – Developed sites have largely been managed in a manner consistent with ROS Classes. However, some sites receive more or less use than design capacity. Consequently, some sites may have experienced slight shifts to more or less primitive social settings, but these shifts have not likely affected the social setting by as much as 10%. Unfortunately, MM data is incomplete, from which Development Scale is drawn, but the table below delineates the percentage of each zone’s developed sites within each Development Scale, according to data currently available. The MM database will be completed and refined in FY 2001-02.

DEVELOPMENT SCALE	NORTH ZONE (48)	SOUTH ZONE (14)	FOREST TOTAL (62)
5	0%	0%	0%
4	21%	7%	18%
3	67%	57%	65%
2	13%	36%	18%
1	0%	0%	0%

Discussion – The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in the use of many developed sites. Compounded by Utah family and group sizes that are generally much larger than average, site occupancies often exceed design capacity, particularly in campgrounds and picnic areas. This may have shifted some sites from more primitive to less primitive social settings, but this shift is generally limited to weekends and holidays. A few other sites receive less use than design capacity. Nizhoni Campground and Ferron Canyon Picnic Area, for example, are not well used, despite being highly developed. The reasons for this are uncertain. Sites such as these may have shifted from less primitive to more primitive social settings, but this shift is generally limited to weekdays and shoulder seasons. These shifts should be assessed and monitored so that appropriate developed site ROS Classes may be maintained.

Synopsis – Developed sites have largely been managed in a manner consistent with ROS Classes. Rapidly increasing use in some sites, little use in other sites, and large average party sizes may cumulatively threaten to change ROS social settings, however, and the degree to which this may occur or may have already occurred should be assessed. This is unlikely to affect the social setting by as much as 10%. Nevertheless, the ROS and Development Scale should be monitored and mitigation methods should be developed.

Action - Improve the accuracy of use reporting at some sites, such as trailheads and interpretive sites, which continues to be based largely on crude estimates and is often derived inconsistently between Districts. Continue to manage developed sites according to designed Development Scale and monitor social settings for ROS Class compliance. Assess the degree to which changes in use and large party sizes may have cumulatively affected the ROS. Develop methods to mitigate undesirable ROS shifts, if such shifts are identified.

Responsibility - Forest and Ranger District Recreation Staffs

Developed Site Use – Private Sector

The purpose of this monitoring is to verify predicted conditions of private developed facilities. Monitoring will be conducted in developed sites and management areas.

Methods - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and INFRA inventories, conducts routine site inspections, and reviews operation and maintenance plans. The electronic RIM database was discontinued in 1986. It was replaced by the INFRA and MM databases in the late 1990's, which are still under development and will later be merged into a single database. The special-use permit component of the MM database has not yet been developed, but reporting will describe site condition in the context of "Key Measures and Standards" and quantify the degree to which each is being met. "Critical National Standards" will be particularly important in future monitoring. Reporting will also describe occupancy. Data is maintained annually.

Results - The Forest has monitored private developed facilities and taken appropriate actions to ensure compliance with permits, laws, policies, and standards. However, recreation residences are overdue for site inspections and require additional permit enforcement. The Skyhaven Resort at Ferron Reservoir has ceased operations, been sold, and is now attempting to obtain another permit, but they have not yet satisfied the application requirements and financial viability is in question. Despite attempts to reopen it, the Blue Mountain Ski Area remains inoperable as well. No private developed sites have been reported vacant.

Discussion – Increasing workloads and large energy development projects are expected to make it more difficult to effectively monitor private developed sites. Additional personnel and/or increased efficiencies will be necessary to achieve Critical National Standards, once they have been finalized, and to maintain adequate monitoring. Furthermore, demand for private developed sites (SUP's) is increasing and will have to be addressed.

Synopsis - The Forest has monitored private developed facilities and taken appropriate actions to ensure compliance with permits, laws, policies, and standards. Due to increasing workloads, however, recreation residences have been somewhat neglected and require site inspections and permit enforcement. This will be emphasized in FY 2002. The special-use component of the MM database will support and facilitate future monitoring and reporting.

Action - Continue monitoring use, occupancy, and condition of private developed sites. Inspect recreation residences and take appropriate management actions, as necessary, to obtain compliance with permits, laws, policies, and standards. Seek ways to enhance Forest monitoring capabilities, particularly regarding recreation residences.

Responsibility - Forest Recreation, Lands, and Engineering and Ranger District Recreation Staffs

Dispersed Campsite Condition

The purpose of this monitoring is to verify predicted conditions of dispersed campsites. Monitoring will be conducted in dispersed campsites.

Methods - The District staff person in charge of recreation compiles field data from site inventories and condition surveys and conducts routine site inspections. The Code-A-Site campsite inspection program has been discontinued and has not yet been replaced. Field data is currently collected using a form appropriate to the purpose. Reporting typically describes campsite condition in the contexts of soil and vegetation, infrastructure (if any), water or adjacent riparian or wetland resources, and other attributes. Reporting also identifies the level of impact (light-extreme). Campsites that cannot be maintained in impact levels light-heavy and those identified as "extreme" will be closed. At least 10 % of the data is maintained annually.

Results – There has been a general deterioration of dispersed campsites during this monitoring period. Campsite inspections have been completed and several sites were identified as having extreme impact. These sites have either been closed and successfully rehabilitated or developed, as appropriate. Most of these sites are located in Huntington Canyon. Additional campsites are currently being considered for closure or development. In many other campsites, methods of mitigating impacts are being aggressively devised and implemented. Twelve-Mile Canyon has become a very popular area for dispersed camping and is heavily impacted, as are areas of the parcels of State land recently added to the Forest. Campsites in these locations require additional condition surveys and analysis, planned for FY 2001-02.

Discussion - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in dispersed camping. This growth is particularly pronounced in the use of ATV's, and the impacts to dispersed campsites are growing proportionately. Since this growth is expected to continue, there is a high potential for increased impacts to dispersed campsites and a resulting loss of dispersed camping opportunities, if these impacts cannot be mitigated. Maintaining or reducing impact levels in campsites under increased use and with inadequate resources may prove to be a challenge, and the degree to which this can be accomplished should be monitored closely.

Synopsis - There has been a general deterioration of dispersed campsites during this monitoring period. However, several campsites with extreme impacts have been closed or developed and impacts to many others have been successfully mitigated. Inventories and condition surveys continue to be completed and maintained, but a greater emphasis on monitoring and mitigation will be necessary to address increasing use and impacts.

Action - Inventory and survey dispersed campsites in Twelve-Mile Canyon and on State parcels recently added to the Forest, and identify sites to be closed or developed. Continue to closely monitor all other inventoried campsites. Develop methods to maintain or reduce current impact levels to preserve existing dispersed camping opportunities.

Responsibility – Forest and Ranger District Recreation Staffs

Dispersed Area Use

The purpose of this monitoring is to verify that the amount of use and degree of social interaction in dispersed areas is within the range specified for the Recreation Opportunity Spectrum (ROS) Class. Monitoring will be conducted in dispersed areas.

Methods - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and conducts routine area inspections. The electronic RIM database was discontinued in

1986. Sampling methods include traffic counters and field observation. Results of the National Recreation Use Monitoring (NRUM) Program will also be added to the monitoring data in FY 2002. ROS social setting criteria are applied to the data. Reporting describes use and delineates the relative percentages of each dispersed area (GFA) within each ROS Class in the context of "Key measures and Standards" and quantifies the degree to which each is being met. Data is maintained annually.

Results - Dispersed areas have largely been managed in a manner consistent with ROS Classes. However, high use and impacts to natural resources in some "concentrated use areas" have resulted in both site closures and infrastructure development, as appropriate. Consequently, some areas have experienced highly localized, site-specific shifts to more or less primitive social settings, perhaps affecting some dispersed areas by more than 10%. Unfortunately, MM data is incomplete, from which ROS Class is now drawn, but the table below delineates the average percentage of each zone's GFA's within each ROS Class, according to data currently available. The MM database will be completed and refined in FY 2001-02.

ROS CLASS	NORTH ZONE (11)	SOUTH ZONE (0)	FOREST TOTAL (11)
URBAN	0%	NO DATA	0%
RURAL	0%	NO DATA	0%
ROADED NATURAL	88%	NO DATA	88%
SEMI-PRIM MOTOR	4%	NO DATA	4%
SEMI-PRIM NON	8%	NO DATA	8%
PRIMITIVE	0%	NO DATA	0%

Discussion - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in dispersed area use. Since this growth is expected to continue, there is a high potential for ROS "creep" from more primitive to less primitive social settings. This may present challenges in maintaining the greatest possible range of ROS opportunities and will need to be monitored closely.

Synopsis - Dispersed areas have largely been managed in a manner consistent with ROS Classes. Site closures, site developments, and rapidly increasing use may cumulatively threaten to change ROS social settings, however, and the degree to which this may occur or may have already occurred should be assessed. Under the circumstances, the ROS should be closely monitored and mitigation methods should be developed.

Action - Improve the accuracy of use reporting, which continues to be based largely on crude estimates and is often derived inconsistently between Districts. Continue to closely monitor social settings for ROS Class compliance. Assess the degree to which recent site closures and infrastructure developments may have cumulatively affected the ROS. Develop methods to mitigate undesirable ROS shifts, if such shifts are identified.

Responsibility - Forest and Ranger District Recreation Staffs

Trail Condition

The purpose of this monitoring is to verify predicted conditions of developed trails. Monitoring will be conducted on developed trails used for recreation.

Methods - The District staff person in charge of recreation compiles field data from Meaningful Measures (MM) condition surveys and INFRA inventories, conducts routine trail inspections, and prepares hiking opportunity guides. Reporting describes site condition in the context of "Key Measures and Standards" and quantifies the degree to which each is being met. Reporting also identifies, by constructed feature, annual maintenance, deferred maintenance, and capital improvement needs. At least 5% of the data is maintained annually.

An average "Reference Percentage" (MM) of four "Critical National Standards" will be used as a measure of overall trail condition. A Reference Percentage of 30% is considered to be the Regional Acceptable Work Standard. Therefore, trails with a Reference Percentage of greater than 30% are cause for concern.

Results - The Forest has recently completed inventories and condition surveys for most developed trails. The database will be completed and refined in FY 2001-02. Of the 138 trails recorded, all have Reference Percentages greater than 30%. These trails fail to meet the Regional Acceptable Work Standard and Critical National Standards. However, the MM database requires refinement and the condition of many of these trails may be misrepresented. Nevertheless, there is clearly a great need to improve Forest trail conditions.

Discussion - As resources are made available to address deferred maintenance and capital improvement needs, particularly regarding issues of public health and safety, trail conditions are expected to improve throughout the next monitoring period. Recent and planned trail projects and the recruitment of a new Forest-wide trail crew will contribute to this improvement. At the current rate of improvement, most developed trails are expected to have Reference Percentages of less than 30% by the end of the next monitoring period. However, a continued and concerted emphasis on monitoring and improvement will be necessary to ensure that all developed trails meet at least Critical National Standards by the end of this period.

Synopsis - It is unclear whether or not trails have improved during the monitoring period because early data was largely anecdotal and current data needs refinement. It is clear, however, that there is a great need to improve Forest trails conditions. According to current MM data, all recorded trails (138) fail to meet the Regional Acceptable Work Standard and Critical National Standards. Recent and planned trail maintenance and reconstruction projects and the recruitment of a new Forest-wide trail crew will gradually contribute to the overall improvement of the trail system. As some trails are improved, however, others may continue to deteriorate until they become a higher priority or resources are made available for improvement.

Action - Continue the maintenance of all trails to prevent further deterioration, to the degree possible. Aggressively address deferred maintenance needs with an emphasis on meeting Critical National Standards. Seek innovative ways to meet all Key Measures and Standards on all trails. Expand partnership opportunities resulting in trail improvements.

Responsibility - Forest and Ranger District Recreation Staffs

Vehicle Travel

The purpose of this monitoring is to verify predicted conditions of general forest areas (GFA). Monitoring will be conducted on roads, trails, and GFA's.

Methods - The District staff person in charge of recreation inspects travel corridors (roads and trails) and general forest areas to determine the amount and extent of vehicle travel impacts on Forest resources and users. Reporting describes unauthorized travel routes that have been pioneered, impacts to natural resources and visual quality, and the effects of these impacts on users. A Forest roads analysis is planned for FY 2002, which will contribute further monitoring data. At least 20% of the data is maintained annually.

Results - Forest travel management has improved as a whole. Some roads and trails have been upgraded to withstand all-weather traffic and reduce vehicle impacts to adjacent areas. Road, trail, and area closures have been implemented when use violates the Travel Plan, conflicts with management goals, substantially reduces visual quality, or otherwise results in unacceptable impacts to natural resources. However, the Travel Map is out of date and does not reflect these closures or changes in permitted uses. Consequently, some users become confused or frustrated when they find that the map is not consistent with current management. This may occasionally result in further violations of the Travel Plan.

Discussion - The rapidly growing population of the nearby Wasatch Front and the increasing popularity of outdoor recreation have resulted in dramatic increases in vehicle traffic on roads and trails. This growth is particularly pronounced in the use of ATV's, and the impacts to adjacent GFA's are growing proportionately. Since this growth is expected to continue, there is a high potential for increased impacts to GFA's and a resulting loss of vehicular access, if these impacts cannot be mitigated. Enforcing the Travel Plan and managing impacts under increased use and with inadequate resources may prove to be a challenge.

Synopsis - Travel routes have been managed to minimize environmental impacts. As travel routes are gradually improved to withstand all-weather traffic and reduce pioneering, there may be less impact resulting from poor route conditions. However, rapidly increasing vehicle use, particularly ATV's, may result in a net increase in pioneering and greater impacts to natural resources and other users. Closures and restrictions have been implemented as necessary, but the Travel Map does not reflect these changes and needs revision. This should be paired with a user education program. Close monitoring will be necessary to achieve multiple resource management goals and prevent the loss of vehicular access.

Action - Continue to monitor vehicle use and Travel Plan compliance. Aggressively enforce the Travel Plan. Revise the Travel Map to reflect current management and permitted uses. Develop a user education program and improve signing. Upgrade popular travel routes for all-weather use. Prepare and implement restrictions and closures as necessary.

Responsibility - Forest and Ranger District Recreation Staffs

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CULTURAL RESOURCE

Project Compliance with Forest Direction management requirements on ground disturbing projects.

The purpose of this monitoring is to verify protection of cultural resources. Monitoring will be conducted at the project and site levels.

Methods - Forest cultural resource specialists, including District and Forest archaeologists, will monitor randomly selected projects to ensure that cultural resource protection measures recommended in inventory reports are being followed. This information will be reported annually.

Results - Forest and District archaeologists completed monitoring several projects between 1991 and 2000. Monitoring occurred both during and after project implementation, and results indicated that cultural resources had been protected from adverse effects.

Discussion - The Forest has taken a proactive stance to ensure that project managers consider effects to cultural resources. This involves an active program of early identification of cultural resource workloads in project planning; field inventory of projects; reporting and consultation with the Utah State Historic Preservation Office; meetings (including on-the-ground reviews and delineations of protective site buffer areas) between archaeologists and project administrators to coordinate protection of cultural resources; project implementation monitoring; and post-implementation monitoring of randomly selected projects.

Synopsis - No cultural resources were irreparably damaged or destroyed as a result of project implementation. Crazy Bird Rockshelter (42SV892), a National Register-eligible site, was determined to be at-risk by ground subsidence resulting from planned subsurface mining activities. A data-recovery effort was initiated in the summer of 1997 to limit adverse impacts from the proposed project. One small rockshelter experienced partial collapse of the sandstone overhang, resulting in partial damage to cultural resources. That site, and two additional others that are considered to be at-risk from ground subsidence, are being continually monitored.

Action - Project implementation appears to adequately consider cultural resources. However, the number of projects reviewed for post-project implementation is relatively small. It is suggested that approximately 1 project implemented for each broad Forest function (e.g. minerals or timber) be monitored annually.

Responsibility - Recreation Staff, Forest Archaeologist

Protection Of Significant Cultural Resource Properties

The purpose of this monitoring is to assess the condition of significant cultural resources and determine damages caused by unauthorized and/or uncontrollable agents. Monitoring will be conducted at the cultural resource site level.

Methods - Forest and District archaeologists, law enforcement personnel and other qualified specialists will conduct field reviews of selected sites deemed to be at "high risk" and compare site conditions with base level data (e.g. cultural resource site records, still and video photography). Use of Forest Law Enforcement Officer

and law enforcement personnel hired on contract and through interagency agreements to conduct routine monitoring and patrols at selected archaeological sites. Employ still-life and video photography to assess the condition of cultural resources and to provide base level data. Update existing cultural resource site records. Utilize various types of surveillance to protect significant cultural resources.

Results - This table summarizes site protection, monitoring and enhancement efforts and observed/reported cases of unauthorized damages during the previous ten-year period.

Year	Sites Monitored	Sites Enhanced	Sites Protected	Estimated Cases Of Illegal damage
1991	91	0	200	5
1992		no data available		
1993		no data available		
1994		no data available		
1995	52	2	2	2
1996	46	2	12	2
1997	24	2	8	2
1998	50	4	0	0
1999	41	3	0	0
2000	60	3	1	1

Sites Monitored: Number of archaeological sites where site conditions were recorded in a systematic way. In 1989, the Forest participated in an interagency effort to determine the types and locations of sites vulnerable to vandalism using GIS. Between 1989 and 1991, approximately 200 sites were documented through a volunteer partnership with the Sierra Club. Beginning in 1998, the site steward program, utilizing volunteers in a proactive stance geared toward site protection, has monitored over 20 sites. During this reporting period, the entry of spatial data for archaeological sites and inventory projects into a Geographic Information System (GIS), provides base-level data for continual site monitoring.

Sites Enhanced: Number of historic properties where data recovery, site stabilization or other maintenance activities occurred. During this reporting period, site stabilization/restoration efforts were undertaken for the Great Basin Research Station, Stuart and North Cottonwood ranger stations; major data recovery effort was undertaken at Crazy Bird Rockshelter (42SV896).

Sites Protected: Number of sites actually visited by law enforcement personnel for purposes of informal monitoring and/or sites placed under surveillance. Presence of law enforcement personnel on routine patrols most likely affords protection to a significant number of surrounding sites, especially in areas of high site density.

Estimated cases of illegal damage: Number of observed/documented cases of unauthorized excavation/site damage. Beginning in 1991, formal law enforcement investigations were commenced on five separate incidents of unauthorized digging. Indictments, trials and sentencing were carried out on all cases.

Discussion - The precise times of occurrence for incidents of illegal vandalism are difficult to determine. However, the ability to make this determination is increasing with improved base-level resource data that is continually being acquired through the methods mentioned above. Overall, efforts to investigate and prosecute illegal vandalism has increased since the early 1980s; much of this is probably due to heightened efforts in both

the Forest Service and other federal and state agency efforts in the arenas of public education, awareness, and involvement with cultural resources. Law enforcement, though not high profile, is believed to have significantly contributed to this decrease.

Incidents of damage by controllable natural agents, while acknowledged to occur, are more difficult to detect. Structural deterioration of prehistoric ruins, disturbance of subsurface archaeological deposits, and erosion due to the effects of wildfire, will continue on a long-term basis. Enhanced properties where data recovery or stabilization efforts were undertaken are shown in the table above.

Synopsis - Illegal vandalism to archaeological resources is being treated through a balanced program involving routine patrols, active investigation and prosecution of antiquities violations, surveillance, updating of base-level data through several media and the offering of and participation in public education, awareness and public involvement efforts with other agencies and public groups. This approach appears to be effective.

Action - Continue funding of law enforcement efforts and site steward program, and continue to upgrade surveillance equipment as needed; continue law enforcement agreements for shared services, increase efforts to fund ruins preservation, and continue to find unique ways of involving the public in protection and enhancement efforts.

Responsibility - Recreation Staff, Heritage Staff, Forest Law Enforcement Officer, and District Rangers

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VISUAL RESOURCE

Compliance With Visual Quality Objectives

The purpose of this monitoring report is to verify predicted visual conditions of Forest land, water and vegetative activities. Forest-wide direction states: "Forest Resource uses or activities should meet the adopted VQO as displayed on the Planned Visual Quality Objective Map (Appendix F, Forest Plan)." Other Plan direction directs activities to blend with the natural landscape and discusses rehabilitation and enhancement of existing conditions.

Methods - Analyze the results of man's activities as they relate to the Visual Management System and determine compliance with assigned visual quality objectives. Field Review is the chosen method.

Results – Monitoring was completed as per projects listed below (Discussion). In most cases, compliance with Visual Quality Objectives has been achieved.

The Forest Plan seems to be silent concerning timeframes to achieve VQO's. As far as I can determine, compliance with Forest-wide direction can take more than one or two years to fully comply.

Discussion – I visited the following projects for evaluation:

1. Bear Ridge Green Aspen Timber Sale. The VQO for Bear Ridge is "Modification". My review indicates that the VQO was met.
2. Spoon Creek Green Aspen Timber Sale. The VQO for Spoon Creek is "Partial Retention" in the foreground and "Modification" in the middleground view zone. My review indicates that the VQO's were met.
3. Maverick Point Timber Sale. This sale was harvested about 40 years ago. The VQO is "Partial Retention". My evaluation indicates that the VQO is met.
4. Timber Sale activities adjacent to the Elk Ridge Road near Kigalia Ranger Station. Recent harvest activities. The VQO is "Partial Retention" in the Foreground and "Modification" in the Middleground. My review indicates that some of the slash material could have been cleaned up better; however, given a few more years, the VQO will be met.
5. Timber Sale activities on the SW side of Abajo Peak. This sale was harvested about 40 years ago. The VQO is "Partial Retention". The VQO has been met.

Synopsis – Maintain Visual Quality as outlined in the Manti-La Sal National Forest Land and Resource Management Plan. As Forest Plan revisions are completed, monitoring procedures should adopt direction from the Scenery Management System.

Action – Continue to monitor for Visual Quality. As Forest plan revisions are completed, monitor as per the Scenery Management System.

Responsibility – Recreation Staff and Landscape Architect.

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WILDERNESS RESOURCE

Wilderness Campsite Condition

The purpose of this monitoring is to verify predicted physical conditions of wilderness campsites. Monitoring will occur annually and be reported at three year intervals.

Methods - The district staff person in charge of recreation will inventory, field check and analyze site conditions for compliance with the primitive ROS class requirements and the Forest Plan Standards and Guides.

Results - The Dark Canyon Wilderness sites continue to be monitored annually. All sites have been maintained within a code-a-site category moderate or light condition.

Discussion - Over the past 3 years the number of sites used by visitors had decreased in number. This has been documented through the code-a-site process. Sites have been managed to not exceed code-a-site category light or moderate. Sites near water sources receive the greatest amount of impact. Sites have not had to be closed because of too much use or any other reason. The Peavine Corridor also receives annual monitoring and follow-up management.

Synopsis - The number of code-a-site inventories completed continues to increase, but the number of sites being used has decreased. All sites that have been inventoried have been maintained within a code-a-site category moderate or light condition. All sites were inventoried during the planning cycle.

Action - Continue to monitor sites and inventory their conditions annually, as new sites are identified, add them to the inventory schedule.

Responsibility - District Recreation Staff, District Ranger

Amount And Distribution Of Use

The purpose of this monitoring is to verify that the amount of use and social interaction at campsites and along trails is within the primitive ROS experience and setting guidelines.

Methods - Monitoring is conducted using trail registration forms, on-site trail counts, and campsite and trailhead counts. The Forest has initiated the National Recreation Visitor Monitoring (NRVM) surveys across the forest, including within Dark Canyon. Wilderness exit points were monitored and data collected on the number of visitors, visitor satisfaction, visitor point of origin, and other data. Use appeared to continue to be light.

Results - Recreation use reporting and accuracy has been intensified since preparation of the Land Management Plan. The NRVM will provide statistically valid data on the use within Dark Canyon. The results of this survey will be available in the summer of 2002.

Discussion - The Wilderness Implementation Schedule has been prepared (1994). It has designated that party size be limited to 15 keeping groups small. This will minimize the contact with other parties (on trails and at campsites) within the primitive ROS class guidelines as it applies to Dark Canyon. The NRVM will be repeated

at 5 year intervals, but use of campgrounds will continue to be monitored on an annual basis. Wilderness use though will not be correlated with any particular campsite.

Synopsis - The Wilderness Implementation Schedule is complete; it adopted party size and use monitoring methods, to assist in maintaining the social experiences appropriate for Dark Canyon.

Action - Implement the Wilderness Implementation Schedule. Continue to monitor use and report annually as requested. Develop budgetary requests to maintain wilderness settings and conditions.

Responsibility - District Recreation Staff, District Ranger

WILDLIFE AND FISH

Management Indicator Species

Mule Deer and Elk

The purpose of this monitoring is to determine how the big-game populations on the Forest are doing when compared to the Forest Management Goal of "Maintain or improve habitat carrying capacity for elk and deer" and the Desired Future Condition of "Populations of deer and elk would increase over current levels" and "Big-game winter range capacity could be maintained..."

Methods - Four main items are monitored to make this analysis. These are: 1. Aerial reconnaissance counts of elk winter ranges, 2. Browse and pellet transects, 3. Vegetation trend studies, and 4. Herd composition and harvest. Data on these items has been obtained from interagency field reviews and/or Utah Division of Wildlife publications.

Results - The available data is summarized as follows.

1. Aerial Trend Counts (aerial counts are only made for elk)

Counts Made During the Winters Of

Herd Unit	86 - 87	87 - 88	88 - 89	89 - 90	90 - 91	91 - 92	92 - 93	93 - 94	94 - 95	95 - 96	96 - 97	97 - 98	98 - 99
Manti Herd	3,065	4,154	6,074	*596	*425	7,697		7,265		7,932		9,188	
La Sal Herd	607	362	418	502	1,012	1,231	1,459		1,772				
San Juan Herd				163	296		361		684		773		

* Counts made in Central Region only.

2. Browse and Pellet Transects

Average Deer / Elk Days Use per Hectare by Year															
<u>Herd Unit</u>	<u>85 - 86</u>	<u>86 - 87</u>	<u>87 - 88</u>	<u>88 - 89</u>	<u>89 - 90</u>	<u>90 - 91</u>	<u>91 - 92</u>	<u>92 - 93</u>	<u>93 - 94</u>	<u>94 - 95</u>	<u>95 - 96</u>	<u>96 - 97</u>	<u>97 - 98</u>	<u>98 - 99</u>	<u>99 - 00</u>
Manti Elk	24	27	27	31	40	37	37	40	33	54	40	48			
La Sal Elk			18	19	14	33	33	48	39	78	35	44			
San Juan Elk															
NE Manti Deer	61	54	108	112	108	110	94	53	62	74	36	51			
SE Manti Deer	49	32	43	50	41	39	24	25	17	31	24	35			
NW Manti Deer	47	56	69	35	92	53	59	30	11						
SW Manti Deer	36	43	35	32	42	22	7	13	39						
S. Nebo Deer	18	71	50	19	48	47	17								
Elk Ridge Deer	46	54	50	58	*41 *37	*87 *76	*69 *61	86	95	103	85	83			
Blue Mountain Deer	106	116	84	72	73	73	*91 *77	*117 *104	*100 *90	123	81				
La Sal Mountain Deer	47	43	67	79	72	84	*107 *89	*103 *87	*111 *106	99	65				

* top # according to 1994 & 1997 Big Game Annual Report

* bottom # according to 1992 Big Game Annual Report

1997 was the last year any information was recorded on the browse and pellet transects.

Browse and pellet transects (browse transects are no longer used).

Deer Trend Studies

The following studies were installed in key benchmark areas in cooperation with the Bureau of Land Management and Utah Division of Wildlife Resources. These, and others that have (see Range Trend) or will be installed, are to be re-read every 5 to 10 years to determine vegetation trend (habitat).

3. Utah Big Game Range Trend Studies

Ranger District / Herd Unit	Study Location	Year Installed	Years Assessed
Ferron/Price R.D.			
Manti - Manti	Huntington Canyon	1988	1994,1999
	Howard FS Chaining	1988	1994,1999
	Middle Mountain	1988	1994,1999
	East Mountain	1988	1994,1999
	Trail Mountain Exclosure	1988	1994,1999
	Miles Point	1988	1994,1999
	North Horn Cap	1988	1994,1989
	North Horn Rock Canyon	1988	1994,1999
	Black Dragon	1988	1994,1999
	South Horn Exclosure	1988	1994,1999
	South Horn ¼ Corner	1988	1994,1999
	Dry Mountain	1988	1994,1999
	Birch Creek Chaining	1988	1994,1999
	South of Dry Wash	1988	1994,1999
	Scab Hollow	1988	1994,1999
	Upper Hole Trail	1988	1994,1999
	Box Canyon Knolls	1988	1994,1999
	Muddy Creek	1994	1999
	Little Nelson Mountain	1994	1999
	South Sage Flat	1994	1999
Wildcat Knolls	1994	1999	
Danish Bench	1994	1999	
Joes Valley Overlook	1994	1999	
Sanpete R.D.			
Manti - Manti	Deep Creek	1983	1989,1997
	Dry Creek Chaining	1989	1997
	Oak Creek Ridge Aspen	1989	1997
	Oak Creek Ridge Seeding	1989	1997
	Julius Pasture	1989	1997

3. Utah Big Game Range Trend Studies - Continued

Ranger District / Herd Unit	Study Location	Year Installed	Years Assessed	
Monticello R.D.				
San Juan - Blue Mtn.	Alkali Point	1986	1994, 1999	
	Brushy Basin	1986	1994, 1999	
	Gold Queen Basin	1986	1994, 1999	
	Camp Jackson Reservoir	1986	1994, 1999	
	Jackson Ridge	1986	1994, 1999	
	Harts Draw Reservoir	1986	1994, 1999	
	Shay Mountain	1986	1994, 1999	
	Peters Point	1986	1994, 1999	
	Harts Draw	1986	1994, 1999	
	Harts Point	1986	1994, 1999	
	Shay Mesa	1986	1994, 1999	
	Shingle Mill	1986	1994, 1999	
	Monticello R.D.			
	San Juan - Elk Ridge	Black Mesa	1986	1999
Texas Flat		1986	1999	
Harmony Flat		1986	1999	
Lower Lost Park		1986	1999	
Deer Flat		1986	1999	
Kigalia Point		1986	1999	
Woodenshoe		1986	1999	
Gooseberry		1986	1999	
North Long Point		1986	1999	
Wild Cow Point		1986	1999	
South Plain		1986	1999	
Ruin Park		1986	1999	
Davis Pocket		1986	1999	
The Wilderness		1986	1999	
Mormon Pasture Point		1986	1999	
North Cottonwood		1986	1999	
* Salt Creek Mesa			1999	
* Milk Ranch Point		1999		
* Chippean Ridge		1999		
* Lower Deer Flat		1999		
Moab R.D.				
La Sal Mountain	Two Mile Chaining	1987	1994, 1999	
	East LaSal Pass	1987	1994, 1999	
	Buck Hollow	1987	1994, 1999	
	Slaughter Flat	1987	1994, 1999	
	Amasas Back	1987	1994, 1999	
	Bald Mesa	1987	1994, 1999	
	Round Mountain	1987	1994, 1999	
	Black Ridge	1987	1994, 1999	
	Taylor Flat	1987	1994, 1999	
	Upper Fisher Valley	1987	1994, 1999	
	North Beaver Mesa	1987	1994, 1999	
	Polar Below Rim	1987	1994, 1999	
	Beaver Canyon	1987	1994, 1999	

* These sites were added in the 1999 trend studies guide

4. Herd Composition Data

Herd Unit		Year												
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Moab Elk	Bulls / 100 Cows	21	23	11	14	17	16	18	11	14	15		21	
	Calves/100Cows	58	48	51	60	51	51	47	51	45	49		49	
Manti Elk	Bulls / 100 Cows	20	24	17	15	15	25	14	11	13	18	12	18	17
	Calves/100Cows	49	52	51	42	46	42	47	46	58	43	62	59	53
San Juan Elk	Bulls / 100 Cows				22	31	38	27	24	27	26		24	
	Calves/100Cows				61	61	52	56	57	54	54		44	
LaSal Mtn. Deer	Fawns/100 Does		56	70	63	62	57	46	43	48	44	43	53	47
	Bucks/100 Does		14	16	13	9	7	9	7	5	7	6	12	8
Blue Mtn. Deer	Fawns/100 Does		72	75	60	58	62	73	56	55	59	51	64	65
	Bucks/100Does		20	15	17	7	7	9	11	11	8	15	11	13
Elk Ridge Deer	Fawns/100 Does	78	59	68	48	48	48	55	38	47	37	36	50	48
	Bucks /100 Does		39	33	43	50	46	55	42	32	33	25	22	28
NE Manti Deer	Fawns/100 Does	64	88	79	79	70	52	40	44	67	52	53		
	Bucks100 Does	12	10	19	11	10	6	7	9	9	16	13		
SE Manti Deer	Fawns /100 Does	64	69	69	67	51	46	55	41	54	45			
	Bucks/ 100 Does	12	17	10	8	7	5	11	9	6	14	13		
NW Manti Deer	Fawns /100 Does	79	78	66	70	78	59	86	81	71	80	82	77	75
	Bucks /100 Does	8	10	4	3	5	5	3	6	3	7	10	11	9
SW Manti Deer	Fawns /100 Does	93	83	98	87	83	77	86	72	66	40	70		
	Bucks /100 Does	10	11	12	3	5	6	8	5	1	5	12		
S. Nebo Deer	Fawns /100 Does	91	94	69	80	68	79	87	63	63	81	82		
	Bucks/100 Does	8	7	4	8	3	6	6	3	3	3	6		

Discussion - Herd composition and aerial counts provide good short-term data for basing annual harvest recommendations. The vegetative trend data is good for looking at the long-term objectives of managing vegetation to achieve herd objectives of providing good quality and quantity forage. On a short-term basis it is difficult to separate the influences of weather from the influences of habitat management. The long-term vegetation trend studies show if changes in vegetation are moving toward or away from desired future condition and this information will be useful when revising the Forest Plan. Many of the studies have been in place long enough now that good trend data is available. In general the trend assessments are stable for soils, browse, and herbaceous understory. However, some studies show slight improvements and a few show slight decreases in trends.

The elk herds found on the Forest have stabilized or are increasing slightly. Most of the herds have reached the DWR population objectives. However, the mule deer herds are not faring as well. Drought conditions continue to impact fawn recruitment and survival throughout southeastern Utah. The populations of deer herds found on the Forest range from 43 to 75 percent of the herd unit objectives.

Synopsis – While elk herds found on the Forest are doing well, the effects of drought has been shown in reduced productivity of the mule deer herds and in some of the vegetation studies. Other factors such as predation and disease also impact individual big-game animals as well as populations. It is difficult to determine the exact cause for population declines. Most likely there are a combination of factors involved to varying degrees with each population.

Action – Browse and pellet group transects have proven to be of limited value as indicators of population levels or vegetative conditions. Therefore, this type of monitoring is not cost effective and should be discontinued. However, the Forest should continue the other monitoring efforts to insure the population levels of big game are in line with carrying capacity as outlined in the Forest Plan.

Responsibility - District Range and Wildlife Staff; and Forest Ecosystem Staff.

Macroinvertebrates (For baseline stations or as needed for select project activities.)

The purpose of this monitoring is to evaluate the water quality and to determine the diversity of aquatic life the site is able to support or has the potential to support. Macroinvertebrates serve as natural monitors of management activities undertaken within each watershed.

Methods - The Forest Land and Resource Management plan calls for monitoring macroinvertebrates, at baseline stations, every five years (2-6 sites are monitored on a different district each year). Sampling of macroinvertebrates is conducted with a modified surber net and follows the procedures outlined in FSH R-4 2609.23, March 1985, Fisheries Habitat Surveys Handbook. All samples through 1997 were analyzed by the National Aquatic Ecosystem Monitoring Center out of Provo, UT under the direction of Fred Magnum. From 1998 to present the samples have been analyzed by the National Aquatic Monitoring Center out of Logan, UT under the direction of Mark Vinson.

Results - The macroinvertebrate monitoring program was primarily started after the flood and landslide events of 1983 and 1984. Most stations were sampled in 1984 and the rotation of sampling between districts began after 1984. Aquatic macroinvertebrate conditions across the Manti-La Sal National Forest vary from stream to stream. Some communities have improved since 1992 while others have not changed or have decreased since 1992. Biotic Condition Index (BCI) has been the only method used in this report to show trends and whether or not Forest Plan Standards are met. The BCI is one of three Standards in the Forest Plan and probably best represents the stream health and water quality at the sample point in the stream. Data for the other indices, Standing Crop, and Diversity Index (DAT) are available at all the sample sites and can be looked at on a site specific basis. In general, these indices are a little more problematic for determining trend information. DAT can be high (apparently indicating excellent conditions) sometimes in a severely stressed community with a low number of species but where each species had close to the same number of organisms. Standing Crop is a measured weight or biomass of a sample and problems can occur when a single large insect such as a Pteronarcyidae (a stonefly family with relatively large individuals) within one sample is present. The results can show a high standing crop (good conditions), when in fact stream health problems may exist. Absence of that one individual could give a markedly lower Standing Crop. The following table shows the year each stream was sampled, apparent trend, and whether or not the BCI meets the Forest Plan Standard ($BCI \geq 75$).

Biotic Condition Index

Stream	92	93	94	95	96	97	98	99	00	Trend		Meets Forest Plan Standard
										(+) positive	(-) negative	
Sanpete District												
Twelvemile Creek						82					+ since '84	Yes
Manti Creek						94					+ since '84	Yes
Oak Cr near Spring City						77					- since '84	Yes
Chicken Creek						62					- since '86	No
Pigeon Creek						72					- since '84	No
Ferron-Price Districts												
Straight Canyon				80							+ since '84	Yes
Muddy Creek				69							0	No
Ferron Creek				72							- since '84	No
Lowery Water				69							- since '84	No
Duck Fork				98							N/A	Yes
Fish Creek	59	65	70	47				77	77		+	No
Seely Creek				73							- since '91	No
Huntington Ck below Fks			78	78							0	Yes
South Fork Eccles Creek			66								- since '84	No
Left Fk Huntington Creek			74								- since '84	No
Upper Huntington Creek			72								- since '84	No
Eccles Cr above S. Fk.			59								- since '84	No
Wildcat Hollow			72			92					+	Yes
Gentry Hollow			76			80					+	Yes
Nuck Woodward Canyon		83	79	80			57				-	No
Moab-Monticello Districts												
Pack Creek	68										N/A	No
Mill Creek	91										N/A	Yes
Beaver Creek 1							75				N/A	Yes
Beaver Creek 2							67				N/A	No
Chicken Creek 1							79				N/A	Yes
Chicken Creek 2							67				N/A	No
Geyser Creek 1							40				N/A	No
Geyser Creek 2							74				N/A	No
Geyser Creek 3							54				N/A	No
La Sal Creek 2							59				N/A	No
La Sal Creek 2B							70				N/A	No
La Sal Creek 3							88				N/A	Yes
South Fork Beaver Creek							64				N/A	No
Upper La Sal Creek							54				N/A	No
Indian Cr by Shay Mt. Rd.		84									+ since '82	Yes
Indian Cr at FS Boundary			63								- since '87	No
Johnson Creek		86									N/A	Yes

- * BCI values are an average of the spring and fall samples.. Conditions indicated by BCI values are: Above 90 = Excellent, 80 - 90 = Good, 72 - 79 = Fair, Below 72 = Poor. The Forest Plan Standard for the BCI is \geq 75.
- * N/A is used when the sample site has been monitored only one year. No trend can be determined

Discussion - The Plan identified a sampling frequency of five years and an index change of 20% requiring further evaluation. It appears that many of the stream macroinvertebrate populations have gone downward in trend since 1984. There are two streams that have remained constant and others that show upward or downward trends. Of the streams where trend can be determined, eleven show a downward trend since the earliest sampling in 1884 and only four show a positive trend. Out of the 37 streams displayed, 23 do not meet the Forest plan standard for BCI and 14 do, according to the most recent sample taken. There is considerable variability in measuring macroinvertebrate populations and by using only one index, there appears to be some overall downward trends in many streams. Other indices should be looked at on a case-by-case basis to determine if conditions are below their potential. There is typically large variation in the measurement of macroinvertebrate communities and the Habitat Condition Index (HCI) could be determined in future sampling to describe the overall quality of the aquatic habitat of a stream.

Synopsis - Stream conditions across the Forest generally do not appear to be improving except for 4 out of 11 (27%) of the streams where trend can be determined. Water quality parameters and other indices including Habitat Condition Index should be analyzed on a case-by-case basis to better conclude if the conditions in these streams are worsening.

Action - Biotic Condition Index has been the primary method used to determine the condition of the aquatic community and it indicates that many streams show downward changes. Using just one index to quantify a community condition can lead to erroneous decisions. The Biotic Condition Index and the Habitat Condition Index need to be conducted together in order to better evaluate the aquatic habitat condition of our streams.

Future Monitoring should be conducted more intensively on streams that show downward trends or ones that do not meet the Forest Plan standard for BCI. Many of the streams in the Moab-Monticello Districts have only been sampled once for project specific analysis (Moab Range EA, 2001 and native cutthroat projects) and should be continued as time and money allows. The use of macroinvertebrate indices can be an excellent way to show the response from management changes. A one or two year sampling rotation would be recommended for those streams below Forest Plan standards or those showing a downward trend, especially if distinct land management changes will be occurring in the watershed. A four year rotation for all the other sites should be accomplished and would provide more data and better interpretation of conditions in these streams.

A new methodology has been established in 2000 according to Nationally establish standards (Mark Vincent, National Aquatic Monitoring Center, Logan, UT, personal communication 6/2001). Two types of samples should be taken:

1. Collect a qualitative sample using a .009m² Surber net and composite macroinvertebrates from the first four consecutive fast-water (e.g. riffles, runs) habitat units.
2. Collect a single 10-minute qualitative sample taken from all major habitat types approximately in proportion to their occurrence.

Since 1979, when the first macroinvertebrate samples were collected on the Manti-La Sal National Forest, all samples have been only quantitatively analyzed with a .009m² surber net. Instead of four riffles composited into one sample, (as required with the new protocol) three samples from an individual riffle were taken. The results of the three samples were then averaged. No Qualitative samples have been collected to date. This new protocol may initially have some crossover problems. The Bug Lab from Logan is currently working with the Forest's to develop this crossover to the new methodology so that old and dew data can be analyzed for trend information. The first year or so, many of the sample sites should be collected both ways to determine

what the differences are, if any. It is highly recommended that long-term trend analysis include pre 2001 and post 2001 sampling data so that trend analysis can be most meaningful.

Responsibility - Forest Fishery Biologist and District Wildlife Biologists.

Golden Eagles

Golden eagle monitoring as a Management Indicator Species is designed to aid in determining the impacts of Forest Plan implementation on this species.

Methods - The Utah Division of Wildlife Resources, in concert with several mining companies, routinely inventories areas where golden eagles are known to nest. Each pair of golden eagles occupies a territory which contains from one to seven nests. Generally eagles return to the same territory year after year. They may maintain (or "tend") one or more of the nests and subsequently may lay eggs in one of the tended nests. By inventorying inactive (not tended), tended, and active nests it is possible to monitor golden eagle activity.

Results - The result of these inventories is displayed in tabular form in the following table:

GOLDEN EAGLE MONITORING

Year	Total Nests Including old dilapidated nests, nests not surveyed, and nests not found.	Total Nests Excluding old dilapidated nests, nests not surveyed, and nests not found.	Percent Inactive	Percent Tended	Percent Active	Percent Tended & Active
1981		50	64	20	16	36
1982		32	84	0	16	16
1983						
1984						
1985						
1986		36	75	19	6	25
1987		41	58	29	12	41
1988		39	59	33	8	41
1989		56	71	22	7	29
1990		64	65	25	10	35
1991		41	68	17	14	31
1992						
1993						
1994	30	29	97	3	0	3
1995						
1996						
1997	89	71	56	32	11	44
1998	141	55	65	18	17	35
1999	146	64	77	14	9	23
2000	146	69	69	19	12	30

Percent totals were only given for the nests surveyed. Excluding old dilapidated nest, nests not surveyed, and nest not found.

Discussion and Synopsis - When comparing the percent of nests tended and active the data is fairly uniform considering the variation in sample size. The number of active nests may appear to be low however; these numbers are very similar to those from other golden eagle surveys in the Rocky Mountain West. Raptor research has shown that raptor species often do not nest when the amount of prey low for the given area. Although no specific studies have been conducted on the Manti-La Sal National Forest, this tendency appears to hold true.

Action - Continue the monitoring program.

Responsibility - District Wildlife Staff and District Rangers

Blue Grouse/Northern Goshawk

Blue grouse monitoring was intended to indicate condition of mature timber.

Methods - The Forest Plan calls for monitoring the harvest records, spring territory surveys and summer brood counts. Data collected by the Utah Division of Wildlife Resources was to be used for this analysis. As noted in the 1987-1991 Monitoring and Evaluation Report, for many years the use of Blue Grouse as a management indicator species for mature timber has been questioned.

Many people felt that the northern goshawk would be a better indicator. The Forest has inventoried and monitored for northern goshawks since 1992. In the spring of 2000 a decision was made to change the programmatic management direction for the six National Forests in Utah, relative to northern goshawk habitat. This decision amended the Forest Plan by adding management direction in the form of goals and objectives, standards and guidelines to be applied to management activities that could affect goshawk habitat. Goshawk standard (j) was modified in a forest plan amendment July 5, 2001.

The 2000 amendment also included monitoring requirements. One of the main focuses of this monitoring is aimed at answering the question; "Are known goshawk territories on national forests remaining occupied?" This question is to be answered by annually monitoring a sample of goshawk territories to determine the percent occupancy.

Results - Data to date indicates that there is a stable population of goshawks on both the Manti and La Sal Divisions of the Forest. In 1999 ten of twenty territories monitored were active, or fifty percent. Except for special studies the Utah Division of Wildlife Resources has stopped collecting the required data for Blue Grouse.

Discussion - It would be very difficult and costly for the Forest to collect data on Blue Grouse and the value of such data is questionable as outlined above. Therefore this monitoring has not been and will not be completed.

Synopsis - Data indicates that there is a stable population of goshawks on both the Manti and La Sal Divisions of the Forest. In 1999 ten of twenty territories monitored were active, or fifty percent.

Action - The Forest should evaluate the appropriateness of Blue grouse as a Management Indicator Species. The forest should continue monitoring goshawk.

Responsibility - District Wildlife Staff and District Rangers.

Abert Squirrel

Methods - The Forest Plan calls for monitoring Abert squirrel habitat by surveying the percent ponderosa pine in mature class every ten years.

Results - Since the Forest Plan was approved, 2,049 acres of Ponderosa pine have been inventoried on the Monticello Ranger District. The area inventoried is in the vicinity of Gooseberry Guard Station. Three percent of this area contains mature Ponderosa Pine. Ponderosa pine 18 inches DBH or larger is classified as mature.

Discussion - Three percent mature is thought to be representative of the Ponderosa pine found elsewhere on the Monticello Ranger District. Mountain Pine beetle activity on Elk Ridge continues to reduce the mature stands creating more open stands.

Synopsis – Three percent mature Ponderosa pine is adequate to maintain Abert squirrels only if it is dispersed in clumps throughout the type. The clumps with inter-locking crowns are necessary for nesting. Additional monitoring of the juxtaposition of mature Ponderosa pine is needed to better evaluate Abert squirrel habitat.

In 1992 and 1993 the Utah Division of Wildlife Resources (DWR) conducted a cooperative study of the Abert Squirrel population status, trend and habitat use on the Monticello Ranger District. This study concluded: "The number of Abert squirrels in this area seems to be increasing, or at least stable."

Action – Continued monitoring of Abert habitat by surveying the percent ponderosa pine should take place with several thousand acres inventoried every ten years. In addition the population status should be monitored every ten years using methodologies similar to the DWR study conducted during 1992 and 1993. Page II-33 of the Forest Land and Resource Management Plan calls for monitoring Abert squirrel populations.

Responsibility – Monticello Ranger District Staff and Ecosystem Staff.

Habitat Improvement Accomplishment

Fish and Wildlife habitat improvements are tracked in four categories. These are: Nonstructural Wildlife Habitat Improvement, Structural Wildlife Habitat Improvement, Nonstructural Fish Habitat Improvement, and Structural Fish Habitat Improvements.

Methods - These improvements are accomplished by altering vegetation (burning, roller-chopping, pruning, and herbicides), constructing water developments (ponds, springs, and rain catchments), improving flat-water fishing (adding hiding cover, removing unwanted vegetation, and fish), and improving stream fishing (check dams, reservoirs, willow plantings, rock placement, and construction of barriers).

Results - Accomplishments

Improvement Type	Year Accomplished												
	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Nonstruct. Wildlife Habitat Impr. (acres)	1049	2400	2200	2800	----	1400	----	----	410	0	700	2800	0
Structural Wildlife Habitat Impr. (struc.)	0	3	3	5	----	1	----	----	0	0	0	0	0
Nonstructural Fish Habitat Impr. (acres)	145	0	0	0	----	10	----	----	0	12	0	0	0
Structural Fish Habitat Impr. (struc.)	36	140	21	17	----	33	----	----	*0	*2.5	*5.5	*0	*1.5

* From 1996 on, this was reported in miles of stream improved.

Discussion – The completed improvements do not follow the Activity Schedules as outlined in the Forest Land and Resource Management Plan. This is because of changes in funding levels within and between the different programs, the Forest could not (or was not allowed to burn) on some years, and because we were able to take advantage of Challenge Cost Share Projects when alternative funding sources were available. As a whole the accomplishments move the Forest towards meeting the Desired Conditions for Fish and Wildlife as outlined in the Forest Land and Resource Management Plan.

Synopsis - Completed improvements do not follow the Activity Schedules as outlined in the Forest Land and Resource Management Plan because funding levels have varied for the different programs. Challenge Cost Share funding has been an important source of alternative funding. Accomplishments are moving the Forest towards meeting the Desired Conditions for Fish and Wildlife but at a different rate than is shown in the Plan.

Action - Continue to take advantage of alternative funding sources.

Responsibility - Forest Range, Watershed, and Wildlife Staff.

RANGE RESOURCES

Allotment Carrying Capacity

One of the Forest Plan Goals is to balance livestock grazing permit obligation with the range carrying capacity. Since the inception of the Forest, there has been a history of grazing permits exceeding available carrying capacity. Over the years the range improvement efforts, adjustments of livestock permits, and overall improved range management systems and practices have gradually restored the range to where permit obligations and estimated grazing capacity are fairly close to balancing.

Largely as a result of Public Law 104-19, during the last seven years, an accelerated effort to re-evaluate each allotment has been undertaken. This re-evaluation will include completion of a NEPA analysis on each allotment.

Methods - The grazing capacity is determined from monitoring the range and livestock use on an allotment basis as specified in the allotment management plan and/or in the methodologies prescribed in the Range Analysis Handbooks. This normally involves evaluation of long-term trend studies, grazing impact (use studies) on specific bench marks, and/or use intensity mapping where the actual use is compared against prescribed use levels for several years.

Results - The allotments are evaluated according to the standard and if adjustments are needed they are worked out with the respective permittees on each particular allotment based on the degree of management, the levels of available forage, cooperative practices, and coordination with other uses and activities on the land. Because of the history of overstocking most adjustments have been downward, but occasionally some upward adjustments have been made. This status summary is shown on the following tables (which depict status as of April 1992, the last Forest Plan Monitoring Report date, and currently, for comparison).

LIVESTOCK GRAZING CAPACITY STATUS (4/92)

District	Number of Livestock Permittees	Number of Permitted Sheep	Number of Permitted Cattle	Permitted Animal Months Sheep	Permitted Animal Months Cattle	Permitted Level M - AUM's	Estimated Grazing Capacity M - AUM's	Difference Between Obligations & Capacity	Number of Grazing Allotments.
Sanpete	86*	21,951	5,292	58,474	16,718	39,622	29,796	9,826	33
Ferron	119	25,656	5,274	75,573	17,843	45,919	42,038	3,881	27
Price	84	36,670	2,052	103,451	6,916	40,162	38,257	1,905	42
Moab**	15	0	3,226	0	12,232	16,142	15,630	512	12
Monticello	12	0	3,794	0	15,197	20,060	19,765	295	6
TOTAL	306	84,277	19,636	237,498	68,906	161,905	145,486	16,419	130

*Wales Association permit (20) counted as 1. **8 Horses with 24 AM's and 29 AUM's counted.

LIVESTOCK GRAZING CAPACITY STATUS (3/01)

District	Number of Livestock Permittees	Number of Permitted Sheep	Number of Permitted Cattle	Permitted Animal Months Sheep	Permitted Animal Months Cattle	Permitted Level M - AUM's	Estimated Grazing Capacity M - AUM's*	Difference Between Obligations & Capacity	Number of Grazing Allotments.
Sanpete	105	26,784	4,778	66,763	14,925	39,730			38
Ferron	106	19,531	5,131	58,602	17,550	40,747			24
Price	51	29,071	1,619	80,512	5,145	30,945			42
Moab**	14	0	3,785	0	11,571	15,274			12
Monticello	14	0	3,512	0	13,688	18,068			16
TOTAL	290	75,386	18,825	205,877	61,763	144,764	145,486	722	126

*Estimated grazing capacity is not provided by District in current reports. Some allotments have been combined and are administered by different Districts than in 1992.

Discussion - Permitted livestock use has decreased from 175,334 AUM's in 1980 as shown in the Forest Plan to 144,764 AUM's in 2000. Actual grazing use has been considerably less than permitted, especially the last few years due to the drought. It has fluctuated from a low of 126,927 AUM's in 1990 to 155,100 AUM's in 1988. The estimated grazing capacity has only been summarized every three or four years, and currently the Districts' summary has shown a downward level. The Forest Plan estimated the carrying capacity in 1980 at 142,248 AUM's with an average for the first 10 years of the plan at 153,800 and the potential based on improvement and better management identified in the Plan to get to approximately 160,000 AUM's in 1996-2005. In 1986 it was estimated at 152,000 and the most recent summary (2001) indicates it has dropped back down to 145,486 AUM's (the same as estimated in 1992). The current number reflects better information that has been gained from studying some allotments, but also reflects to some degree the effects of the current drought. On a Forest wide basis, the difference between the permitted level and the estimated capacity has been greatly reduced to 722 AUM's. This reduction is due to the accelerated effort to re-valuate each allotment (including renewed NEPA documentation). As part of these analyzes the capacity of each allotment is better aligned with the permitted numbers.

Synopsis - Permitted use has gradually decreased and is now very close to the current capacity. Actual use has been fairly close to estimated capacity the last few years.

Action - The planned action to complete the re-evaluation of all allotments on the Forest.

Responsibility - Range Staff and District Rangers

Long-Term Range Trend

Long-term permanently located range trend studies are located on all grazing allotments. These studies are located on designated benchmark areas where changes can more easily be detected. Data collected includes plant composition, forage production, ground cover, and soil stability.

Methods - Four different methods have been used, over the years, to collect Range Trend data. These methods are:

1. Photo plot-chart quadrant
2. Parker 3 step
3. Photo plot site analysis
4. Nested frequency

Data collected from these various study methods has been summarized and is located in the Allotment Study Folder filed on each District.

Results - {Photo plot-chart quadrats}: There a total of 9 active photo plot quadrant studies on the forest. These studies were established in the late 1940's and early 1950's. They have been read at approximately each ten years interval since establishment. Data from these studies show that, in general, composition of desirable plant species and ground cover has increased over the years. These studies are not tied to any specific allotment but are used to determine long-term changes.

Parker 3 Step: Transects have mostly been discontinued and are not presently used to determine condition and trend on allotment. They contain very good photo records.

Photo Plot-Site Analysis: These studies are present on most allotments. Some of these studies have been in place over 20 years and data collection has been used to determine Range conditions and trend and also help firm up allotment capacities.

Nested frequency: This new study method is being installed on allotments and will gradually replace the photo plot-site analysis studies. Most have not been in-place long enough to give trend information, but the information collected is more measurable for statistical purposes.

Discussion - The number of trend studies established on each allotment varies depending on the size of the allotment and need for trend information. Many small sheep allotments may have only one or two studies, while a cattle allotment with several units may have up to twenty studies. Data collection is scheduled at three to five year interval on most allotments, and depends on the allotment use schedule and need for the data.

The data provides site specific information to aid in determining if the area is moving toward the desired future condition or other Forest plan objectives (see attached example).

During the last seven years the focus has been to complete studies of those allotments being re-valuated. This information is then used in the planning process to aid in making the best decisions concerning management of each respective allotment.

Synopsis - Photo plot-chart quadrat studies show that in general composition of desirable plant species and ground cover has increased over the years. These studies are not tied to a specific allotment but are used to determine long-term changes. Studies have been conducted on many allotments and for the majority of the sites are improving.

Action - Long term quadrant studies need to continue, other studies need to be correlated and converted to nested frequency method. Where trend is not going toward desired objectives the management practice affecting the change needs modification.

Responsibility - District and Forest Range Staff

Range Condition

Range Analysis has been completed on all grazing allotments within the Manti-La Sal N.F. The analysis was started in the mid 1950's and mostly completed by the early 80's. There are several of the early analyzed allotments that have been re-analyzed and updated. There are also several allotments that presently need to be re-analyzed as the basic data and allotment maps are not adequate for making resource decisions on grazing management. There are some allotments that do not need re-analysis because the basic data and maps are still adequate for making grazing resource decisions, even though the data is over 20 years old.

Methods - All allotments were analyzed using the Region-4 Range Allotment Analysis Handbook FSH 2209.21 (dated before 1986) for instructions and guidance. This analysis resulted in a determination of range suitability, vegetation cover types, and range condition and trend all designated on an allotment map, along with acreage by types and a tentative capacity for the allotment.

Results - All range analysis data and maps have been compiled and completed and data summaries are in each Allotment 2210 Folders. The data is still being used for developing and modifying allotment management plans.

Discussion - The allotments needing re-analysis should be based on the need for new allotment basic data. This need may be the result of extensive re-vegetation or, changes in allotment boundaries, changes in use or other activities as well as changes in management.

Allotments needing re-analysis are prioritized by the Ranger Districts in their Range Action Plans.

Since the Revision of the Range Allotment Analysis Handbook 2209.21 in 1986, in which the Range Analysis procedures and methods were changed, new analysis has not been done. The procedures and methods in the present Handbook contain different methods to do the analysis. Certain study procedures are adequate, but most Forests are struggling to make the current system work for analyzing individual allotments. Baseline data is being collected and as soil mapping is completed the ecological mapping units based on vegetation and soil will be made and old and new data collated to display ecological capabilities and limitations.

Synopsis - All allotments have been analyzed under the pre-1986 methodology. Baseline data is being collected in more ecological terms that will aid in re-analysis to the current standards. All range analysis data and maps have been compiled and completed and data summaries are in each Allotment 2210 Folders. The data is still being used for developing and modifying allotment management plans.

Action - Allotment re-analysis should be based on the need for new allotment basic data. This need may be the result of extensive re-vegetation, changes in allotment boundaries, changes in use or other activities as well as changes in management. All allotments need to be gradually converted to new range analysis procedures for ecological basis in lieu of condition.

Responsibility - District and Forest Range Staff

Allotment Field Inspection, Administration, And Use Reporting

Range Allotment field inspections are done on the majority of allotments each year for the purpose of insuring permittees are following the allotment management plan and the annual operating plan.

Methods - Allotment inspection is completed by making a visit to each allotment area. Inspections include livestock numbers and use patterns, status of maintenance of range improvements, compliance with annual plan of use, checking for unauthorized livestock use, use by big game, and other activity uses and impacts on the forage or soil resources.

Results - When inspections show problems, contact is made with the permittee or others. If unauthorized use is occurring appropriate action is taken. Field checks verify permittee information and use data is compiled annually for allotment records and for upward reporting. Field checks also provide for compliance checks with management practices, standards and guidelines and to see if changes in allotment management are needed. Of inspected allotments, approximately 75% are in compliance and on most of the others appropriate action is taken by the permittees to correct deficiencies. On about 1-2% of the allotments some permit action is initiated in order to correct problems.

During the last seven years the focus of these inspections has been on those allotments being re-evaluated. Because of the effort to re-evaluate all allotments, the number of inspections being made on those allotments not being evaluated in the near future has been reduced. However, in order to meet direction for updated information on range allotment improvements, all allotments have received at least some inspection over the last two years.

Synopsis - Allotment inspection is done by visiting each allotment area. Of inspected allotments, approximately 75% are in compliance and on most of the others appropriate action is taken by the permittees to correct deficiencies. On about 1-2% of the allotments some permit action is initiated in order to correct problems.

Action - Continue field inspection, provide for monitoring and compliance with the terms and conditions of the grazing permit and for action for unauthorized uses and practices.

Responsibility - District Rangers

Range Forage Treatment Practices

For most range forage treatment projects, a site analysis Range Study Transect is installed before treatment and re-read during the 2nd and 5th year after treatment. These studies are designed to measure the success or failure of the individual project and why or how they could be improved.

Methods - A Site Analysis Range Study Transect is either installed permanently or randomly on each project site before treatment and re-read again during the 2nd and 5th year after treatment. These studies reflect changes in vegetation composition by weight. Photographs are normally included.

Results - Study data are compiled and copies sent to S.O. and filed in the District Project File Folders. Data is also used to determine the success or failure of the project and further action needed to maintain the project.

Synopsis - The analyses show the success or failure of each specific treatment and why.

Action - This practice should continue for acquisition of knowledge and development of appropriate management practices and prescriptions as well as for employee development and growth. Especially in the 1990's these studies have been useful in identifying areas where noxious weeds or other undesirable species (such as cheat grass) have increased. This information is valuable in planning how to prevent the invasion of undesirable species on future projects.

Responsibility - District and Forest Range Staff.

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TIMBER RESOURCE

Adequate Restocking Of Lands Within 5 Years Of Final Harvest

The purpose of this monitoring is to verify that adequate stocking has been accomplished within 5 years of final harvest.

Methods - Silvicultural Examination

Results - Generally natural regeneration in ponderosa pine is quite successful. In the Engelmann spruce type, stands are not treated with a final harvest since this treatment is not applicable to this forest type¹. Plantation survival studies for the first year have been averaging over 90 percent, those for the third year are approximately 70 percent.

Final removal or clear-cutting is used to manage aspen and aspen mixed conifer forests. These treatments plan for natural regeneration of aspen by root sprouting.

Discussion – Regeneration of aspen and aspen/mixed conifer stands have generally been successful on the Manti Division of the Manti-LaSal when the stands have been protected from livestock grazing or when regeneration treatments have covered a large enough area to disperse wild and domestic ungulate use.

The LaSal division has had repeated difficulties regenerating aspen due to the small amount of aspen regenerated (stands are usually less than an acre in size) and the lack of protection from ungulate grazing. Subsequent treatments will incorporate protection from both wild and domestic ungulate grazing. Because of the small amount of acres that have been treated, no report of their status is currently available.

Synopsis - Aspen harvests are almost always clear-cuts where all trees except wildlife designated trees and groups are removed. The exceptions are the three Four Mile sales in which an appeal caused a special mitigation to be applied. This mitigation allowed the retention of all non-merchantable stems (less than 8 inches in diameter). Aspen regenerate by root sprouts when the above ground stems are removed or killed. Retention of the stems partially suppressed regeneration where the stems were left. An analysis is planned to be completed in 2002 that compares sprouting response in plots with residual stems and without.

Initial reviews of the aspen harvest on the Manti Division indicate that, barring unforeseen circumstances, the harvest units will be certified as stocked at the third year exam. Stocking surveys are scheduled 2 to 3 years after harvest to allow the root suckering to respond to the harvest. See attached table of projects.

Action - Continue to conduct first and third year plantation survival surveys, followed by certification at the third year exam when appropriate. Conduct fifth year stocking surveys to confirm survival or certify survival.

Responsibility – Forest and District Silviculturists

The following table contains a list of harvest acres that meet the criteria listed for final harvest since 1991.

¹ Engelmann spruce stands under the South Manti EIS were treated with a salvage harvest and do not fall under the conditions of the report.

Sale Name	Unit #	Acres	Veg. Type	Year Harvested	First Year Survey	Third Year Survey	Fifth Year Survey	Year Certified	Ranger District	Remarks
4 Mile I	1	80	Aspen	1993	1996	1999	2001	1996	Sanpete	
	2	23	Aspen	1993	1996	1999	2001	1996	Sanpete	
4 Mile II	1	30	Aspen	1998	2000	2002	2004		Sanpete	
	2	61	Aspen	1998	2000	2002	2004		Sanpete	
4 Mile III	3	47	Aspen	1998	2001	2003	2005		Sanpete	
Bear Ridge	1	23	Aspen	1998	2001	2003	2005		Price	
	2	24	Aspen	1998	2001	2003	2005		Price	
	3	21	Aspen	1999	2001	2003	2005		Price	
	4	30	Aspen	1999	2001	2003	2005		Price	
	5	38	Aspen	1998	2001	2003	2005		Price	
	6	15	Aspen	1998	2001	2003	2005		Price	
	7	38	Aspen	1999	2001	2003	2005		Price	
	8	5	Aspen	1999	2001	2003	2005		Price	
Spoon Creek I	1	14	Aspen	1993	1996	1997	2000	1997	Ferron	
	2	24	Aspen	1993	1996	1997	2000	1997	Ferron	

Sale Name	Unit #	Acres	Veg. Type	Year Harvested	First Year Survey	Third Year Survey	Fifth Year Survey	Year Certified	Ranger District	Remarks
	3	56	Aspen	1993	1996	1997	2000	1997	Ferron	
Spoon Creek II	1	8	Aspen	1998	2001	2003	2005		Ferron	
	2	6	Aspen	1999	2001	2003	2005		Ferron	
	3	16	Aspen	1999	2001	2003	2005		Ferron	
	4	3	Aspen	1998	2001	2003	2005		Ferron	
	5	9	Aspen	1999	2001	2003	2005		Ferron	
	6	8	Aspen	1998	2001	2003	2005		Ferron	
	9	1	Aspen	1998	2001	2003	2005		Ferron	
	10	6	Aspen	1998	2001	2003	2005		Ferron	
	11	12	Aspen	1998	2001	2003	2005		Ferron	
Spoon Creek III	1	15	Aspen	2000	2002	2004	2006		Ferron	
	2	8	Aspen	2000	2002	2004	2006		Ferron	
Spoon Creek III	3	4	Aspen	2000	2002	2004	2006		Ferron	
	4	32	Aspen	2000	2002	2004	2006		Ferron	
	5	18	Aspen	2000	2002	2004	2006		Ferron	
	6	11	Aspen	2000	2002	2004	2006		Ferron	

Sale Name	Unit #	Acres	Veg. Type	Year Harvested	First Year Survey	Third Year Survey	Fifth Year Survey	Year Certified	Ranger District	Remarks
	7	14	Aspen	2000	2002	2004	2006		Ferron	
	8	16	Aspen	2000	2002	2004	2006		Ferron	
	9	7	Aspen	2000	2002	2004	2006		Ferron	
Spoon Creek IV	11	18	Aspen						Ferron	Sold Not Harvested
	12	28	Aspen						Ferron	Sold Not Harvested
	13	36	Aspen						Ferron	Sold Not Harvested
	14	11	Aspen						Ferron	Sold Not Harvested
	15	9	Aspen						Ferron	Sold Not Harvested

Maximum Size Of Openings Created By Clearcutting

The purpose of this monitoring is to verify that maximum opening size created by clear-cutting is limited. The maximum size opening created by timber sales is limited to 40-acres unless approved by the Regional Forester or results from salvaging in areas following natural events such as fires and insect attacks.

Methods - The size of created openings can be found on Sale Area Maps and other Timber Sale Contract documents.

Results - Timber harvesting has created openings of the Forest greater than 40 acres by clear-cutting. This has been specifically applied to the aspen and aspen/mixed conifer types. See attached table.

Discussion - Shelterwood harvesting, and selection methods have been utilized in harvesting the conifer types on the forest. Some group selection has occurred associated with insect and dwarf mistletoe infestations that have resulted in small clear-cuts approaching three acres in size.

The Kigalia timber sale, located in an active mountain pine beetle infestation, resulted in an area of 120 acres being understocked when additional mortality trees were harvested following the normal operations.

Units with the South Manti EA timber sales did exceed 40-acres but they were the result of salvage from a spruce beetle infestation.

Synopsis – Since 1991 4 units have exceeded the 40-acre limitation on created openings. All were applied after receiving the Regional Foresters approval.

Action - Continue to monitor any harvesting plans that utilize clear-cutting methods.

Responsibility – Forest and District Silviculturist

Project Name	Unit	Acres	Vegetation Type	District	Remarks
4 Mile I	1	80	Aspen	Sanpete	Certified Stocked 1996, > 5000 trees/acre
4 Mile II	2	61	Aspen	Sanpete	Stocking adequately, should certify in 2002
4 Mile III	3	47	Aspen	Sanpete	No data yet.
Spoon Cr. I	3	56	Aspen	Ferron	Certified stocked 1997, > 5000 trees/acre

Harvesting Practices In Retention, Partial Retention And Riparian Areas.

The purpose of this monitoring is to assure proper harvesting practices are performed in retention, partial retention, and riparian areas.

Methods - In order to monitor the harvesting practices the Forest Landscape Architect and the Forest Hydrologist are involved in the ID Team reviews of the proposed projects and in reviewing the silvicultural prescriptions before the projects are approved. Post-sale reviews show how well the predicted results compare with the actual results.

Results - Timber sale requirements and design have avoided harvesting in riparian areas. Post-harvest reviews of several sales, completed since the last monitoring report, indicate that VQOs are met or will be met within an acceptable time period (please see the Visual Resource section presented earlier in this Monitoring Report for specific monitoring results).

Discussion - During the ID Team interaction, riparian and Visual Quality Objectives are reviewed and all aspects of the projects are discussed to assure that they are acceptable with the objectives. In some cases involving salvage harvest during significant bark beetle mortality events, additional trees are killed by the beetles during logging operations and some of these dead trees are also harvested. This results in the area being understocked causing impacts to the visual and wildlife values. Post-sale reviews are usually made by one to a few individuals.

Synopsis - Post-harvest reviews completed since the last monitoring report, indicate that VQOs are met or will be met within an acceptable time period (please see the Visual Resource section presented earlier in this Monitoring Report for specific monitoring results).

Action - Continue the review process during NEPA evaluation and during post sale reviews.

Responsibility - District Rangers, Forest Landscape Architect, Forest Hydrologist, and Timber Staff

Timber Sale Action Program

The purpose of this monitoring is to ascertain that timber sales are offered on schedule and that the Allowable Sale Quantity (ASQ) is not exceeded during the decade.

Methods - Review the Five-Year Action Plan, the Annual Timber Cut and Sold Report, and the Forest Land Management Plan.

Results – The Forest Plan set the ASQ (annual average) at 3.16 MMBF for sawtimber and 2.5 MMBF for other products, for a total of 5.66 MMBF allowable from regulated lands as an annual average (Table A-9, page A-24). Table A-12B (page A-28) schedules total sales of 61.45 MMBF for all products (sawtimber and other, from regulated and unregulated lands) for the period from 1986 through 1995, an average of 6.15 MMBF per year. Available information for volume sold, removed, and offered for sale is shown on the following table.

Manti-La Sal National Forest
1987-2000 Monitoring and Evaluation Report

Fiscal Year	Volume Sold (MBF)						Volume Removed (MBF)						Volume Offered (MBF) *		
	Sawtimber	Pulpwood	Poles	Posts	Fuelwood	Total	Sawtimber	Pulpwood	Poles	Posts	Fuelwood	Total	Regular	Salvage	Total
1987	1745	0	29	13	3674	5461	1713	5	44	13	3920	5695	908	101	1009
1988	3459	820	33	5	5101	9418	1664	0	28	12	3691	5395	2590	50	2640
1989	281	3	21	4	3746	4055	1235	823	38	4	6005	8105	0	0	0
1990	1771	75	122	9	2293	4270	2323	0	17	7	2759	5106	1693	1188	2881
1991	1655	0	23	5	4246	5929	819	75	127	12	2329	3362	254	130	384
1992	3679	0	25	2	2149	5855	3094	0	23	2	2432	5551	520	3074	3594
1993	1402	0	20	8	2117	3547	1207	0	32	9	3253	4501	2439	2077	4516
1994	2525	0	36	4	1551	4116	1626	0	40	5	1859	3530	325	873	1198
1995	890	0	42	5	1250	2187	2071	0	328	5	1416	3820	40	2102	2142
1996	2378	708	23	6	1134	4249	3317	0	23	6	1051	4397	0	11078	11078
1997	21402	0	9	3	853	22267	3135	174	8	3	882	4202	0	15880	15880
1998	2248	0	5	3	854	3110	6292	522	5	3	920	7742	1019	0	1019
1999	975	0	5	2	937	1919	6787	12	5	2	751	7557	0	0	0
2000	773	0	4	11	806	1594	10288	56	3	3	679	11029	31	204	235
Total	45183	1606	397	80	30711	77977	45571	1667	721	86	31947	79992	9819	36757	46576
Average	3227	115	28	6	2194	5570	3255	119	52	6	2282	5714	701	2626	3327

* Volume offered does not include personal use or small commercial sales (includes sales following the gate tracking system, typically commercial sawtimber).

Discussion – The average annual volume sold for all products of 5.57 MMBF does not exceed the total ASQ of 5.66 MMBF. The average annual sawtimber volume sold of 3.23 MMBF does slightly exceed the ASQ for sawtimber of 3.16 MMBF but much of this volume was salvage (as shown under the breakdown for volumes under Volume Offered). ASQ is provided as required under implementing regulations (36 CFR 219) for the National Forest Management Act (NFMA). The Regulations at 36 CFR 219.2(c)(2) clarify that, “Nothing in this paragraph prohibits salvage or sanitation harvesting of timber stands which are substantially damaged by fire, windthrow, or other catastrophe, or which are in imminent danger of insect and disease attack or where such harvests are consistent with silvicultural and environmental standards. Such timber may either substitute for timber that would otherwise be sold under the plan or, if not feasible, be sold over and above the planned volume.” The salvage harvest of killed or imminently susceptible timber to epidemic bark beetle attack makes up the majority of volume sold for the past several years. Additionally, most of the volume of fuelwood sold was harvested from management areas that were not used in the calculation of the timber base from which the ASQ was derived.

Synopsis - The volumes of timber and fuelwood sold is within allowable amounts as defined by the Forest Plan and the NFMA.

Action - Emphasize efforts in scheduling, utilizing the Gates program which will result in proper planning, timing, and implementation of the program.

Responsibility - District Rangers and Timber Staff

Reforestation And Timber Stand Improvement Accomplishment

The purpose of this monitoring is to insure all projects that identify a reforestation and/or a timber stand improvement need are accomplished.

Methods - This is accomplished by reviewing annual reforestation and TSI accomplishments..

Results – The silvicultural prescriptions identify reforestation and timber stand improvement needs. These needs are tracked within the Rocky Mountain Resource Information System (RMRIS). When the reforestation or timber stand improvement project is accomplished the need is completed in the database.

Discussion – When a need is recorded in the database this information is forwarded to the Regional and then the Washington office at the end of each fiscal year. When funds are allocated to the Forest, the need for the reforestation or timber stand improvement project is verified by the outstanding acres in need of treatment.

Synopsis - Present reviews indicate reforestation and timber stand improvement needs are being accomplished. See table below for a summary by fiscal year and by each division. The vegetation and work differs between the Manti and La Sal Division and therefore the activities have been listed separately by fiscal year.

Action - Continue the review and auditing process presently being used.

Responsibility – Forest and District Silviculturists

The following table lists all completed harvest units in the South Manti Analysis area as of Sept. 2001. The Olga, Oley, and Camel sales from the South Manti EA have been completed and all the post harvest work has been completed. Data for reforestation projects prior 1995 is sketchy and involve only a few acres of planting.

The Baldy, Duck and Six sales have only a few units left to harvest and it is expected that they will be completed by the end of 2001.

The slash from the logging and the weed/thin activity is lopped to a 24-inch height and scattered in the openings and skid trails. This provides microsites for planting and reduces soil movement. The weed/thin treatment fells damaged trees and spaces the clumps of healthy trees, less than 7 inches in diameter, to 11 by 11 foot spacing. All logged units have received both slash work and weed/thin. It is anticipated that some of the helicopter units will not need weed/thinning because there is insufficient existing trees under 7 inches in diameter to warrant treatment. It is therefore expected that only 50 percent of the units to be logged will require weed/thin.

Following these activities the units are ready to be planted. Review of the units following harvest indicated that few Engelmann spruce, capable of providing seed, survived the spruce beetle. It is therefore expected that 70 percent of all acres will require planting to ensure that Engelmann spruce will be at least 50 percent of the future stand composition.

The seed used to grow trees planted in the South Manti Project area was collected in August 1995. Manual direction at that time required the seed to be collected within 50 miles of the site and within the same 500-foot elevation band. One-third of the seed was collected within several South Manti EA units at the 9500-10000 elevations, at the 10000-10500 foot elevations, and at the 10500-11000 elevations. The rest of the seed was collected at Philadelphia Flat, Seeley Creek, and Danish Knoll just above Ephraim Canyon.

The units are planted with Engelmann spruce grown at the Coeur d'Alene nursery with seed collected from the area in 1995. The container stock used to reforest these units is known as summer stock since it can be planted in June and July when the units are free of snow. This seedling only grows roots the first growing season and therefore is not surveyed for survival until the fall of the second growing season. During the second growing season the seedling will put on new shoot and diameter growth as well as continuing to grow additional roots.

A few bare-root 2-year-old seedlings have been planted in the Olga timber sale. This was to compare the survival and growth with the summer container stock. The monitoring results, at this time, indicate the summer container stock is superior to the bare-root stock for these sites. During the 2000 plantings, 1-year-old container seedlings will be planted to compare their survival and growth with the summer container seedlings.

The survival and growth of the planted trees will be monitored 3 times during a 5-year period. If the units meet or exceed minimum stocking requirements with healthy vigorous seedlings (based on the silvicultural prescription) the units will be certified as stocked. Should the units fall below minimum stocking requirements the units will be evaluated for re-planting, as in the case the Timber Canyon units 1 and 2.

The units have been monitored for animal damage from domestic livestock and from gophers. Several units contained sufficient damage from gophers that treatment was applied during the summer of 2001. The treated units are listed in the following tables.

/s/ Diane M. Cote
DIANE M. COTE
Forest Silviculturist

Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 st Year Survey Planned/ Completed	3 rd Year Survey Planned/ Completed	Remarks
1997 Program									
Timber Canyon	1	28	6/96	6/96	7/97	214	9/98	-	Units due to delay of rains by 3 weeks
Timber Canyon	2	31	6/96	6/96	7/97	210	9/98	-	
Timber Canyon	3-12	246	6/96	6/96	6/97	346	9/98	8/00	
12 Mile	7-9	78	6/95	6/95	7/97	303	9/98	8/00	
1998 Program									
Timber Canyon	7-9	25	6/96	6/96	7/98	252	9/99	8/01	
12 Mile	1-6,10-13	142	6/95	6/95	7/98	401	9/98	8/01	
Baldy	9	40	6/97	6/97	7/98	248	9/98	8/01	
Camel	14	14	6/97	6/97	7/98	233	9/98	8/01	
Olga	1-2	173	6/97	6/97	7/98	197	9/98	8/01	
1999 Program									
Oley	3,4	168	6/98	6/98	7/99	302	9/00	2002	

Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 st Year Survey Planned/ Completed	3 rd Year Survey Planned/ Completed	Remarks
1999 Program									
Baldy	9	70	6/97	6/97	7/99	360	9/00	2002	Finished Unit
Baldy	10	8	10/99	10/99	7/99	375	9/00	2002	Leftover trees
Timber Canyon	1-2	59	6/96	6/96	7/99	478	9/00	2002	Replant
Strawberry	1	28	NA	NA	7/99	366	9/00	2002	
2000 Program									
Baldy	10	80	10/99	10/99	7/00	423	9/01	2003	Partial Plant
Six	28	100	10/99	10/99	7/00	441	9/01	2003	
Six	31	38	10/99	10/99	7/00	398	9/01	2003	
Six	34	91	10/99	10/99	7/00	458	9/01	2003	
2001 Program									
Baldy	8	8	7/00	7/00	7/01	386	2002	2004	
Baldy	10	75	10/99	10/99	7/01	350	2002	2004	Partial Plant

Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 st Year Survey Planned/ Completed	3 rd Year Survey Planned/ Completed	Remarks
Baldy	11	20	10/99	10/99	7/01	412	2002	2004	
2001 Program									
Baldy	12	40	10/99	10/99	7/01	523	2002	2004	
Baldy	23	38	10/00	10/00	7/01	363	2002	2004	Hoe Planted
Baldy	24	28	10/00	10/00	7/01	376	2002	2004	Hoe Planted
Baldy	26	62	10/00	10/00	7/01	483	2002	2004	Hoe Planted
Camel	14	14	6/97	6/97	7/01	388	2002	2004	Replant, bareroot stock failed
Olga	1	24	6/97	6/97	7/01	313	2002	2004	
Duck	20	115	10/00	10/00	7/01	386	2002	2004	Hoe Planted
Duck	21	44	10/00	10/00	7/01	387	2002	2004	
Duck	16	9	10/00	10/00	7/01	423	2002	2004	

Unit Name	Unit Numbers	Acres	Date Slash Work Completed	Date Weed/Thin Completed	Date Planted	Ave. Trees Planted Per/Acre	1 st Year Survey Planned/Completed	3 rd Year Survey Planned/Completed	Remarks
Duck	18	27	Six	25	19	470	2002	2004	
2001 Program									
Six	5	56	8/00	8/00	7/01	431	2002	2004	
Six	25	19	10/00	10/00	7/01	469	2002	2004	

The following table lists those areas where reforestation and timber stand improvement (TSI - precommercial thinning treatments) have been applied on the Moab and Monticello Ranger Districts from 1991 to 2001. Monitoring continues. On the Monticello District the North Elks I, North Elks IIA, North Elks IIB, Kigalia, Chimney Park, and Twin Springs Timber Sales have been completed between 1991 and 1992. The Dead Goose Timber Sale will be completed in 2002. The Roc Creek, Sawmill Pond 1, 2, and 3, Hop Creek, and Willow Basin Timber Sales have been completed on the Moab District. These are all primarily ponderosa pine thinning and salvage timber sales with some incidental aspen treatment included.

Some post-sale treatments (primarily slash disposal and TSI) have not been completed in the Kigalia, Chimney Park, and Twin Springs Timber Sale areas. Drought conditions, short burn windows, and National prescribed burn restrictions in 2000 have limited our ability to complete these treatments. Planting is planned within the Chimney Park Timber Sale salvage areas in 2002.

The slash from the logging and the weed/thin activity is lopped to an 18-inch height and scattered in open areas. This reduces fire hazards and provides site protection. Current weed/thin treatments fell damaged or unhealthy trees and spaces the healthy young trees, less than 8 inches in diameter, to 15 by 15 foot spacing. Precommercial thinning treatments have also been applied to harvested areas and to other young seedling, sapling, and pole size stands that were harvested in the 1960s to 1970s. Thinning treatments from 1992 to 1995 were generally done at 12 by 12 foot spacing.

400 acres of thinning reported in 1998 were accomplished utilizing prescribed fire on Deadman Point and Kigalia Point. Fire was applied to the understory with the objective of removing seedling and sapling size trees under the mid-age and mature overstory trees to reduce fire hazard and improve growth of residual trees. The treatment was partially effective, but mortality was more extensive than anticipated in some areas due to fuel concentrations and continuous ladder fuels in areas of dense trees. The fire resistance of larger ponderosa pine and the susceptibility of young seedling and sapling size trees to fire limits our ability to successfully uniformly thin using fire in ponderosa pine.

The seed used to grow trees planted in the Kigalia Project area was collected in September, 1997 on north and south Elk Ridge, Monticello District following current seed collection elevation, zone, and transfer requirements. Planted seedlings were grown in containers for one season at the Coeur d'Alene nursery.

The seed used to grow trees planted in 1993 were collected on the Monticello District following the current seed collection elevation, zone, and transfer requirements at that time. Planted seedlings were two-year old bare root stock grown at the Lucky Peak Nursery.

The survival and growth of the planted trees are monitored 3 times during a 5-year period. If the units meet or exceed minimum stocking requirements with healthy vigorous seedlings (based on the silvicultural prescription) the units are certified as stocked. Should the units fall below minimum stocking requirements the units will be evaluated for re-planting, as in the case the North Elks I and Roc Creek units. Planted units have been monitored for animal damage from wildlife, livestock, and from gophers.

/s/ Greg T. Montgomery

GREG T. MONTGOMERY
Forest Silviculturist

Project Name	Unit Numbers	Acres	Date Slash Work Completed	Date Thinning Completed	Date Planted	Ave. Trees Planted Per/Acre	1 st Year Survey Planned/ Completed	3 rd Year Survey Planned/ Completed	Remarks
1991 Program									
Maverick Point & Chippean Ridge		793		9/91					Monticello RD
1992 Program									
Roc Creek		30		8/92					Moab RD
		100		9/92					
Maverick Point		57		9/92					Monticello RD
1993 Program									
North Elks I T.S.		71			5/93	350	9/93	9/95	Monticello RD 52% survival 3 rd year. Replant 2002
Roc Creek T.S.		29			5/93	350	9/93	9/95	Moab RD 69% survival 3 rd year.
Roc Creek T.S.		78		9/93					Moab RD
1993 Program									
West Paradox		60		9/93					Moab RD
Maverick Point		169		9/93					Monticello RD
South Cottonwood		56		9/93					Monticello RD
1994 Program									
Sawmill Pond		75		9/94					Moab RD

Project Name	Unit Numbers	Acres	Date Slash Work Completed	Date Thinning Completed	Date Planted	Ave. Trees Planted Per/Acre	1 st Year Survey Planned/ Completed	3 rd Year Survey Planned/ Completed	Remarks
<p><i>North Elks I areas planted in 1993 were openings created by mountain pine beetle induced tree mortality and fire in ponderosa pine stands. Although stands are suitable, soils are clay to rocky. Planting was primarily a failure. The North Elks I planting area is scheduled for replant in 2002. They were machine scarified in 2001. Areas planted in the Roc Creek Timber Sale area will be reviewed in FY 2002, and, if appropriate, scheduled for replanting. Areas planted in Roc Creek were openings created by a fire in the sale area in 1992 and small openings created during the timber sale activities.</i></p>									
1995 Program									
North Long Point		47		7/95					Monticello RD
		92		8/95					
		56		9/95					
West Paradox		50		7/95					Moab RD
		190		9/95					
1995 Program									
Sawmill Pond		42		9/95					Moab RD
		133		10/94					
1996 Program									
North Long Point		41		9/96					Monticello RD
North Elks		86		9/96					Monticello RD
1997 Program									
Kigalia Point		6		9/97					Monticello RD
West Paradox		294		9/97					Moab RD
1998 Program									
Kigalia Point		300		9/98					Monticello RD Prescribed Fire
Deadman Point		100		8/98					Monticello RD Prescribed Fire
North Elks II		40		8/98					Monticello RD

Project Name	Unit Numbers	Acres	Date Slash Work Completed	Date Thinning Completed	Date Planted	Ave. Trees Planted Per/Acre	1 st Year Survey Planned/ Completed	3 rd Year Survey Planned/ Completed	Remarks
1998 Program									
North Long Point		70		9/98					Monticello RD
Paradox		191		8/98					Moab RD
1999 Program									
North Long Point		129		9/99					Monticello RD
				10/99					
Twin Springs		138		9/99					Monticello RD
Paradox		33		9/99					Moab RD
2000 Program									
Chimney Park		300		9/00					Monticello RD
2001 Program									
Kigalia T.S.	1	19	5/01		5/01	225	10/01	2003	Monticello RD
	2	37	5/01		5/01	225	10/01	2003	
	3	27	5/01		5/01	225	10/01	2003	
	4	70	5/01		5/01	275	10/01	2003	
	6	28	5/01		5/01	275	10/01	2003	
	7	71	5/01		5/01	275	10/01	2003	
	8	8			2002		2003	2005	
2001 Program									
<p><i>The areas planted in 2001 were openings created by mountain pine beetle induced tree mortality in ponderosa pine stands. Areas are suitable, but rocky with high competition from grass and brush. Planting areas were machine scarified using a Salmon River Blade in FY 2000.</i></p> <p><i>The TSI contract is not awarded for FY 2001 at this time. 300 acres of treatment are planned for this FY.</i></p>									

Fuelwood Consumption And Supply

The purpose of this monitoring is to determine whether fuelwood availability is meeting the demand for its use.

Methods - Field observations are continually being made of fuelwood availability, reviewing the number of permits being issued, and feedback from the fuelwood permit holders.

Results - From all indications there is an adequate fuelwood supply to meet the present demand and that predicted for the foreseeable future. Volume of fuelwood sold from 1987 through 2000 is shown in the following table:

Fiscal	Fuelwood
Year	Sold (MBF)
1987	3674
1988	5101
1989	3746
1990	2293
1991	4246
1992	2149
1993	2117
1994	1551
1995	1250
1996	1134
1997	853
1998	854
1999	937
2000	806
Total	30711
Average	2194

Discussion - The demand for fuelwood, as indicated by volume sold, over the period of the Forest Plan, has been variable from year to year but has been decreasing overall. This decline can be attributed to three main factors: (1) the relatively low cost of other heating fuels such as natural gas, fuel oil and coal, (2) more restrictions on smoke emissions from fireplaces and stoves along the Wasatch front, and (3) readily available and inexpensive firewood available from sawmills in Gunnison and Wellington that have been established for the past several years.

The Forest's present fuelwood quantity remains quite adequate with no problems in the foreseeable future considering the mortality resulting from insect and disease. The available species, location, and cost do not always meet public desires.

Synopsis - Fuelwood supplies are meeting present demand and no problems are anticipated for the foreseeable future.

Action - Continue to anticipate fuelwood demands based on past use curves and any changes that may occur to influence future demand curves.

Responsibility - District Rangers

Verify Classification Of Suitable And Unsuitable Lands

The purpose of this monitoring is to verify the classification of suitable and unsuitable lands for timber management.

Methods - Examine lands during silvicultural exams, timber sale inventories, and other opportunities when field visits are being made. This information is kept with the analysis records at present and is not in digital form

Results - As a general rule the classifications in the Forest Land Management Plan are accurate. Some minor errors have been found relating to the map locations and references in the Plan. At this time, a new vegetation map is being developed. This digital map is 90 percent complete. The remaining 10 percent is scheduled to be completed in fiscal year 2002. It is based on mapping completed by the Forest Botanist. Following completion of the vegetation map, data from land type associations and soils resource inventories will be used to prepare an initial suited/unsuited for timber harvest map. Silviculturists, using stand examinations to verify and correct any errors will review the data.

Discussion - The minor discrepancies that are being found relate to timber stands being located improperly on maps and incorrect management coding. There have been no major problems identified, to date, with classification problems. Following completion of the vegetation map, suitability data from old NEPA analysis will be used to verify and update the new map.

Synopsis - No significant problems have been identified to date with the original land classification.

Action - Continue validating classification information.

Responsibility – Forest and District Silviculturists

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SOIL RESOURCE

Soil Survey Activities

The purpose of this item is to track accomplishments in conducting progressive soil surveys and making soil resource information available. This includes the number of acre mapped, soil survey reports completed, and information made available for Forest and public use through GIS and the internet.

Methods - Reporting consists of acres mapped, reports written for order three intensity soil surveys, and the types of information available on the intranet and internet.

Results - Order 3 SRI's have been published by the NRCS covering the La Sal Division, part of the Abajo Division, and the San Pitch Division. The Forest Service has completed an Order 3 survey for the Abajo Division; however, documentation remains in draft form.

The Soil Resource Inventory for the Manti Division has been under development over the last 10 to 15 years. The inventory is unpublished and has not been correlated to adjacent published soil inventories. The map unit descriptions are in draft form and were last edited in December 1997. Recent analysis of the SRI for the Manti Division found that consistency, completeness, and good documentation of supporting data did not fully meet Regional or National standards. The initial field work and raw data collected in the inventory is of good quality and is adequate to further develop map unit descriptions and interpretations. The draft map unit descriptions, at this time, do not always accurately reflect what is on the ground well enough to be utilized for development of site specific plans.

Discussion – In the near future, the Forest will not complete and publish standard soil surveys. Instead, work will be directed toward the completion of landtype and landtype association mapping, and the completion of GIS coverages and databases correlated with existing soil resource inventory information.

Synopsis – Landtype and landtype association mapping and databases will provide the information needed for Forest Plan revision and most project planning.

Action - A combination of contracting and Forest personnel will be used to finalize map units, develop the appropriate databases, and provide user interfaces in NRIS, ArcView and ArcInfo. All products for the Manti Division are expected to be complete in 2002.

Responsibility - Ecosystems Staff Officer, Forest Hydrologist, and Forest Resource Information Manager.

Project Impact Evaluation For Any Soil Disturbing Activities That Have Potential Of Altering Soil Productivity

Methods – Most NEPA analyses include management requirements and mitigation measures designed to limit adverse effects to soil productivity. These measures typically focus on restricting activities in order to limit soil compaction and on prompt revegetation.

Results – Implementation is routinely documented in timber sale administrators' and minerals inspectors' reports. Implementation associated with other activities is not as well documented. It is assumed that management requirements and mitigating measures were implemented. No reports documenting effectiveness monitoring were readily found for the reporting period.

Discussion – Generally, reviews of management activities have not identified significant concerns with compaction (e.g., impacting >15% of timber harvest units with skid trails and landings), erosion (evident signs such as ravel, gulying, pedestals), or revegetation. Better methods of tracking monitoring information recorded as a part of administrators' and inspectors' reports is needed, as well as better regulated monitoring and reporting for other activity areas.

Synopsis – General evidence suggests that soil productivity is being maintained by implementation of effective best management practices as planned in NEPA assessments. Better tracking and consolidation of monitoring data is needed to verify this contention or identify activities of concern.

Action - Develop user-friendly forms that can be used to systematically document implementation and effectiveness of specific measures. Use and contribute to the RO-Biophysical Resources intranet-based monitoring network.

Responsibility - Forest Hydrologist, project field inspectors

Sequential Photo Points Of Vehicular Travel Damage.

This monitoring was intended to evaluate adverse soil and watershed impacts from motorized vehicles. Upon evidence of excessive damage, there would be an evaluation of closure, travel plans, and rehabilitation needs.

Methods - The Forest Land and Resource Management Plan notes that this would be accomplished through sequential photo points of vehicular travel damage. Evaluation has been made through field inspections and documented by some photographs, however sequential photo points have not been set up.

Results - Plans are being developed to close and rehabilitate unclassified roads and trails where resource damage has occurred and where these roads or tracks serve no need for Forest use and management.

Discussion - Most vehicular travel damage to natural resources is caused by recreational activities. Travel maps and regulations are available to the public in an effort to minimize resource damage and use conflicts; however, they are not entirely effective in the face of increasing use.

Synopsis - Vehicular travel damage is periodically assessed at the District or Division scale and at the project scale. Unauthorized use is expanding faster than the Forest can achieve control or rehabilitation. Systematic monitoring of damages has not been done.

Action - Continue to make inspections and evaluation of vehicular travel damage and close and rehabilitate roads or other areas damaged by vehicles as appropriate. Consider using other tools to monitor unauthorized use and the extension of unclassified roads and trails; photo points are not a useful monitoring tool given the scale of this problem.

Responsibility - Forest Watershed, Engineering & Recreation Staffs and District Watershed & Rec. Staffs

WATER

Compliance With State Water Quality Standards

Baseline Monitoring

The purpose of this monitoring is to establish a baseline for chemical and physical characteristics of the water flowing from the National Forest and to demonstrate compliance with the water quality standards for the States of Utah and Colorado.

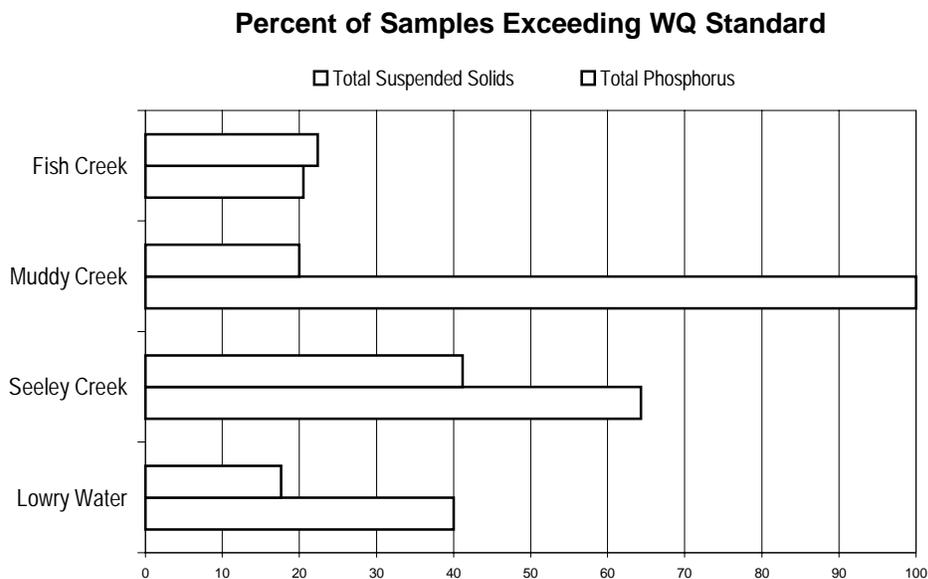
Samples are to be collected at 3 to 5 year intervals and compared to the State's Water Quality Standards to determine if standards have been violated and compared to the previous samples to determine if changes have occurred.

Methods – Sampling and reporting methods vary depending on specific objectives of the monitoring and agreed upon sampling and QA/QC protocols.

The USGS maintains several gages on and near the National Forest and measures streamflow and some water quality characteristics. This data is available on USGS Internet sites.

The Forest has established several sampling stations for baseline data as part of the cooperative monitoring project with the Utah Division of Water Quality. Forest personnel collect the samples following the State's protocols and the State analyses the samples. The following are long-term baseline stations: Lowry Water, Seeley and Muddy Creeks (San Rafael River basin), and Fish Creek (Price River basin).

Results - Based on the data from the cooperative monitoring project, the baseline stations generally meet the water quality standards for their designated uses except for total suspended solids and total phosphorus.



The following tables further describe the number of samples for each station and the range of values associated with the exceedances.

Lowry Water

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
PH	6.5 – 9.0	17	1	9.1
Minimum dissolved oxygen	6.5 mg/l	17	1	5.2
Total phosphorus	0.05 mg/l	17	3	0.07 - 0.52
Total suspended solids	35 (most restrictive value – associated with aquatic life standard)	15	6	98 - 574
Iron	1.0	8	2	1.5, 1.2

Seeley Creek

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
Minimum dissolved oxygen	6.5	17	1	6.0
Total suspended solids	35	14	9	41 - 930
Total phosphorus	0.05	17	7	0.056 - 0.29
Iron	1.0	9	2	

Muddy Creek

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
Total suspended solids	35	3	3	212 - 734
Total phosphorus	0.05	4	2	0.12 - 0.20
Iron	1.0	3	1	

Fish Creek

<i>Parameter</i>	<i>WQ Standard</i>	<i>Total Number of Samples</i>	<i>Number of Exceedences</i>	<i>Range of Exceedence Values</i>
PH	6.5 – 9.0	75	1	9.2
Minimum dissolved oxygen	6.5 mg/l	78	3	4.8 - 5.7
Total suspended solids	35	73	15	38 - 597
Total phosphorus	0.05	85	18	0.06 - 2.3
Iron	1.0	36	2	

Discussion – The exceedances for total phosphorus and suspended sediment generally occur on the same dates and may be associated with spring runoff or storm flows from summer thunderstorms. Streamflow data and/or information about weather conditions is not in the database. The causes of the iron exceedances have not been determined.

The current baseline data does not well represent the overall quality of water the Forest produces. Several of the baseline stations are at locations influenced by Mancos shales, which even in their undisturbed state, are a source of phosphorus and total dissolved and suspended solids .

Project Monitoring

The purpose of this monitoring is to ensure that selected activities on National Forest System lands comply with water quality standards.

Methods - Each mining company that operates on the National Forest is required by stipulations in the lease and mine plans to monitor the hydrologic conditions including the chemical and physical characteristics of the surface water. There are 12 mines with portals on the National Forest and 4 more with portals off of the Forest that mine under the Forest. Each of these operations conducts monitoring. About 160 stations are monitored in this fashion. About 1600 locations have been sampled as a part of the pre-mining investigations.

Results - The mining companies prepare annual reports as a requirement of their leases and generally report that the samples are within the state standards. High phosphates have been detected but are believed to be the result of natural processes.

Discussion - Many water quality samples have been collected over the years; however, the data has not been analyzed for any trends.

Synopsis - Much sampling has been done; little data analysis or synthesis have been done.

Action - Continue to cooperate with Utah Division of Water Quality, permittees, leasees, mining companies, and others. Require data to be submitted to a State or national data base, such as those maintained by Utah DOGM or STORET.

Coordinate the collection of water chemistry samples and macro-invertebrate to improve the interpretation of both data sets.

Responsibility - Forest Hydrologist

Change In Riparian Areas Due To Land Management

This monitoring is to identify the type and conditions of the riparian areas on the Manti-La Sal National Forest so that we can quantitatively address the issues of management effects on riparian areas and plan our activities to reach the desired future conditions.

Methods - Sequential photo points and site analysis.

Results - The Forest selected a Riparian Demonstration Project in Hop Creek on the Moab Ranger District and initiated improvements both through in-channel construction and changes in livestock management. Photos were taken before and after construction to document these conditions. The area was inspected in 2000. Approximately 1/3 of the structures had failed; 1/3 were damaged and at risk; and 1/3 were acceptable. The enclosure fence around the upper portion of the area was in poor condition and had not served its purpose.

Changes in livestock management had not resulted in the anticipated improvement. Maintenance/reconstruction of the in-channel structures and the enclosure fence is scheduled for 2001. Livestock management changes are being evaluated as part of allotment plan revision scheduled for completion in the spring of 2002.

Site analysis has been done using the 1992 Region 4 Level 2 Riparian Inventory protocol. Inventories were completed under contract in 1992 and 1997.

Discussion and Synopsis – Following the initial inventory, no sequential photos or site analysis has been done. Both the vegetation and stream channel information are based on ocular evaluations instead of quantitative measurement. Additionally, the stream classification system has changed since 1997, making interpretation of the information in the reports difficult.

Additional inventory and monitoring methods have since been developed. There is an increasing emphasis on measurements at representative sites within an individual riparian area or stream reach. The national data standards and the NRIS database are designed around this philosophy and may result in changes in monitoring techniques.

Sequential photos document changes but may not provide sufficient information about causes or consequences.

Currently, wetlands which are not part of a streamside riparian area are mapped as inclusions in other vegetative units. There is a need to delineate and classify wetlands as separate entities in order to determine the type, extent, distribution, and condition of wetlands across the Forest.

Action – Develop site or project specific monitoring objectives and tailor the monitoring technique to the objective while meeting national data standards.

Inventory wetlands and evaluate their condition and any impacts of Forest activities.

Responsibility - District Rangers, Ecosystems Staff, and ID team including hydrologist, biologists, and range specialists.

Watershed Improvement Accomplishment

The Forest Plan identifies several areas that need watershed improvement; management units where the primary emphasis is watershed protection and improvement are shown as WPE management units on the Plan map. Projects in these and other locations are identified in Table A-15. Watershed improvements are accomplished when the acres are treated.

Methods - Acres improved as reported in MAR reports.

Results - Table A-15 of the Forest Plan shows a planned implementation rate of 470 acres per year. Annual accomplishments vary year to year based on funding, staffing, fire seasons, and weather conditions and fall short of the Forest Plan objective.

Following are the accomplished acres as reported in MAR for the past five years: 2000 – 30 acres, 1999 – 50 acres, 1998 – 11 acres, 1997 – 0, 1996 – 11 acres.

Discussion and Synopsis -. Watershed treatments include erosion and sediment control by contour trenching, gully plugs, stream revetments, and revegetation of areas that have insufficient vegetation. Funding to construct watershed improvements is generally available, but funding for advance planning is not as readily available. Project surveys, plans and EA's must be prepared in advance of project implementation. Additional watershed and related resources staffing is needed to prepare the documentation and manage the implementation for improvement projects.

Action – Additional staffing is planned for 2002. In the interim, district and SO specialists will prepare plans and the associated documentation as time permits.

Responsibility – Forest Hydrologist, District Watershed Staffs, Leadership Team

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MINERALS

Number Of Reports Prepared.

This item includes site investigations to determine the geologic characteristics of a project area. It includes only in-service generated projects.

Methods - Site investigations are completed and geologic reports are generated. They are monitored by keeping track of how many requests are made and how many of the requests are completed within the time frames requested.

Results - The expected workload was projected during a time when the number of requests were high. This was during 1984-1986 when site investigations were being done for repair of damages that occurred during the flood/landslide years of 1984-1986. During 1986 and 1987 the number of requests for geologic investigations were in line with the ten-year plan predictions. This was due to intensive efforts to complete repairs with emergency money obtained. Requests for geologic investigations decreased from 1988 to the present. The workload shifted from damage repairs to investigations for new water developments and timber sale land stability investigations.

Discussion - Because of drought conditions, the number of requests decreased to approximately 2-3 per year for each year from 1987 to the present.

Synopsis - Since the number of requests have decreased the number completed decreased proportionately. Of the requests received, site investigations and reports were submitted within required time frames.

Action - We will continue to respond to requests for geologic services as received from other staff groups. No change is recommended.

Responsibility - Minerals/Engineering Staff

Landslide Movement

An inventory of landslides was compiled on USGS 7.5 minute topographic quadrangles in 1983 and 1986. This inventory is continuously updated as new landslides occur and are mapped. A monitoring program was initiated to monitor the flow rate of landslides that could continue to cause damage to facilities and streams. Several project related land stability analyses have been completed for projects such as salvage timber sales, prescribed burns, pipelines, roads, and drill pads.

Methods - As landslides are discovered they are mapped and classified on the inventory using field observations and aerial photography. The flow of landslides is measured by placing stakes at strategic locations along the slides and measuring displacement over time. Project management personnel inspect project areas for new landslides. If discovered, they are mapped and analyzed. See Results below for further discussion.

Results - Hundreds of new landslides were inventoried and mapped during the flood/landslide years of 1983 through 1986. Flow monitoring of 8 landslides continued through 1985 to detect the rate of downslope movement. Monitoring of all of the landslides except the Seeley Creek and Boulger Canyon slides was discontinued in 1987 because drought conditions caused slope conditions to stabilize. Drought conditions have continued through the present. Formal monitoring of the Seeley Creek and Boulger Canyon landslides has since been discontinued though they are inspected on occasion to determine if significant movement has occurred. Only minor landslides/slumps have occurred in the last ten years that have damaged roads (Twelve Mile Canyon, Joes Valley, and Trough Springs Ridge). Road repairs were made and water was adequately drained to prevent further movement.

Discussion - Monitoring of landslides resulted in increasing our knowledge of what geologic conditions influence land stability. The landslide inventory and monitoring program resulted in completion of a land stability map of the Manti Division based on the occurrence of landslides, slope, aspect, and geologic conditions.

Synopsis - Monitoring has kept pace with the need to assess land stability. For those landslides that have stabilized or are no longer a threat to facilities and resources, monitoring has been discontinued.

Action - As landslides occur they should be classified and added to the inventory. Monitoring of existing and new landslides should be initiated if the landslides are determined to be a threat to facilities or protected resources. No change to the Forest Plan is recommended.

Responsibility - Minerals/Engineering Staff

Number Of Plans/Leases Completed And Administered

This includes NEPA analyses, processing and administration of minerals operating plans and leases. The Forest Service reacts to proposals for mineral leases or operations submitted by operators (locatable/salable) or other regulatory agencies (BLM and OSM/UDOGM). The Forest Service does not have control over what and how many proposals are submitted. Federal regulations and MOU's with other agencies determine time requirements for the Forest Service to react to these proposals in preparing NEPA analyses and making approve/not approve, consent/not consent, and object/not object decisions.

Methods - Applications for mineral operations are evaluated through the NEPA process by interdisciplinary teams. They are either approved or not approved by the responsible official based on the results of NEPA analyses.

Results - Applications received each year since 1986 have deviated significantly from Forest Plan predictions.

Locatable mineral operations proposed for uranium and gold mining have decreased to 0 each year from a predicted level of 50 to 60 each year. Two gypsum mines have been approved on the SanPitch Division of the Uinta National Forest administered by the Manti-La Sal National Forest. Another gypsum mine already operating on private inholdings in this area is being evaluated under a proposed plan of operations to expand onto NFS lands. It is expected to be approved early in FY-2002. The potential for gypsum mines was not evaluated in the Forest Plan. The present workload involves administration of 1 uranium mine that has been

reclaimed by the operator. The mine is being monitored for success of vegetation standards regarding bond release. All other uranium mines that were permitted under Forest Service regulations have been reclaimed and meet required revegetation standards. The three gypsum mines are being administered to standard.

Salable mineral operations have decreased from approximately 10 each year to 1 or 2 each year due to a decrease in demand for road surfacing gravels, riprap and building stone. The decrease in demand is proportionate to other mineral activities which require road improvements and the decreased need for materials to repair flood and landslide damages. The Forest Service has developed several gravel pits for surfacing of Forest Roads. These are being operated and reclaimed in accordance with the Forest Service operating plans and NEPA analyses, including reclamation.

Oil and gas leasing and drilling operations have been significantly less than predicted in the Forest Plan, but are expected to increase under the Bush Administration National Energy Policy. Leasing was discontinued from 1987 to 1992 after passage of the Onshore Oil and Gas Leasing Reform Act of 1987 because it rendered almost all leasing recommendations in Forest Plans and Final EISs obsolete. The Final Environmental Impact Statement for Oil and Gas on Lands Administered by the Manti-La Sal National Forest was completed in 1992 and the final Record of Decision released in January of 1994. Leasing resumed in 1994 with approximately 100,000 acres being leased annually. Only two wildcat wells were drilled on the Forest between 1987 and 2000. One wildcat well was drilled in 2001 and it is expected that 2 will be drilled in 2002. Maintenance of 7 existing gas production wells has continued.

Coal leasing has lagged behind the predictions. It was anticipated that approximately 24 new lease actions would be proposed and processed for the ten year period following Forest Plan completion (1987 to 1997). We have completed analyses for and consented to 7 new leases from 1987 through 2000. Approximately 10 lease modifications (add up to 160 acres to an existing lease) have been processed.

The economics of coal mining have changed significantly since Forest Plan completion due to the increased use of the longwall mining method in place of conventional room-and-pillar mining. Mining efficiency has generally increased from a production rate of 16 tons/miner/day to 63.7 tons/miner/day. Mining efficiency has increased at the expense of the number of available jobs.

Discussion - See above

Synopsis - The number of plans processed has decreased but the complexity of each plan and the associated NEPA analyses have increased. The workload is generally the same as in 1986.

Action - Resources need to be maintained at a level adequate to accomplish the workload.

Responsibility - Minerals/Engineering Staff

Compliance With Terms Of Completed Plans

Once mining operations are approved or leases are issued compliance inspections are required to assure compliance with the terms of approval and lease stipulations. Reviews need to be completed on a periodic basis to assure compliance with requirements for mitigating impacts.

Methods - Site inspections are required to determine compliance with requirements for mining operations. In addition, mine plans are reviewed for compliance with lease stipulations.

Results - Office reviews for compliance with terms of approval have been conducted as required and show general compliance. On the ground inspections for multi-year operations are often postponed or are less frequent than the ideal due to a high workload related to approval of new proposals. Since mine plan inspections for coal mines are generally the responsibility of the Utah Division of Oil, Gas, and Mining, compliance inspections for coal mines are not conducted as often as other types of mining operations.

Inspections of new active operations that have the greatest potential for environmental effects are given priority and have been monitored frequently (at least once per week). Inspection of other multi-year operations are being done but to a minimum level needed to assure compliance. They are not being done as often as would be ideal as outlined in the Forest Plan.

Discussion - See above

Synopsis - In general, operations are in compliance with requirements. When non-compliance situations are discovered, appropriate action is taken.

Action - Compliance inspections are being done at a minimum but sufficient level. Additional resources are needed if the frequency of mine plan inspections is to be increased.

Responsibility - Minerals/Engineering Staff

Subsidence And Hydrologic Monitoring

The purpose of monitoring is to track the impacts to resources, enforce required mitigations, and help make decisions for future leasing and mining proposals. Subsidence and hydrologic monitoring of coal mine areas is required to be completed each year. This is the responsibility of the coal mine operators in accordance with the Surface Mining Control and Reclamation Act and the coal mining regulations (30 CFR 700 to end).

Methods - Conventional ground surveys, ground observations, aerial photogrammetry, computer modeling, measurement of water flow and quality.

Results - A photogrammetric subsidence monitoring program coordinated by the Forest Service proved to be unsuccessful and was discontinued in 1987. The participating companies initiated independent programs consistent with the mining regulations and lease stipulations in 1987 and 1988. These mines include the Crandall Canyon, Trail Mountain, StarPoint, White Oak, and Hiawatha Mines. There is a continuous record of subsidence monitoring from 1988 to the present.

There is a continuous record of subsidence monitoring for those companies that originally elected to implement independent programs in 1980. These mines include the Skyline, SUFCO, Des-Bee-Dove, Cottonwood/Wilberg, and Deer Creek Mines.

Hydrologic monitoring has been completed for each mine as required by the mining regulations.

Discussion - The mining companies submit hydrologic monitoring reports to the Utah Division of Oil, Gas and Mining on a quarterly basis. They compile subsidence and hydrologic monitoring results on an annual basis and submit annual reports to DOGM. Copies of the annual reports are sent to the Forest Service for information and review upon request.

Synopsis - Except for 1981 to 1987 when subsidence monitoring data was lost, subsidence monitoring has been continuous and in accordance with the Forest Plan, mining regulations, and lease stipulations. For the years lost, observable subsidence effects have been monitored and recorded.

Hydrologic monitoring has been conducted by the mines in accordance with the Forest Plan, mining regulations, and lease stipulations.

Since so much information is compiled by the mining companies, it is difficult to effectively track potential impacts. Utah Division of Oil, Gas and Mining (DOGM) and the Forest Service do not have the resources available to continuously review and interpret the submitted information to determine if the mines are causing slow, gradual changes in hydrologic conditions. Obvious or abrupt changes are more easily detected and are rare. All hydrologic monitoring data are now submitted to the Utah Division of Oil, Gas and Mining in digital format and is entered into an electronic database. All past monitoring data has also been entered into the database. The information is available for review by the public through the Utah Division of Oil, Gas and Mining's website.

Action - Additional resources are needed to adequately track effects.

The Forest and DOGM have digitized hydrologic monitoring data for automated (computer) processing. Additional personnel and funding would be required for Forest Service or UDOGM personnel to review this information on a scheduled basis to confirm effect analyses submitted by mine companies in monthly monitoring reports and annual reports.

Responsibility - Minerals/Engineering Staff, Utah Division of Oil, Gas and Mining (DOGM)

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PROTECTION

(Air Quality) Whether Utah And Colorado State Air Quality Standards Are Met

Forest Service activities are required to comply with the procedural and substantive aspects of State requirements for air quality protection. Prescribed fire is the primary activity affecting air quality. There are no Class I airsheds on the Manti-La Sal National Forest; however, several nearby National Parks are.

Prescribed Fire

Methods - Compliance with weather forecast, burning index and visual observation of smoke dispersal plus number of complaints.

Results - Prescribed fire plans include evaluation and predictions for smoke management which comply with the State Requirements. Prior to any prescribed burning the State of Utah has been notified and necessary meteorological data has been obtained. No notices of violations of state air quality standards have been received.

Discussion and Synopsis –

Action – Comply with State requirements and procedures; continue using effective smoke management practices. Document implementation and effectiveness of practices as part of the record-keeping associated with burn plans.

Responsibility – Forest FMO, Forest Hydrologist

Lichen Biomonitoring

In addition to smoke management, the Forest has inventoried and is monitoring lichens.

Methods – The Forest has 15 reference sites; 2 on the San Pitch Division, 7 on the Manti Division, and 3 each on the La Sal and Abajo Divisions. Initial site characterization and subsequent monitoring has been done through cooperative agreement with Brigham Young University. Monitoring is at 3-8 year intervals.

Results – BYU has collected 143 lichen species in 48 genera from the reference sites. Pollution-sensitive indicator species have been identified at each site and selected species have been collected for analysis of bioaccumulation of heavy metals and other pollution-related elements. Results are available in periodic reports from BYU to the Forest, the most recent is December 2000.

Discussion and Synopsis – The high species diversity, general absence of pollution-damaged thalli, and relatively high number of sensitive indicator species per site indicate that air pollution has not significantly affected lichen flora. However, there are several areas of concern. The sites on the San Pitch Division and several on the Manti Division have elevated heavy metal concentrations at or near thresholds of concern similar to sites adjacent of the heavily populated and industrialized areas of the Wasatch Front. The sites on the Abajo Division have elevated sulfur concentrations and may be affected by power plants in the Four Corners area.

Action – Continue cooperative monitoring. Evaluate monitoring intervals for reference sites at or near threshold concentrations for one or more parameters. Add reference sites in the vicinity of already identified areas of concern.

Responsibility – Forest Hydrologist.

(Fire) Number Of Wildfires And Acres Burned - 1987-2000

The purpose of the monitoring is to verify if there is a 20% increase in Wildfires and Acres Burned above the five-year average, and National Fire Management Analysis System (NFMAS).

Methods - Evaluation annually using frequency by size class, distribution, intensity levels and acres burned from individual fire reports.

Results – Fire Numbers From 1982 –1991 a five-year time frame was selected as a monitoring period (1987 to 1991). During this five-year period, for two years the number of fires (45 and greater) exceeded the average plus 20%. These years were 1988 and 1989. From 1987 until 2000 there were six years where the number of fires exceeded the 1987 to 1991 average plus 20 percent. These years were 1989, 1994, 1995, 1996, 1997 and 2000.

Results – Fire Acres From 1982 –1991 a five-year time frame was selected as a monitoring period (1987 to 1991). During this five-year period, an average plus 20% acre number was determined equaling 476.6 acres. During this same five-year period, two years 1987 and 1988 exceeded the average. From 1987 to 2000 there were no years that exceeded the average.

Discussion – The number of fires and acres burned varies greatly due to regional weather conditions. Continue monitoring annually.

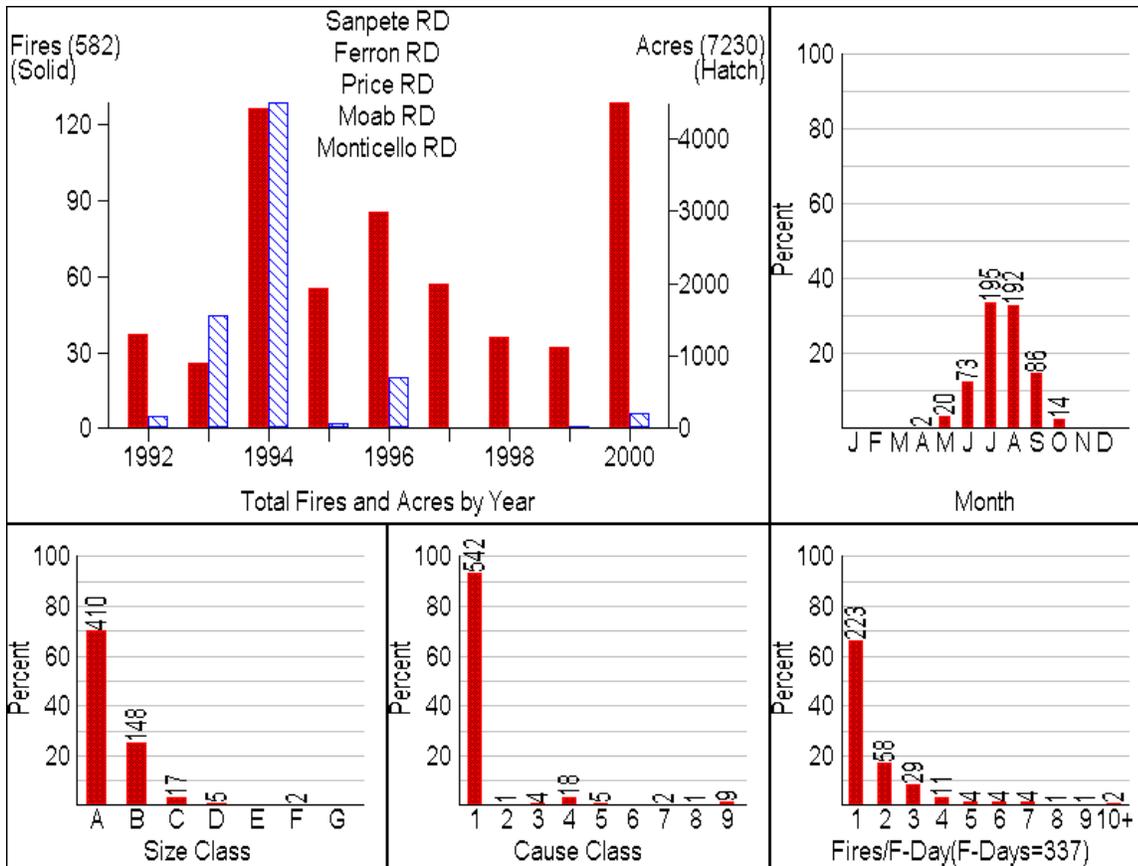
Synopsis - The number of wildfires are expected to be within NFMAS and the 5-year average, however acres burned from 1987 to 2000 have stayed below the 5 year average.

Action - Continue monitoring and reporting annually. Update NFMAS every 5 years.

Responsibility - Fire Staff and Fire Management Officer

For number of fires and acres burned from 1992 to 2000, see the graphs below.

For number of fires and acres burned from 1982 to 1991 see M-L Forest Monitoring Technical Report pages 3-69 and 3-68.



(Fire) Number Of Wildfires And Acres Burned (Human Caused). 1987-2000

The purpose of the monitoring is to verify if there is a 20% increase in human caused Wildfires and resulting Acres Burned above the five-year average. Information is based on National Fire Management Analysis System (NFMAS) data.

Methods - Evaluation annually using frequency by size class, distribution, intensity levels and acres burned from individual fire reports. Reference the attached PCHA analysis for the base line data for the years 1970 thru 1998. Data for the years 1999 and 2000 has been included in the results noted below.

Results – Fire Numbers - From 1982 –1991 there were 47 human caused fires on the Forest. During the five-year time frame selected as a monitoring period (1987 to 1991) there were 27 human caused fires or an average of 5.4 fires per year.

From the period 1982 till 1986 the following year exceeded the five-year monitoring period average plus 20%:
1982 - 08 fires

From the period 1987 till 2000 the following years exceeded the five-year monitoring period average plus 20%:
1987- 10 fires
1991- 07 fires
2000 - 09 fires

Results – Fire Acres - From 1982 – 1991 human caused fires contributed to 153 acres of wildfire on the Forest. During the five-year time frame selected as a monitoring period (1987 to 1991) 136 acres burned due to human caused fires or an average of 27 acres per year.

From the period 1982 till 1986 no years exceeded the five-year monitoring period average plus 20%.

From the period 1987 till 2000 the following years exceeded the five-year monitoring period average plus 20%:

- 1987 – 71 acres
- 1988 – 55 acres

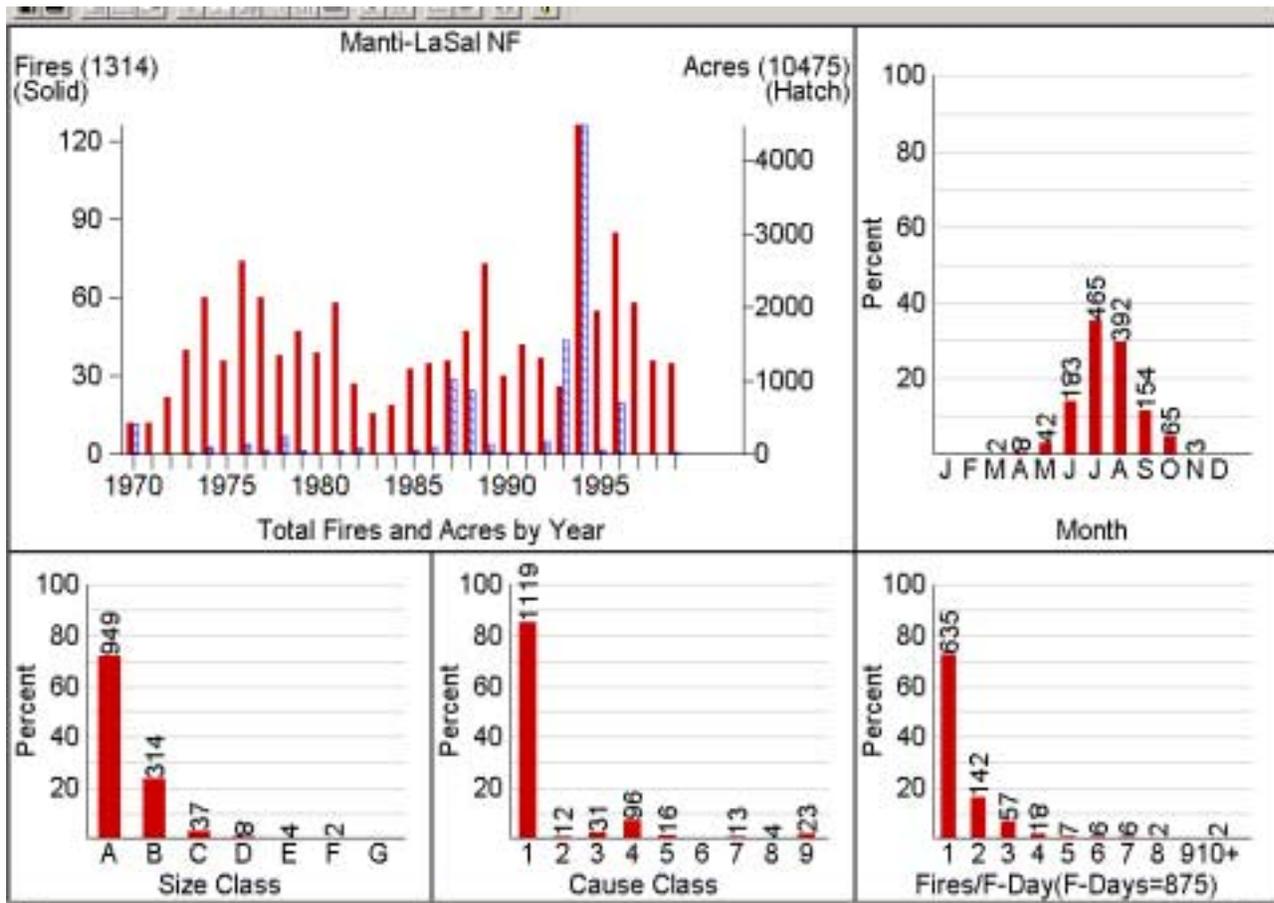
Discussion – The number of fires and acres burned varies greatly due to regional weather conditions. Overall the number and acres burned due to human caused fires is approximately 7 % of lightning caused fires. Continue monitoring annually.

Synopsis - The number and acres of human caused wildfires to date is not a significant number on the Forest.

Action - Continue monitoring and reporting annually. Update NFMAS every 5 years.

Responsibility - Fire Staff and Fire Management Officer

For number of fires and acres burned from 1992 till 2000 see the PCHA report displayed below:



Manti-La Sal National Forest
1987-2000 Monitoring and Evaluation Report

PCHA99 10-03-2001 MANTI-LASAL NF YEARS: 1970 - 2000

FIRES
===== BY STATISTICAL CAUSE
ACRES (,000)

Year	Litng	Equip	Smokg	Cmpfr	DebBr	RRoad	Arson	Child	Misc	Total
====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1970	31	0	0	1	1	0	1	1	0	35
	0	0	0	0	0	0	0	0	0	0
1971	42	1	2	2	0	0	1	1	0	49
	0	0	0	0	0	0	0	0	0	0
1972	38	1	0	8	0	0	0	1	0	48
	0	0	0	0	0	0	0	0	0	0
1973	33	0	2	5	0	0	0	0	0	40
	0	0	0	0	0	0	0	0	0	0
1974	48	0	3	8	1	0	0	0	0	60
	0	0	0	0	0	0	0	0	0	0
1975	26	0	0	8	0	0	0	0	2	36
	0	0	0	0	0	0	0	0	0	0
1976	65	0	0	4	2	0	0	0	3	74
	0	0	0	0	0	0	0	0	0	0
1977	51	1	0	7	1	0	0	0	0	60
	0	0	0	0	0	0	0	0	0	0
1978	26	1	1	9	0	0	0	0	1	38
	0	0	0	0	0	0	0	0	0	0
1979	26	1	5	7	1	0	6	0	1	47
	0	0	0	0	0	0	0	0	0	0
1980	28	1	4	3	2	0	0	0	1	39
	0	0	0	0	0	0	0	0	0	0
1981	53	2	2	0	0	0	0	1	0	58
	0	0	0	0	0	0	0	0	0	0
1982	19	0	1	6	0	0	1	0	0	27
	0	0	0	0	0	0	0	0	0	0
1983	12	0	0	4	0	0	0	0	0	16
	0	0	0	0	0	0	0	0	0	0
1984	18	1	0	0	0	0	0	0	0	19
	0	0	0	0	0	0	0	0	0	0
1985	30	0	0	0	0	0	2	1	0	33
	0	0	0	0	0	0	0	0	0	0
1986	31	0	0	2	0	0	0	1	1	35
	0	0	0	0	0	0	0	0	0	0
1987	26	1	3	5	1	0	0	0	0	36
	0	0	0	0	0	0	0	0	0	1
1988	42	0	2	2	0	0	0	0	1	47
	0	0	0	0	0	0	0	0	1	1
1989	69	0	0	0	1	0	0	0	3	73
	0	0	0	0	0	0	0	0	0	0
1990	29	0	0	0	0	0	0	0	1	30
	0	0	0	0	0	0	0	0	0	0
1991	35	1	3	2	0	0	0	0	1	42
	0	0	0	0	0	0	0	0	0	0
1992	34	0	1	0	1	0	0	0	1	37
	0	0	0	0	0	0	0	0	0	0
1993	22	1	0	2	1	0	0	0	0	26
	0	0	0	0	1	0	0	0	0	2
1994	119	0	2	3	0	0	0	0	0	124
	0	0	4	0	0	0	0	0	0	4
1995	50	0	0	2	0	0	0	1	2	55
	0	0	0	0	0	0	0	0	0	0
1996	78	0	0	3	2	0	0	0	2	85
	1	0	0	0	0	0	0	0	0	1
1997	52	0	0	2	1	0	2	0	1	58
	0	0	0	0	0	0	0	0	0	0
1998	32	0	1	2	0	0	0	0	1	36
	0	0	0	0	0	0	0	0	0	0
1999	2 human caused fires under 1 acre									
2000	9 human caused fires under 1 acre									
TOTALS:	1165	12	32	97	15	0	13	7	22	1363
	2	0	4	1	2	0	0	0	1	11

(Fire) Fuel Treatment Program (BD) 1987-2000

The purpose of the monitoring is to verify that at least 90% of the activity fuels created during the year on the forest, has had some type of treatment.

Methods - Complete On site inspections of 25% of the timber sales on the forest to determine accomplishment. Due to the variance of weather conditions and approvals for burning the percentage of sites inspected required adjustment based on the level of BD Treatments.

Results – Currently BD treatment information is available for the years 1996 through 2000. In four of the five years noted above at least 80% of the target acres were treated.

Year	BD Target	Acres Treated
1996	245	63
1997	345	341
1998	390	316
1999	902	602
2000	1,320	1,004

Discussion – Continued monitoring would take place on timber sale operations to determine BD needs in accordance with the sale area plan. Backlog acres will be identified and treated during time periods when weather and smoke conditions are favorable and qualified personnel are available.

Synopsis - No problem was observed with timber sales monitored in the five-year period.

Action - Continue monitoring large timber sales on the forest. Treat remaining slash on past and current sale units as they are released and favorable conditions are realized.

Responsibility - Fire Staff, Timber Staff, and District Rangers.

(Fire) Fuel Treatment Program, Hazardous Fuels Reduction 1987-2000

The purpose of the monitoring is to verify the year-to-year acreage accomplishment of Hazardous Fuels Reduction of natural fuels on the Manti-La Sal National Forest.

Methods - Actual accomplishment is based on completed acreage treatments of individual projects.

Results – Currently local data exists for the years 1994 thru 2000.

Manti-La Sal Hazard Reduction Prescribed Fire (does not include BD treatment acres)	
YEAR	ACRES
1994	95
1995	1,300
1996	1,300
1997	0
1998	3,680
1999	1,350
2000	300

Discussion - Completing projects varies yearly and depends on weather conditions and the severity of the fire season nationally. In 2000 during the fall months, no prescribed fire was permitted due to high fire fighting resource needs in the western states. The Forest is strengthening the Fuels Program and the completion of additional projects is expected in future years.

Synopsis – Funding changes, weather conditions and severity of the fire season will effect accomplishments in hazard reduction of natural fuels.

Action - Continue monitoring accomplishment of projects on an annual basis.

Responsibility - Fire Staff and District Rangers.

(Forest Pest Management) Depredation By Insects And Disease.

The purpose of this monitoring is to maintain a surveillance of forest insect and disease activity levels.

Methods - Annual aerial detection flights are made over the Forest by personnel of the Region's Forest Health Protection office. In addition to the aerial flights, information is obtained from field visits, silvicultural exams, timber cruising, timber marking, and other day-to-day management activities.

Results - The mountain pine beetle population continues to persist on the Monticello Ranger District and has reached epidemic levels in the Buckeye and Paradox Creek areas of the Moab Ranger District. The mountain pine beetles have expanded on the Moab District since the Willow Basin fire in 1994. Populations have also increased on adjacent private lands.

The mountain pine beetle increased in the Kigalia/Twin Springs (Monticello RD) area until the thinning/salvage harvest in the mid to late 90's. Sanitation treatments applied during these timber sales appear to have effectively reduced bark beetle populations in these areas. Since then the population, although still active has moderated to slightly above endemic levels. It is estimated from the aerial detection flights that approximately 14,000 acres have had mountain pine beetle activity since the last report in 1991.

Spruce beetle populations have continued to expand on both the Manti and the La Sal divisions. Suppression activities are being applied in the Monticello and Blanding Watersheds. The La Sal pass population has fluctuated but is still active.

The spruce beetle population on the Manti Division has moved from the 12-mile drainage northward. The farthest pockets are in the Rolfson-Lake Canyon drainages.

Overall, the spruce beetle has impacted over 80,000 acres on the Manti-La Sal since the 1991 report. In the heavily affected stands as much as 90 percent of the Engelmann spruce over 10 inches in diameter have been killed (Anhold, John and A. Steve Munson. 1998. Beetle-Induced Spruce Mortality)

Discussion - The conditions of the ponderosa pine stands on the Monticello and Moab Ranger Districts make them highly vulnerable to the mountain pine beetle. Some of the variables that contribute to this includes overcrowding of the stands, age of the trees, size of the trees, presence of the beetle populations, and

additional stress that may be put on the trees because of weather conditions. Most of the Engelmann spruce that is experiencing beetle attack is over mature and very susceptible.

Synopsis - Mountain pine beetle and spruce bark beetle continue to be greatest problem and are presently causing heavy losses on the La Sal and Manti Divisions.

Action - Continue the annual aerial detection flights.

Responsibility – Regional Forest Health Protection Staff, Forest and District Silviculturists.

(Forest Pest Management) Effectiveness Of Dwarf Mistletoe Suppression Projects To Protect Regeneration.

The purpose of this monitoring is to evaluate the effectiveness of various dwarf mistletoe projects.

Methods - Field reviews are used to determine the effectiveness of the project.

Results - The full results of the first project will be field checked next field season (see discussion).

Discussion - The Dry Wash Mistletoe project located on the Monticello Ranger District was completed in 1988. The decision implemented states: "it is my decision to adopt Alternative C for treatment of the described land in the Dry Wash Mistletoe area. The District Ranger is directed to modify Alternative C to include the use of seed trees. This action will serve to best control the spread of dwarf mistletoe on the Ponderosa pine by eliminating all infected trees over time. Also it provides for slash disposal thereby reducing the risk of fire and insect problems. Further it provides for larger, healthy trees in the future for Abert squirrel habitat while at the same time meeting the visual quality objective for the area" (Reed C. Christensen, Forest Supervisor, 11/12/85).

The selected alternative and silviculture prescription called for stand treatment in stages. The first stage was to remove infected overstory trees, except for seed trees that were left to provide site and seedling protection, wildlife habitat, and to reduce effects on visual quality. Open areas were then planted.

The second stage called for removal of infected seed trees and infected understory trees within 10 years, before planted seedlings were infected. Additional treatments similar to stage 1 were also projected. Additional planting was projected following this treatment. The next stage would be a repeat of stage 2 within 10 years. This sequence was planned to continue through three sanitation and regeneration sequences until the stand was regenerated and relatively clean of dwarf mistletoe infection.

The past monitoring report indicated that a review of the treatment would occur the summer following publication of the report. We have been unable to find any documentation of that review, and assume it was not completed or lost during the one to two year period when silviculture and timber staff positions were vacant on the District. After determining a need to monitor treatment effectiveness, the District Silviculturist visited the stand for a walk-through of the area on 9/19/01.

Review of the area indicated that there are still extensive pockets of infestation within the stand. In areas where efforts were more intensive to remove infected trees, infection levels are relatively low, but increasing. In

those areas where infected, larger trees were left infection appears to have spread extensively in both the overstory and understory. The stand is predominately uneven-aged in structure with few actual openings around infected trees to limit spread of the disease. We are at the limit of the time frame that called for re-treatment of the stand at this time. We recommend that the area be examined intensively during the next field season to determine the extent and general location of infection areas. From that point recommendations will be made regarding the next step in managing these stands.

The Hop Creek Timber Sale was completed in 1993. A shelterwood seed cut harvest was implemented and the initial prescribed burning was completed to reduce slash. Planting treatments have not been completed, initially, due to unavailability of seed and then due to lack of funding to implement burning necessary to reduce competition from gambel oak. This area is also scheduled for survey during the next field season to determine infection levels, identify natural regeneration that has occurred since harvest, determine needs, and identify whether the existing prescription should continue to be implemented.

Synopsis - Results of the two projects undertaken to date have not been finalized.

Action - Field evaluate the Dry Wash and Hop Creek projects during the next field season. Continue field observations of both the Dry Wash and Hop Creek projects until a determination as to their effectiveness can be made.

Responsibility – Regional Forest Health Protection Staff. Forest and District Silviculturists.

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LANDS

Land Purchase And Acquisition. Land Exchange

The purpose of this monitoring is to verify if land purchase, acquisition, and exchange is taking place as planned.

Methods - Land Adjustment Plan and Management Attainment Report

Results - Schedules were not developed in the Forest Plan for these activities. In the last 15 years there has been one land exchange, one donation, and we have purchased one administrative site.

Discussion - We have three land exchanges in progress, The State exchange, the Petty exchange and, the Ephraim City Exchange. No land acquisitions are in progress. Several Small Tracts Act adjustment opportunities have been identified with little progress to date due to funding limitations.

Synopsis - Land exchanges are considered on an "as they come" basis; those considered to be in the public interest will be pursued. No acquisitions are planned at this time. Adjustments under the Small Tracts Act are typically made to resolve occupancy trespass.

Action - Develop a Land Adjustment Plan for the Forest.

Responsibility - Branch Chief, Lands

Rights-Of-Way Acquisition

The purpose of this monitoring is to verify that we are within +/-50 percent of the planning period target.

Methods - Rights-of-Way Acquisition Schedule accomplishment.

Results - Of the 39 rights-of-way identified in the Forest Plan six have been accomplished.

Discussion - This program has fallen behind due to lack of funding of the lands program area. Additionally, the associated private party must be willing to grant the subject R-O-W.. There are presently six rights-of-way in various stages of negotiation.

Synopsis - Six of thirty-nine needed rights-of-way have been obtained. At the present rate, the program will continue to lag behind the schedule.

Action - Prepare a rights-of-way Acquisition Plan for the Forest. Amend Forest Plan or provide resources to accomplish the work.

Responsibility - Branch Chief, Lands

Occupancy Trespass

The purpose of this monitoring is to verify resolution of occupancy trespass. No target is identified in the Forest Plan.

Methods - Onsite inspection and landline location; Management Attainment Report

Results - There are a few records of occupancy trespass cases on file. Some have been resolved and several are pending.

Discussion - Few records are being kept except in the above mentioned files. There are known cases of trespass but no action (other than a letter to the offending party) is being taken in most cases to resolve them. A backlog of unresolved cases has accrued due to limited funding in the lands program areas.

Synopsis - It is apparent more work needs to be done, and few records are available to verify the extent of the problem.

Action - Develop a list of suspected and known occupancy trespass situations. Annually update the list and resolve cases.

Responsibility - Branch Chief, Lands

Landline Location

The purpose of this monitoring is to verify that +/-10 percent of the planning period target is being accomplished.

Methods - Survey; Management Attainment Report

Results - Approximately 135 miles of landline location has been accomplished through FY 2000.

Discussion - The financing for this activity has not been at the full Forest Plan level. We have completed about 84% of the 10-year projection within a 15 year period

Synopsis - Total miles of landline location is not within +/-10 percent of amount identified in the Forest Plan due to funding levels below those anticipated in the Forest Plan. Planned accomplishment levels need to be adjusted to reflect present funding levels.

Action - Reduce planned accomplishment to 6 miles per year with emphasis on areas with known/suspected occupancy trespass

Responsibility - Branch Chief, Lands

Special Use Permits Including: Applications, Amendments, Transfers, And Administration.

The purpose of this monitoring is to verify the activity is within 25% of Regional Acceptable Work Standard and Forest Direction.

Methods - Land Use Reports

Results - It is estimated that inspections of Special Use Permits do not meet the above standard, and that the uses meet requirements specified in the permit.

Discussion - Special use amendments and transfers are typically handled currently; new applications are backlogged due to funding limitations. Voluntary cost reimbursement has been implemented to provide resources necessary to process requests on a limited basis. The Districts has not been able to respond immediately to many requests annually.

Synopsis - Forest priority of funding is directed toward permit administration first then to processing new occupancy requests. This has resulted in the present backlog of permit applications. The Agency proposed mandatory cost reimbursement policy will provide some relief when implemented.

Action – Develop a list of backlogged applications; annually update the list and request funding accordingly.

Responsibility - Branch Chief, Lands

Effect Of Management Practices On Adjacent Or Intermingled Non-National Forest On Forest Plan Goals And Objectives

The purpose of this monitoring is to identify significant problems in Forest Plan implementation as a result of non-Forest land management activity.

Methods - Annual Interagency meetings, meetings with State and County governments, grazing associations. Monitoring activities occurring on Forest.

Results - No major problems have been identified through contacts as listed above.

Discussion - It appears little documentation is being done to record problems that come up. A record should be kept to identify problems until they are resolved.

Synopsis - Increased coordination and cooperation is needed to avoid effects.

Action - Annually request line officers to report any known situations. Continue to monitor.

Responsibility - Branch Chief, Lands

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FACILITIES

Road and Bridge Construction and Reconstruction.

The purpose of this monitoring is to verify that road construction and reconstruction is completed in accordance to approved project plans and the plans reflect the resource and road management objectives. Also, to verify that construction, reconstruction and surfacing are progressing in accordance with the 10-year activity schedule.

Methods - Projects will be reviewed by the Forest Engineer, Contracting Officer, and Line Officer responsible for approval of the project plans. The road accomplishments will be reviewed annually and required changes reflected in out-year budgets.

Results - Road Construction:

Year	Budget			Const./Reconst./Surfacing	
	Plan	Actual	Percent	Plan	Actual
87	430	350	81%	27.7	9.2
88	477	315	66%	30.8	5.1
89	488	53	11%	20.3	3.7
90	512	378	74%	8.2	8.2
91	544	346	64%	8.7	4.9
92	566	344	61%	10.3	6.9
93	593	343	58%	10.4	2.7
94	619	226	37%	9.9	6.6
95	644	238	37%	10.3	6.83
96	670	182	27%	10	8.25
97	697	469	67%	10	31.33
98	725	196	27%	10	11.6
99	754	212	28%	10	4.9
00	784	242	31%	10	13.5
01	815	362	44%	10	8.0

As of FY2001 reporting, there are 185 miles of Operational Maintenance Level 3 roads, and 560 miles of Objective Maintenance Level 3 roads; indicating that 375 miles do not meet their road management objective. Construction and reconstruction activity accomplished 132 miles of improvement, or 24% for the period. Mineral activities have allowed an additional 71 miles of road to be upgraded for 36% overall.

While the Forest Plan outlined 153.5 miles of road to be improved, and improvements to date total approximately 132 miles, the improved segments do not necessarily match the plan. Improvements that are project driven may or may not match planned improvements as outlined in the Forest Plan. Additionally, gravel placed in previous years has a design life, and some segments of gravel have worn out, and funds are expended in surface replacement on such roads.

The low number of projects per year has allowed on-site inspection of all projects against project plans.

Discussion - A backlog of 375 miles of road require improvement at a cost of approximately \$14,593,040 to meet the transportation facilities Forest Plan objectives. Roads are being planned and constructed to resource and road management objectives. The continuous wearing of existing road surfacing, and mandates like The Clean Water Act add to the amount of road segments needing improvement.

Synopsis - The Forest Plan objective of providing improved access to developed and point recreation sites is not being fully met. The Forest Plan objective of reducing operating, maintenance and resource costs is not being fully met.

Action - Identify the benefits of improved access to the Forest Management Team and Regional Staffs. Allocate additional funds to improving access in balance with other resource program needs.

Responsibility - Engineering Staff and District Rangers

Road Maintenance

The purpose of this monitoring is to verify predicted conditions of the transportation facilities. Monitoring will be a review of road logs, road condition surveys, maintenance accomplishments reports, surface replacement reports, sign replacement reports.

Methods - The transportation engineer and construction and maintenance foreperson will review the logs, survey and accomplishment reports annually.

Results - Recurring Road Maintenance:

Previous reporting:

Year	Budget (M \$)			Level 1-2 Maintenance (miles)			Level 3-5 Maintenance (miles)		
	Plan	Actual	Percent	Plan	Actual	Percent	Plan	Actual	Percent
88	500	225	45%	1000	180	18%	274	334	122%
89	522	233	45%	1005	41	5%	274	231	85%
90	544	340	62%	1959	1392	71%	299	134	45%
91	566	431	76%	2687	1240	46%	331	164	50%

2001 Reporting:

Year	Budget (M \$)			Level 2 Maintenance (miles)*			Level 3 Maintenance (miles)*		
	Plan	Actual	Percent	Plan	Actual	Percent	Plan	Actual	Percent
92	587	354	60%	338	No Data		217	No Data	
93	609	333	55%	411	1114	271%	227	240	106%
94	631	484	77%	517	1085	210%	227	208	92%
95	653	551	84%	623	951	153%	227	193	85%
96	697	647	93%	**	670	**	**	193	**
97	744	557	75%	**	1075	**	**	193	**
98	794	475	60%	**	939	**	**	193	**
99	848	408	48%	**	945	**	**	193	**
00	905	583	64%	324	524	162%	454	193	43%
01	966	632	65%	324	287	89%	454	238	52%

*All work was completed on maintenance level 2 and 3 roads.

** For 1996-1999, no projected numbers are provided by the Plan.

\$682,070 is needed to bring maintenance standards on level 2 roads up to forest plan levels.
\$5,246,693 is needed to bring maintenance standards on level 3 roads up to forest plan levels.

Discussion – In 1989, in preparation for the Travel Plan revision, the number of road miles in maintenance levels 1-2, and levels 3-5 increased to include user-developed roads. These additions were added to the inventory for tracking purposes, some became legitimate access for Forest needs, others were listed for planned decommissioning because the access was not needed for management of Forest resources.

67% of Forest roads are at a maintenance level below the objective level for safety, road investment protection, and/or adjacent resource protection. The current level of funding has not allowed for custodial maintenance or surface replacement and sign maintenance to keep up with annual needs.

Synopsis - The number of transportation facilities not providing acceptable traffic service will continue to increase. The number of roads open to use without restriction will continue to decrease. Potential for unsafe conditions and roadway and resource damage will increase.

Action - Identify road maintenance needs through condition surveys. Prioritize high-use maintenance level 3 roads first, then high-use maintenance level 2 roads to receive funding in the road maintenance program. Issue road restrictions to minimize roadway or resource damage. Continue monitoring and reporting of deferred maintenance.

Responsibility - Engineering Staff and District Rangers

Road Closures

The purpose of this monitoring is to insure orders are current and restrictions are necessary for safety, protection of the roadway, or protection of the adjacent resources.

Methods - Review all closure orders every 3 years to insure they are current.

Results – Between 1990 and 2001, thirteen new road closure orders were issued, twenty road closures were rescinded (29 since 1988). Continued review of road closure orders is under way in conjunction with the travel management plan.

Discussion - With the issuance of closure orders by district to cover the travel management plan and the review of the existing permanent and recurring orders we will be in compliance with the implementation of the Forest Plan.

Synopsis - The Forest Plan objective of keeping road closure orders current is being achieved.

Action - Continue monitoring closures and update as needed.

Responsibility - Forest Law Enforcement Staff.

Road Obliteration

Obliteration of unneeded and unplanned roads can reduce resource damage, improve land productivity and simplify management.

Methods - Review of the Transportation Activity Schedule and annual accomplishment.

Results - Road Obliteration, System Roads

Year	Completed	Total	
1986	0.95 miles		
1987	2.25 miles		
1988	4.70 miles		
1989	9.60 miles		
1990	14.35 miles		
1991	127.90 miles		
1992	No data		
1993	0		
	Unclassified	Classified	Total
1994	26 miles	6 miles	32 miles
1995	2.6 miles	0.3 miles	2.9 miles
1996	3 miles	1 mile	4 miles
1997	0 miles	2 miles	2 miles
1998	5 miles	4 miles	9 miles
1999	0 miles	16.8 miles	16.8 miles
2000	20.7 miles	5.1 miles	25.8 miles
2001	2.4 miles	6.5 miles	8.9 miles

Discussion - The Forest Plan identified 1264 miles of system roads (inventoried) and 1500+ miles of non-system (un-inventories) roads. The plan identified 35 miles of system road for obliteration and 35 miles of non-system road for obliteration. Another 20 miles of system roads were identified for further evaluation in order to determine if obliteration was to occur.

With the completion of the travel management plan the non-inventoried roads were evaluated for addition to the system or obliteration. Those roads recommended for retention have been inventoried and road management objectives assigned. Those roads recommended for obliteration have been inventoried and a record will be kept until the roads have been reclaimed with vegetation established.

Between 1998 and 2001, road condition surveys were conducted on part of the Forest, and district personnel interviewed to establish use on those roads. Recommendations were made for obliteration on some segments of both Forest system roads and user developed roads. Recommendations were made for adding some user developed roads to the Forest System, pending Roads Analysis and subsequent decision.

Synopsis - Additional funding in 1991 allowed significantly more road obliteration to occur than was identified in the Forest Plan. This allowed more rapid progress towards achieving the desired future condition in road management.

Action - Continue monitoring.

Responsibility - Forest Engineer

Buildings

Introduction – The Forest Service’s objective is to ensure effective management of facilities after occupancy commences, to provide for the most cost-effective, safe, and functionally efficient use of space within available resources, and to ensure that buildings, related facilities, equipment, and subsystems function as originally designed or subsequently modified.

It is the responsibility of the facility manager to operate and maintain the facility including periodic inspections and evaluations until the need for the facility ceases. The facility manager should:

1. Understand the objectives of the facility and services the facility is to provide
2. Observe facility user practices and needs, and facility performance, condition, operating requirements, and costs. Recognize changes from the design assumptions for intended use of the facility.
3. Identify maintenance and repair requirements, health and safety deficiencies, facility security needs, and operational and user-service improvement opportunities.
4. Implement improvements to provide access for persons with disabilities, gender-related facilities, and efficient space and energy usage in facilities operations.
5. Organize and use operations, maintenance, and repair practices and procedures to document and report findings, to plan and implement corrective actions, and to efficiently manage these activities and their costs.
6. Recommend operation, maintenance, and repair budget needs.
7. Implement corrective actions including preventive maintenance, repair, and renovation of the facilities and their components or their replacement or retirement if the former actions are not cost-effective.
8. Sustain historic and other specific values of the facility as required by agency agreements and policy.

Responsibilities of the facility manager are to:

1. Keep the facilities safe, sanitary, neat, attractive, and in good working order both inside and outside
2. Insofar as practicable preserve the original condition of Forest Service-owned buildings and related facilities.
3. Minimize interruption of service and support benefits provided by the building and providing necessary backup systems as practicable.
4. Prevent major unplanned repairs, reconditioning, or replacement costs by developing and implementing a preventative maintenance program.
5. Develop an operations and maintenance plan
6. Determine long-range management objectives and procedures for each facility

7. Do not abandon Government-owned buildings on Government-owned land. Any building not needed must be removed or destroyed.

Methods - Building inspections are conducted annually by the District Facilities Manager, documented on the Forest Form 7300-1, Maintenance Condition Survey Checklist, and submitted to the Supervisor's Office by September 1. The Facilities Engineer should participate in at least a third of these annual inspections.

Items identified on the checklists are entered into the Infrastructure (INFRA) database and classified according to Safety, Sanitation, Recurrent Maintenance, Code, Preventive Maintenance, Energy Saving, Betterment issues or needs. Information on the database is updated annually.

Reports from the database are used to identify items needing work, as well as, a record of what has been done on the buildings. These reports are used to plan and budget the following fiscal year's maintenance program.

Results - Annual inspections and use of the INFRA database have been instrumental in planning the next year's maintenance program.

Discussion - Based on the funding available, the Forest has been active in maintaining its facilities. Maintenance/repairs have concentrated on addressing health, safety concerns as well as protection of the facilities. However, problems have occurred in which funding directed for specific maintenance/repairs items(s) are redirected towards other items, not necessarily considered a health and safety issue.

The districts have performed annual inspections, and all items identified during these inspection have been entered into the database and scheduled for repair.

Synopsis - The Forest has been active in correcting health and safety items identified during annual building inspections.

Action - Continue annual inspections of buildings, with emphasis on Health and Safety items, and detection of structural deficiencies.

Responsibility - District Rangers and Forest Engineer.

Dam Administration

Introduction - Minimum acceptable criteria for design, operation, maintenance, and monitoring of dams are based on the administrative size and hazard classifications. All factors that might influence the potential hazard classification must be evaluated during the design and design review of the dam. The hazard rating should be consistent with the potential for loss of human life and damage to property that could be caused by a failure of the dam.

For administrative purposes, dams are classified as follows:

Class A Projects – Dams that are 100 feet or higher or impound 50,000 acre-feet or more water.

Class B Projects – Dams that are 40 feet but less than 100 feet high, or impound 1,000 but less than 50,000 acre-feet of water.

Class C Projects – Dams that are 25 feet but less than 40 feet high, or impound 50 but less than 1,000 acre-feet of water.

Class D Projects – Dams that are less than 25 feet high and impound less than 50 acre-feet of water.

Dams are classified according to hazard potential based on the loss of human life or property damage that could occur if the structure failed. Dams are classified as follows:

Low Hazard – Dams built in undeveloped areas where failure would result in minor environmental or economic loss, damage would be limited to undeveloped or agricultural lands, and significant improvements are not planned in the foreseeable future. Loss of human life would be unlikely.

Moderate Hazard - Dams built in areas where failure would result in serious environmental damage or appreciable economic loss with damage to improvement, such as commercial and industrial structures, public utilities and transportation systems. No urban development and no more than a small number of habitable structures are involved. Loss of human life would be unlikely.

High Hazard - Dams built in areas where failure would likely result in loss of human life or excessive economic loss. Generally this would involve urban or community development with more than a small number of habitable structures.

Methods - Dams are visually inspected by qualified individuals at a frequency based on its size, hazard rating, and condition. Presently, the frequencies are 1, 2 or 5 years. The Forest is responsible for scheduling inspections of dams on the 5 year interval. The state schedules and inspects dams on the 1 and 2 year interval. On all inspections, administered or permitted, Forest Service personnel should be present. The inspections are to be documented and sent annually to the Regional Office. Inspections are done by a qualified engineer.

The purpose of this monitoring is to inspect dams administered or permitted by the Forest. These inspections concentrate on detecting/monitoring any unsafe conditions, which if not monitored may result in extensive damage or loss of life.

Results of the inspections should be used to:

1. Efficiently and effectively achieve resource management objectives.
2. Protect the investment in facilities.
3. Present the FS in a defensible legal position.

Common recurring problems noted during inspections are,

1. Burrowing rodents on the embankment.
2. Log debris on the downstream face of the dam, which can be homes to rodents and insects.
3. Log debris collecting at the outlet spillways.
4. Long rooted vegetation growing on the dam embankment.

Results - There are 50 dams identified and inventoried on the Forest classified as follows: 7 High Hazard, 23 Moderate, and 20 Low. The Forest owns 17 dams. (See attached spreadsheet)

Discussion – Regular dam inspections provide a systematic and documented means for determining the conditions of the dams by addressing safety issues. Annual maintenance programs should be initiated to deal with and monitor recurring problems (rodent, vegetation, and debris control)

Synopsis - Dam inspections are performed on a frequency based on their hazard classification and administrative class. These inspections are performed on dams owned and permitted by the Forest. Safety considerations are the main concerns during inspections of the dams.

Action – Dams should continue to be inspected based on their required frequencies. Due to the safety issues involved with dams, the Forest should continue to take a more active role in performing these inspections and on schedule.

Responsibility – Qualified District and Engineering Personnel

DAM NAME	OWNER	INFRA #	YEAR BUILT	HAZARD CLASS	INSPECT INTERVAL (YEAR)	AREA SURFACE ACRE	ADMIN CLASS
1 GRASSEY LAKE	FS	0016	1975	M	2	11	C
2 LOWER GOOSEBERRY	FS	0018	1937	H	1	57	C
3 LAKE OOWAH	FS	0020	1965	M	2	5.4	C
4 YEARNS	FS	0106	1924	L	5	9.9	C
5 ACADEMY MILL	FS	0111	1950	M	2	5	C
6 PETES HOLE	FS	0113	1975	L	5	12	C
7 SOUP BOWL	FS	0114	1975	L	5	2.2	D
8 NEW CANYON	FS	0117	1913	L	5	4.6(111)	D
9 BLUE LAKE	FS	0118	1937	L	5	4	D
10 BENCHES POND	FS	0119	1971	M	2	3	D
11 BOULGER	FS	0120		M	2	6	D
12 MEDICINE LAKE	FS	0122		L	5	2	D
13 POTTERS POND 1	FS	0124	1975	M	2	8	D
14 POTTERS POND 2	FS	0125	1975	M	2	8	C
15 LAKE HILL	FS	0133		L	5	3.7	C
16 WARNER LAKE	FS	0134		L	5	1.7	D
17 UPPER SIX MILE	FS	0135		L	5	3.4	
18 BUCKEYE	PERMITEE	0021	1951	H	1	65	B
19 CLEVELAND	PERMITEE	0015	1977	H	1	105	B
20 COOLEY CREEK 1	PERMITEE	0103	1936	L	5		D-BR
21 COOLEY CREEK 2	PERMITEE	0104	1936	L	5		D-BR
22 DEEP LAKE	PERMITEE	0003	1931	M	5	4.4	C-BR
23 DRY HOLE	PERMITEE	0110	1930	L	5	BREACHED	D-BR
24 DRY WASH	PERMITEE	0023	1962	M	2		C

25 DUCK FORK	PERMITEE	0009	1978	M	2	46.9	C
26 EMERY	PERMITEE	0004	1981	M	2	12.8	D
27 FERRON RES	PERMITEE	0010	1916	M	2	57.1	B
28 HENNINGSON RES	PERMITEE	0005	1947	M	2		C
29 HUNTINGTON	PERMITEE	0012		H	1	185	A
30 JULIUS FLAT	PERMITEE	0002	1951	M	2	32.4	C
31 LOGGER LAKE	PERMITEE	0101	1934	L	5	3.5	C
32 MARY LAKE	PERMITEE	0131		L	5	5.5	C
33 MILLERS FLAT	PERMITEE	0013		M	2	160	
34 MONTICELLO LAKE	PERMITEE	0022	1954	M	2	3.9	C
35 NEW FIELD	PERMITEE	0105	1930	L	5	BREACHED	D-BR
36 PATTON	PERMITEE	0107	1930	L	5	3.5	C-BR
37 RACETRACK	PERMITEE	1394		L	5	2	D-BR
38 ROLFSON	PERMITEE	0014	1929	H	1	50	C
39 SHINGLEMILL	PERMITEE	0102	1931	L	5	BREACHED	D-BR
40 SMITHS	PERMITEE	0019	1907	M	2	21	C
41 SPINNER	PERMITEE	0006	1978	M	2		C
42 SPRING LAKES (FOY)	PERMITEE	0123	1966	L	5	2	D
43 TOWN RES	PERMITEE	0008	1931	M	2	6.4	C
44 TWIN LAKE RES	PERMITEE	0001	1930	M	2	9.1	C-BR
45 WILLOW LAKE	PERMITEE	0115	1978	M	2	24	C
46 WRIGLEY SPRINGS	PERMITEE	0011	1956	M	2	8.2	C
47 CAMP JACKSON				M	2		
48 ELECTRIC LAKE				H	1		
49 FAIRVIEW				H	1		
50 LDS CAMP				M	2		

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