



Aquatics Program

Five Year Management/Action Plan (FY05 to FY10)

*“Water is the most critical resource issue of our lifetime and our children’s lifetime.
The health of our waters is the principal measure of how we live on the land.”*

–Luna Leopold



Middle Paint Rock Creek

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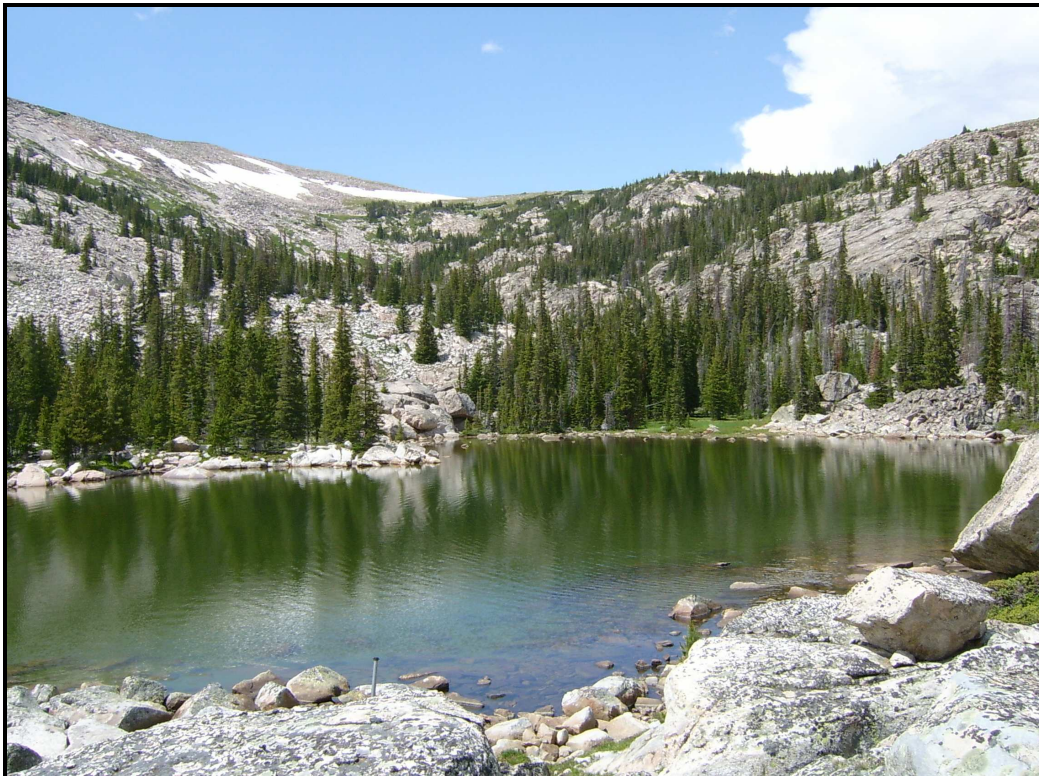
Mission, Vision, and Values

MISSION

“Active management for the protection and restoration of aquatic ecosystems, for the enjoyment and use of current and future generations.”

PROTECTION – Protection of aquatic habitat begins with an understanding of the aquatic ecosystem developed through inventories, field experience, and interdisciplinary watershed analyses.

RESTORATION – Reestablishment of ecosystem structure and function. Restoration attempts to return the area to pre-disturbance conditions. This may not always be possible and rehabilitation may be more realistic. Rehabilitation attempts to make the land useful again after disturbance. It doesn't reestablish pre-disturbance condition; however, it does reestablish geologic and hydrologic stability.



Unnamed lake near Lost Wilderness Lake

VISION

“Provide protection and conservation of soil, air and aquatic resources, while emphasizing the Program importance at the Regional and National level.”

We will determine our success by our ability to:

- ❖ Meet Forest expectations regarding technical support, assistance in decision-making, and strength in program management.
- ❖ Be a diverse staff that is valued by the Agency and the local community for its professionalism, expertise, and ability to provide guidance in the conservation of aquatic resources.
- ❖ Streamline and simplify our procedures through the efficient use of technology.

CORE VALUES

The core values of the Aquatics Program on the Bighorn National Forest are:

- ❖ Respect for the inherent worth of all members of the Forest.
- ❖ Maintain a program that is responsive and reliable.
- ❖ Professional and organizational practice and integrity.
- ❖ Services that meet the needs of the Agency, Forest, Districts, and local community.
- ❖ Shared responsibility and strategic partnerships with other agencies and stakeholders.
- ❖ Continuous learning and improvement within the Program.
- ❖ Allow for positive change and innovation.

Forest Plan Direction

Forest Plan direction for the management of Physical and Biological resources is located on pages 1-21 through 1-30. Additional direction, specific to different management areas, can be found in Chapter 2 of the revised Forest Plan. Monitoring strategies are described in Chapter 4 of the revised Forest Plan.

Goals and Objectives

GOAL 1 PROTECTION/RESTORATION

Promote resource protection and restoration efforts at the watershed scale, in order to maintain or improve watershed health (Clean Water Action Plan).

OBJECTIVE 1: Focused watershed analyses.

A landscape perspective to the management of aquatic resources allows us to evaluate present conditions and to avoid future impacts resulting from piece-meal and shortsighted management actions. The information collected at the watershed scale is incorporated into geographic information systems (GIS) and used to obtain a holistic view of the watershed conditions and facilitate management decisions that conserve the structure, function, and responsiveness to change along the river continuum.

ACTION: Conduct all environmental assessments at the watershed scale. The watershed scale will typically be at the sub-basin level and consider all 6th or 7th level watersheds with greater than 10% of the drainage in contact with the project area.

OBJECTIVE 2: Responsiveness and reliability for watershed protection.

Although the Program is based out of the Supervisor's Office, a major objective is to provide responsive and reliable support for District projects. The level of support needed for these projects varies.

ACTION: Provide timely assistance to both Forest and District issues and projects and allow for flexibility in responding to those needs given existing priorities.

OBJECTIVE 3: Long-term permanent monitoring network.

Long term permanent monitoring stations consisting of cross-sections, a longitudinal profile, photo points, a population estimate, riparian condition, etc. will be more beneficial over time (Kershner et al. *in press*, Roper et al. 2003). This will require a lot of up front effort (will take about 3 years to establish monitoring network), but is relatively short term in the time scales with which landscapes operate. The effort will pay off in future monitoring efforts, project level analyses, and are expected to provide existing conditions and trend for the next Forest Plan revision. Results will be reproducible, have lower observer variability, standardized methodologies, etc. There are approximately 60 potential sites (Fig. 1), of which approximately 20/year will be established. Sites will be prioritized depending on current project needs. For example watersheds of focus in 2005 will be for Piney/Rock and Battle Park AMPs.

ACTION: Use the Aquatic, Riparian, and Wetland Ecosystem Assessment for the Bighorn NF (Winters et al. 2004) to define reference (lower quartile of anthropogenic activities) and managed (upper quartile of anthropogenic activities) watersheds.

OBJECTIVE 4: Set restoration priorities at the watershed scale (WCPH FSH 2509.25).

Restoration priorities should be established at the watershed scale, based on the most current understanding of aquatic ecosystems processes on the Forest. Aquatic ecosystems are intimately linked to the conditions of these watersheds and as a consequence are responsive to land uses and management practices.

ACTION: During project analyses, field inventories, or assessments (Winters et al. 2004) identify the need to develop and prioritize watershed scale restoration opportunities.



Granite Lake

GOAL 2 VIABILITY

Manage aquatic habitats to maintain viable populations of fish species and other native and desirable non-native vertebrate species (36 CFR 219.19).

OBJECTIVE 1: Protect existing and potential habitat for native and desirable non-native species.

Apply ecosystem management principles to public lands in order to conserve, restore, and maintain aquatic biological diversity.

ACTION: Identify key aquatic habitats during watershed analyses at the project level. This information will be used to assess the health and productive capacity of the watershed.

OBJECTIVE 2: Conservation of native aquatic species.

Design and implement projects for the conservation of threatened, endangered, and sensitive native aquatic species. Coordinate with state and federal agencies and private organizations during project design and implementation (Forest Plan).

ACTION: Evaluate the potential for translocation of native species, to maintain or expand the range of occupied habitats of sensitive species on the Forest. Be proactive in the development and implementation of restoration and translocation projects.

OBJECTIVE 3: Coordination with Wyoming Game and Fish Department.

Cooperation the State agency will help to provide ecological conditions and habitats to sustain viable populations of native and desired non-native species, including Management Indicator Species (i.e. rainbow trout). Given existing budget, personnel, and logistical constraints cooperative effort improve the productivity of both agencies.

A Memorandum of Understanding (MOU) is in place between the State of Wyoming, Wyoming Game and Fish Commission and the National Forests in Wyoming. The most recent MOU is dated 2003.

ACTION: Cooperate with Wyoming Game and Fish to meet the dual objectives of habitat and population management and define distributions of native and localized fish species.

OBJECTIVE 4: Public information on the importance of native species conservation.

Educational efforts that can be elevated from the Forest to the local community could facilitate the implementation of potentially controversial projects. Efforts may include presentations to local interest groups, school educational opportunities, or other governmental agencies. Other efforts such as public information bulletins, posters, or interpretive signs could be beneficial.

ACTION: Develop opportunities that highlight resource conservation education and promote them through local information opportunities.



East Tensleep Creek

GOAL 3

WATER QUALITY and QUANTITY

Protect water quality through land management planning and restore streams not meeting State water quality standards, Forest Plan objectives, or Clean Water Act goals (Clean Water Action Plan).

OBJECTIVE 1: Protect water quality and restore streams that are identified in the State 305(b) Report and the 303(d) List and ensure compliance with State water quality standards.

Pollutants delivered to and transported through the stream network can have dramatic and long-term impacts to the health of the public and aquatic ecosystem. Pollutants of concern, which are typically encountered on the Forest, are sediment and bacterial contamination. During project surveys or other site visits, personnel will identify sources of sediment generated by roads, stream crossings, wildlife, livestock, and recreational uses within the watershed. Proposed treatment of these areas will be included in project level planning and the recovery will be monitored for effectiveness during implementation and after completion. Treatments will be completed on a priority basis within the watershed. Proactive management, through monitoring, on the part of the Forest will reduce the potential for additional unexpected workloads as a result of listing. Projects will be monitored to ensure that objectives are being met.

ACTION: Incorporate appropriate practices and design criteria from the WCPH (FSH 2509.25) into all project design, analysis, and decision documents and monitor the implementation and effectiveness of those actions (Forest Plan).

OBJECTIVE 2: Cooperate with Wyoming DEQ and any other stakeholders such as permittees, state agencies, local communities, conservation districts, etc.

Streams listed in the State-wide list of impaired waterbodies require extra effort on the part of Federal, State, and local agencies as well as stakeholders to manage for compliance with water quality standards. Development of working relationships with stakeholder groups, which include government agencies and the public, to address water quality issues as they are identified will improve efficiency in working towards water quality objectives defined by the Clean Water Act.

A Memorandum of Understanding (MOU) is in place between the State of Wyoming, Wyoming Department of Environmental Quality and the National Forests in Wyoming. The most recent MOU is dated 2005.

ACTION: If a stream has been identified as impaired, work with stakeholders and partners to develop a restoration plan.

OBJECTIVE 3: Administer water rights in accordance with applicable State laws and Forest Service direction.

With population increases and associated demand on water resources a more focused effort on the administration of water uses needs to be implemented on the Forest. An assessment of

domestic water uses on the western portion of the Forest, west of the hydrologic divide, was completed for the Big Horn River adjudication. This has left gaps in the knowledge base and data quality for the entire Forest, as the eastern portion of the Forest did not require a water rights investigation. The Aquatics Program has developed a water rights process for the administration of water rights associated with recreational residences. That process is located in the recreational residence handbook and also filed electronically in the Aquatics Program filing structure.

A Memorandum of Understanding (MOU) is in place between the State of Wyoming, State Engineer's Office and the National Forests in Wyoming. The most recent MOU is dated 2006.

ACTION: Request TIN money from the Regional Office to complete a water rights investigation east of the hydrologic divide of the Forest and develop a data management system that incorporates all uses on the Forest.



Spring development, Masonic Summer Home Group

GOAL 4 INTEGRATION

Integrate aquatic resource objectives into all phases of natural resource management (Clean Water Action Plan).

OBJECTIVE 1: Remain a single point of contact for soil and aquatic information for other resource areas, District personnel, and Forest Staff.

The Watershed Conservation Practices Handbook contains proven watershed conservation practices to protect soil, aquatic, and riparian systems. The practices apply to all actions on NFS lands and take effect as each Forest Plan is revised. The watershed conservation practices translate legal provisions and scientific principles into solid, common sense stewardship actions. The practices cover five areas: hydrologic function, riparian areas, sediment control, soil productivity, and water quality. The standards are statements of outcome to ensure that management actions comply with applicable water quality laws and regulations.

ACTION: Provide direction to other Forest program areas and stakeholders for interpretation and implementation of WCPH and BMP guidance.

OBJECTIVE 2: Consistent representation on interdisciplinary teams, while providing technical expertise to Districts and other resource areas.

Having a core group of physical and biological resource specialists at the Forest level working on District projects not only makes the program stronger, with application of knowledge Forest-wide, but allows for consistency between Districts with similar representation on IDTs. Having one sole group working on these project Forest-wide creates efficiency, as the issues are typically the same across the Forest, but occur in different locales. Examples are Allotment Management Plan Revisions, Timber Sales, and Travel Management Planning. Given the specialized nature of the Program duties, educational opportunities are available to educate other resource areas in methodologies for data collection and interpretation of results.

ACTION: Ensure representation on all interdisciplinary teams for ground disturbing projects and prepare soil and aquatic specialist reports for NEPA projects.

OBJECTIVE 3: Ensure adequate availability for site visits and field trips.

Although the Program is based out of the Supervisor's Office, a major objective is to provide responsive and reliable support for District projects. With a large number of issues occurring at any given time on the Forest, Aquatics Program personnel need to be available for District site visits at any given time.

ACTION: Provide timely assistance to both Forest and District issues and projects and allow for flexibility in responding to those needs given existing priorities.

GOAL 5 PARTNERSHIPS

Build partnerships to assist in restoration and protection of soil and aquatic resource (Clean Water Action Plan).

OBJECTIVE 1: Establish relationships and develop a network of other agencies and interest groups in the management of soil and aquatic resources.

Development of working relationships with other agencies and interest groups in the management of soil and aquatic resources will improve efficiency in working towards Program goals and objectives. Given existing budget, personnel, and logistical constraints cooperative effort improve the productivity of parties. This will provide strength to the Program, allow for greater efficiency, and reduced costs for on the ground projects. For example, the Program will work with the State of Wyoming DEQ to monitor and improve streams identified as “impaired” on the 303(d) list.

ACTION: Develop and maintain relationships with other agencies and interest groups.

OBJECTIVE 2: Provide local leadership and education in aquatic resource conservation.

The Aquatics Program has a large amount of expertise in the management of natural resources. As a result of this expertise, Aquatics personnel should be actively involved in the management of natural resources on the Forest by providing leadership as evidenced by example. Efforts on the Forest can help produce clean water and healthy watersheds; however the combined efforts of local communities, private landowners, and citizens are essential to long-term watershed health. The Forest will begin to build and support partnerships among public and private parties, whenever possible to restore and protect the health of all aquatic systems on a watershed basis.

ACTION: Actively participate in local conservation efforts and provide leadership and technical expertise as necessary.

OBJECTIVE 3: Foster informational exchange with other Forests to strengthen “aquatics” programs within the Region.

Information exchange between Forests within the Region is meant to provide the exchange of valuable information through field trips on neighboring Forest with aquatics specialists.

ACTION: Attend Regional and local meetings held on other Region 2 Forest and provide opportunities for networking with neighboring Forests.

GOAL 6 STAFFING

Maintain a well trained staff that is capable of accomplishing the Aquatics Program goals and objectives.

OBJECTIVE 1: Give adequate training opportunities for all Program personnel and allow for personal development within the agency.

Adequate training of personnel will enhance the program by incorporating new ideas as science advances. Professional development will benefit both the individual and the Agency. Careers may be developed within different resource areas given training opportunities. Personal development provides for the necessary human resource management required by the changing agency as well as improving individual performance. Encourage dual qualification within the hydrology and fisheries, or physical or biological resource areas, to build strength within the Program and build diversification in workforce and duties within the Agency.

ACTION: Review individual development plans biannually and provide opportunities for both technical and non-technical training courses.

OBJECTIVE 2: Maintain a foundation of future Agency employees through the hiring of a seasonal workforce.

The emphasis is to hire seasonal and temporary employees who are pursuing careers in natural resource management or similar field. Continual recruitment of students is the foundation of the Agency and it is desirable for Program personnel to provide mentoring and appropriate career experience, both field and office, as a benefit to the future of the Agency, while accomplishing the goals and objectives of the Aquatics Program.

ACTION: Provide career experience for potential employees in the form of employing a seasonal workforce, with interests in natural resource management.

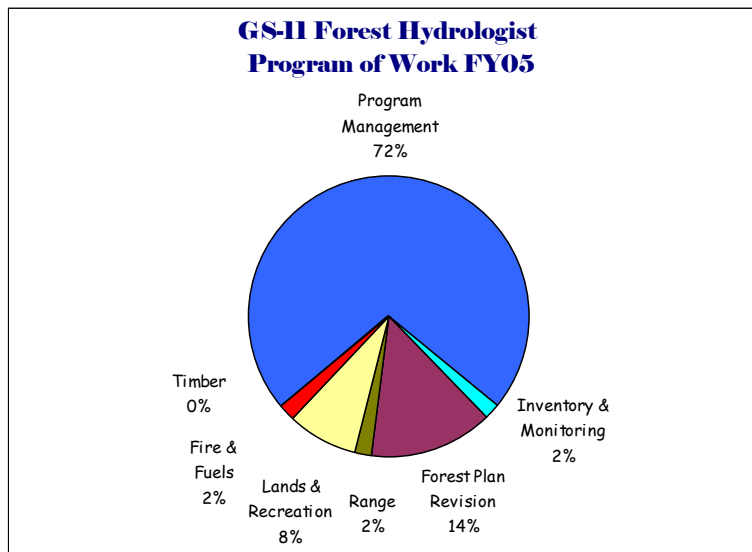
STAFFING & BUDGET

CURRENT WORKLOAD

The Aquatics Program now maintains three permanent positions, which includes one GS-11 Hydrologist and two GS-09 Fisheries Biologists. A majority of the program funding comes from watershed management (NFVW), fisheries (NFWF), and minerals (NFMG) budget items. The Forest has a limited mineral program and does not receive a large amount of funding in this area, but it funds permit administration at the District level, as well as minerals program administration at the Forest level, which is provided for by the Aquatics Program. Given the number of and diversity of resource areas within the Program the duties are assigned as follows:

Hydrologist – Aquatics Program Manager, all program resources
Fisheries Biologist – Fisheries, Hydrology, Air Quality
Fisheries Biologist – Fisheries, Soils, and Geology and Minerals

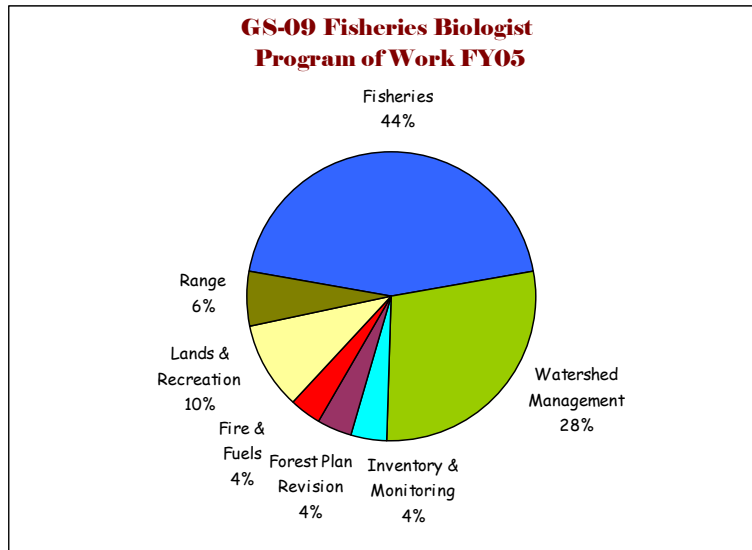
The Program has traditionally maintained a summer seasonal workforce of one to five persons since FY99. These crews are typically assigned to project level field data collection efforts and are generally not available to do other assignments. The supervisory responsibility of these crews is shared between both the Hydrologist and Fisheries Biologists, depending on existing workload and current priorities.



Forest Hydrologist (Aquatics Program Manager)

Forest Hydrologist (Aquatics Program Manager) – A majority of the workload for this position is currently in program management, consisting of three core resource areas; watershed (NFVW), fisheries (NFWF), and minerals (NFMG). Forest Plan revision requires a large percentage of funding, reflecting the need for Final Revised Plan development and FEIS. Lands and recreation shows obligations for oversight on highway reconstruction on both Highway 16 (Deerhaven section) and Highway 14 (Steamboat section). Timber is not represented, as those

types of projects are being funded out of watershed dollars, under programs such as the Accelerated Watershed Restoration Plan (AWRP) and Healthy Forests Restoration Act (HFRA).



Fisheries Biologist (fisheries, watershed, air)

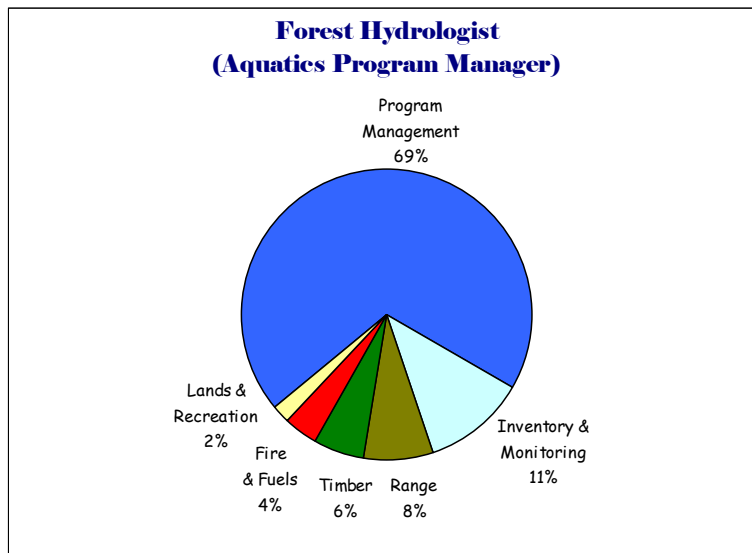
Fisheries Biologist (fisheries, watershed, air) – A change from the previous organizational chart was to further define duties within the shop. Although the Aquatics Program Manager has responsibilities in all program areas, one of the Fisheries Biologists has some limited responsibility in watershed and air resources.

Under the current program, less than half of the funding is from fisheries (NFWF), but watershed/air (NFVW) makes up another 28%, which is appropriate given the definition of duties for this position. Additionally, the other Fisheries Biologist position in the Aquatics Program has been vacant for almost 2 years and the distribution of funding shows a need to diversify within the Program in order to meet Program and Forest needs.

Fisheries Biologist (fisheries, geology, soils) – As previously described, a change from the previous organizational chart was initiated. The other Fisheries Biologist position is expected to assume some responsibilities in the minerals, geology, and soils resource areas within the Program.

An objective of the Program is to provide career experience and development not only for individuals, with the assumed benefit to the Agency as well. One of the Fisheries Biologists positions is meant to provide for these types of opportunities. This position was filled with a Student Career Experience Program (SCEP) opportunity in FY05. The student will work on the unit during the summer season and assume full time duties upon completion of a graduate program at Colorado State University. The estimated completion date for that degree is FY07.

OPTIMAL WORKLOAD



Forest Hydrologist (Aquatics Program Manager)

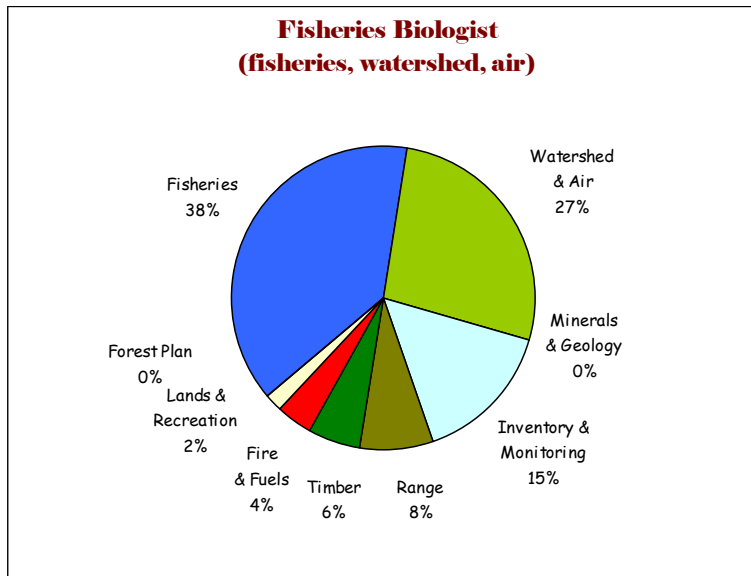
Forest Hydrologist (Aquatics Program Manager) – Under idealized funding conditions, given no constraints, the Aquatics Program Manager would devote approximately 70% of their time in Program Management with oversight in the three core resource areas; watershed (NFVW), fisheries (NFWF), and minerals (NFMG). An additional 20% would provide for support to other resource areas and projects, and 10% for contingencies. These values reflect planned time and may not reflect what was actually charged.

Comparison between current and optimal funding (Aquatics Program Manager).

Funding Area	FY05 %	Optimal %	% difference
Program Management	68	70	- 2
Inventory and Monitoring	2	10	- 8
Range	2	5	- 3
Timber	0	5	- 5
Fire and Fuels	2	3	+ 1
Lands and Recreation	8	2	+ 6
Forest Plan Revision	14	0	+ 14
Roads and Trails	4	5	- 1

Trend of subsequent years

Funding Area	FY06 %	FY07 %	FY08 %	FY09 %
Program Management	56	58		
Inventory and Monitoring	13	22		
Range	0	0		
Timber	4	6		
Fire and Fuels	2	1		
Lands and Recreation	8	8		
Forest Plan Revision/EMS	4	10		
Roads and Trails	13	0		



Fisheries Biologist (fisheries, watershed, air)

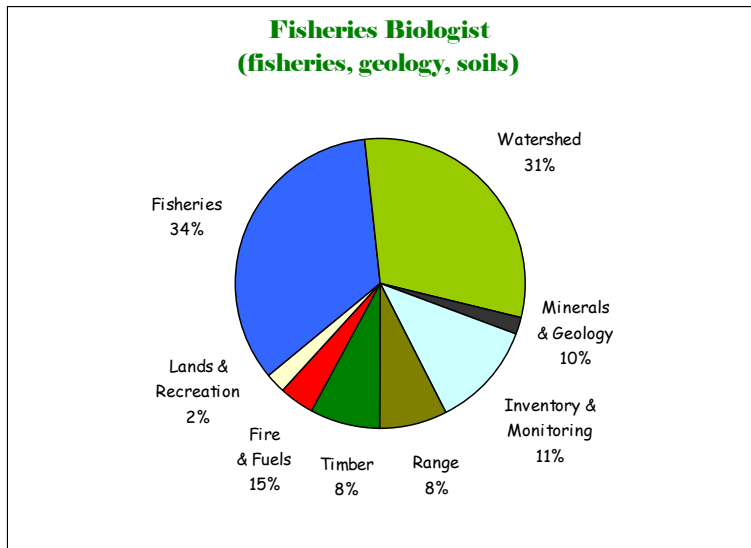
Fisheries Biologist (fisheries, watershed, air) – With unlimited funding possibilities this Biologists position would assume a support role in the fisheries (NFWF) and watershed and air (NFVW) resource areas, with no responsibilities in minerals (NFMG).

Comparison between current and optimal funding (fisheries, watershed, air).

Funding Area	FY05 %	Optimal %	% difference
Fisheries	44	36	+ 8
Watershed	28	24	+ 4
Inventory and Monitoring	4	15	- 11
Range	6	8	- 2
Timber	0	6	- 6
Fire and Fuels	4	4	0
Lands and Recreation	10	2	+ 8
Forest Plan Revision	4	0	+ 4
Roads and Trails	0	5	- 5

Trend of subsequent years

Funding Area	FY06 %	FY07 %	FY08 %	FY09 %
Fisheries	47	47		
Watershed	7	33		
Inventory and Monitoring	4	4		
Range	11	6		
Timber	10	5		
Fire and Fuels	2	3		
Lands and Recreation	10	10		
Forest Plan Revision	2	0		
Roads and Trails	11	1		



Fisheries Biologist (fisheries, geology, soils)

Fisheries Biologist (fisheries, geology, soils) – Since this Biologist position performs a support role as a trainee, there would be more diversity within other resource areas, but the emphasis would continue to be in fisheries (NFWF), watershed (NFVW), with additional responsibilities in the minerals (NFMG) program area. This position would provide more support in other program areas, shown by comparing the above figure with the Fisheries Biologist (fisheries, watershed, and air) figure.

FUTURE WORKLOAD (FY05 – FY10)

The following changes were recommended during the previous Program planning cycle (FY99 – FY02) and are being addressed here to track previous accomplishments. These changes were examined during that period in order to create more balance and eliminate inefficiencies within the Program and on the Forest.

Hydrologist (Aquatics Program Manager)

1) Add more program management days (FY99 –FY02).

Addressed?: (YES) Program days have more than doubled since the FY99 – FY02 Program plan.

Recommendation (FY05 – FY10): Ensure that program funding remains at or near current levels.

2) Add more Forest planning days.

Addressed?: (YES) Forest planning days were added over the life of Forest Plan revision.

Recommendation (FY05 – FY10): Planning days are expected to be reduced to 0 after 2005, upon completion of the Final Revised Plan and FEIS, but we should increase the level of funding in NFIM for inventory and monitoring of the Forest Plan.

3) Reduce the number of special project days.

Addressed?: (YES) Some special project area were increased, while others were decreased, but for the most part, program funding appears to have been increased overall. This was viewed as an attempt to reduce the potential for the Aquatics Program Manger being sole support for other resource

areas and allow for some flexibility in actual program management and being proactive in the management of soil and aquatic resources. Most special project days were probably shifted to both of the Fisheries Biologists positions to provide the needed specialist support to other resource areas and projects.

Recommendation (FY05 – FY10): Forest Plan revision dominated the entire Forest in the previous Program planning cycle. With the completion of the Forest Plan, program funding should be increased to reflect the program workload accordingly. Program management funding should dominate funding.

4) Reduce the number of management codes (there are currently >25).

Addressed?: (YES) The program now currently manages approximately 10 fund codes, down more than half from the previous planning period.

Recommendation (FY05 – FY10): Budgeting is shifting towards a work item accounting system and it is unclear how this will affect management codes into the future.

Fisheries Biologist (fisheries, watershed, air)

1) Add more timber support days per project.

Addressed?: (NO) It doesn't appear that timber dollars have increased to reflect the actual support that is necessary, given the escalation of projects in this area.

Recommendation (FY05 – FY10): Still desire more program days in timber

2) Add more range support days per project.

Addressed?: (YES) Range has probably been addressed.

Recommendation (FY05 – FY10): Ensure that range funding remains at or near current levels to provide the needed support role from the Aquatics Program.

3) Add more TES days to account for Yellowstone cutthroat work.

Addressed?: (YES) TES in fisheries are probably being addressed and could possibly even afford to reduce some NFWF dollars in favor of monitoring (NFIM) funding.

Recommendation (FY05 – FY10): Ensure that TES funding remains at or above current levels to provide the needed emphasis for Yellowstone cutthroat trout. We expect YCT to become federally listed in the near future and this could change some priorities within the Program with increased workload in this arena.

4) Reduce the number of program management days.

Addressed?: (NO) The number of program days has remained about the same.

Recommendation (FY05 – FY10): The number of program management days should be increased slightly to reflect the need for specialized program management in the fisheries resource area.

5) Reduce the number of management codes (there are currently > 25).

Addressed?: (YES) The program now currently manages approximately 10 fund codes, down more than half from the previous planning period.

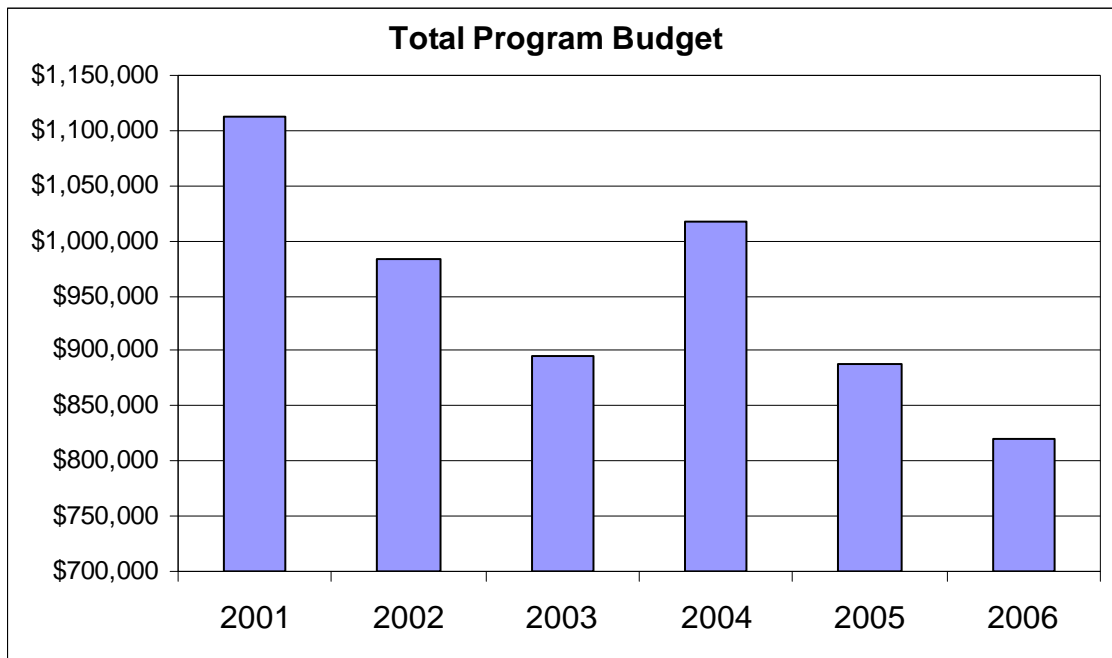
Recommendation (FY05 – FY10): Budgeting is shifting towards a work item accounting system and it is unclear how this will affect management codes into the future.

FUTURE STAFFING

No additional full time positions are anticipated over the course of this planning period. Under the revised Forest Plan, inventory and monitoring will be essential and as a consequence maintaining a seasonal workforce will be necessary to accomplish the intensive data collection that is outlined in the Plan. Given the level of Plan and project level monitoring that will be required in the future, the potential for a 13/13 position for a crew type leader should be considered.

PROGRAM BUDGET

This figure is only a relative representation of overall applicable funding sources, as the Program usually secures approximately 15% NFWW, 40% of NFWF, and 20% NFMG from total Budget Line Items, with additional funding sources from project level support. Even though it is a relative representation, it can be seen that funding has been decreasing and FY06 is predicted to be the lowest yet.



PROGRAM NEEDS

To accommodate expected changes, meet the Forest programmatic needs, and maintain a high level of resource stewardship, the following needs were identified for FY00 through FY02 by issue.

1) Program Structure

The FY99-FY02 Aquatics Program Management Plan identified a need to increase the grade level of the existing fisheries biologist position from GS-09 to GS-11, based on the level of complexity, amount of coordination, and technical skills required for that position. This option will continue to be pursued during the FY05-FY10 period as these skills are still necessary for that position and seem to be increasing in required duties. With the addition of the Fisheries Biologist trainee position, a GS-11 Fisheries Biologist would give a better balance among duties, where program management and supervision responsibility might be shared between the Hydrologist and GS-11 Fisheries Biologist with a cost difference of approximately \$8,000. The estimate is based on annual rate, form locality pay tables, and the difference is assumed to be relative compared to actual daily rate.

Position	Annual Rate
GS-11/1 Fisheries Biologist	\$45,239
GS-09/1 Fisheries Biologist	\$37,390
Cost Difference	\$7,849

FY05-FY10 Program Needs

Proposed Item	Costs	Annual Cost
ATV additional or replacement	\$7,000 – \$10,000	\$200
RiverMorph software license	\$1,800	\$0
Statistical software	\$1,000	\$0

Program Gains from the FY99-FY02 Aquatic Program Management Plan

Vehicles – In FY99, the Aquatics Program had one permanent vehicle assigned to it, a 4x4 Jeep Wagoneer. The previous management plan expressed the need for a 4WD extended cab pickup truck with a topper. That vehicle would be used to transport crews and gear, and pull a trailer for snowmobiles or ATVs depending on different Forest project needs. By FY05, the Program has acquired a total of three vehicles. This number was reduced in FY05 to reduce overall fleet size, while allowing for a vehicle for permanents and one for seasonal use. Two vehicles seem to be the

appropriate size of fleet for the Program. Two additional new ATVs were acquired in FY06 and the previous ATVs were then allocated for use by all of the Resources staff as needed.

- Dodge 4WD extended cab (# 4624)
- Chevrolet 4WD extended cab with topper (# 5395)
- 2 ATVs with trailer

Quarters – An additional camper trailer was requested under the FY99 Management Plan, because of a perceived lack of space and potential conflicts with male/female crews. The existing trailer was decommissioned and a new trailer was purchased with more comfortable and safe quarters. Although there was no net increase in camper trailers by FY04, there have been no conflicts in housing arrangements for summer crews and bunkhouse facilities have been made available upon request to District personnel. No additional mobile quarters are needed, and a request for bunk space is typically made to the appropriate District Office as needed.

Equipment Storage – The Forest had made a significant investment in technical equipment and materials for the Aquatics Program by FY99. There was space reserved in the Brundage warehouse to store that equipment. It was noted that this space was not adequate in terms of security or space and a locker was requested from the Work Center. A locker was granted during the FY99-FY02 planning period and all Program equipment and materials are currently stored in that location.

Aquatics Program Annual Fixed Costs

Funding Item	Average Annual Cost*
GS-11 Hydrologist (@ 70%) 280/day	\$52,000
GS-09 Fisheries Biologist (@ 65%) 240/day	\$41,000
GS-05/07/09 Fisheries Bio. (@ 50%) 240/day	\$31,000
GS-05 seasonal for 90 days (@ 100%) 124/day	\$11,160
GS-04 seasonal for 90 days (@ 100%) 114/day	\$10,260
GS-03 seasonal for 90 days (@ 100%) 101/day	\$9,090
Dodge (# 4624)	\$5,000
Chevrolet (# 5395)	\$4,000
Miscellaneous expenses (supplies etc.)	\$1,000
Travel, Training, Misc. (\$5,000/person)	\$15,000
TOTAL PROGRAM FIXED COSTS	\$179,510.00

* cost estimates available in ../fsfiles/unit/res/aquatics/program_management/program_management_funding.xls

Projected Program Fixed Costs FY99-FY02 ≈ **\$107,000**
41% of this cost estimate is salaries for 2 permanent employees

Projected Program Fixed Costs FY05-FY10 ≈ **\$182,000**
66% of this cost estimate is salaries for 3 permanent employees



Cloud Peak

SUMMARY

This is the second management/action plan developed for the Aquatics Program, on the Bighorn National Forest (BNF). The plan documents the mission, vision, goals, and objectives of the Aquatics Program. The Forest Aquatics Program includes an emphasis in watershed and fisheries management with additional responsibilities for management of the soil, air quality, mineral, oil and gas, and paleontological resources. This current plan, as outlined, will help provide program management direction for the next five fiscal years, beginning October 1, 2005 and ending October 1, 2010. The plan is meant to be dynamic and flexible in order to account for changing conditions in available funding, personnel, or significant issues. New information should be assimilated, requiring a reevaluation of the plan and updates on a yearly basis.

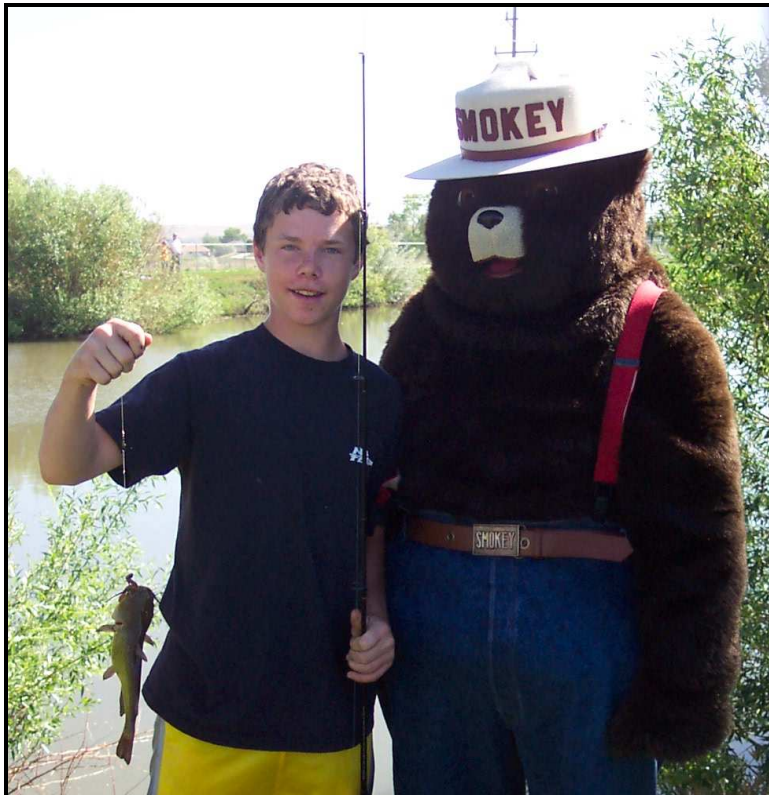
This action plan is tiered to the following documents:

- ❖ Bighorn National Forest Plan (USDA FS 2005)
- ❖ Clean Water Action Plan (USEPA 1998)
- ❖ Watershed Conservation Practices Handbook (Region 2 Amendment No. 2509.25-99-1)

CONCLUSION

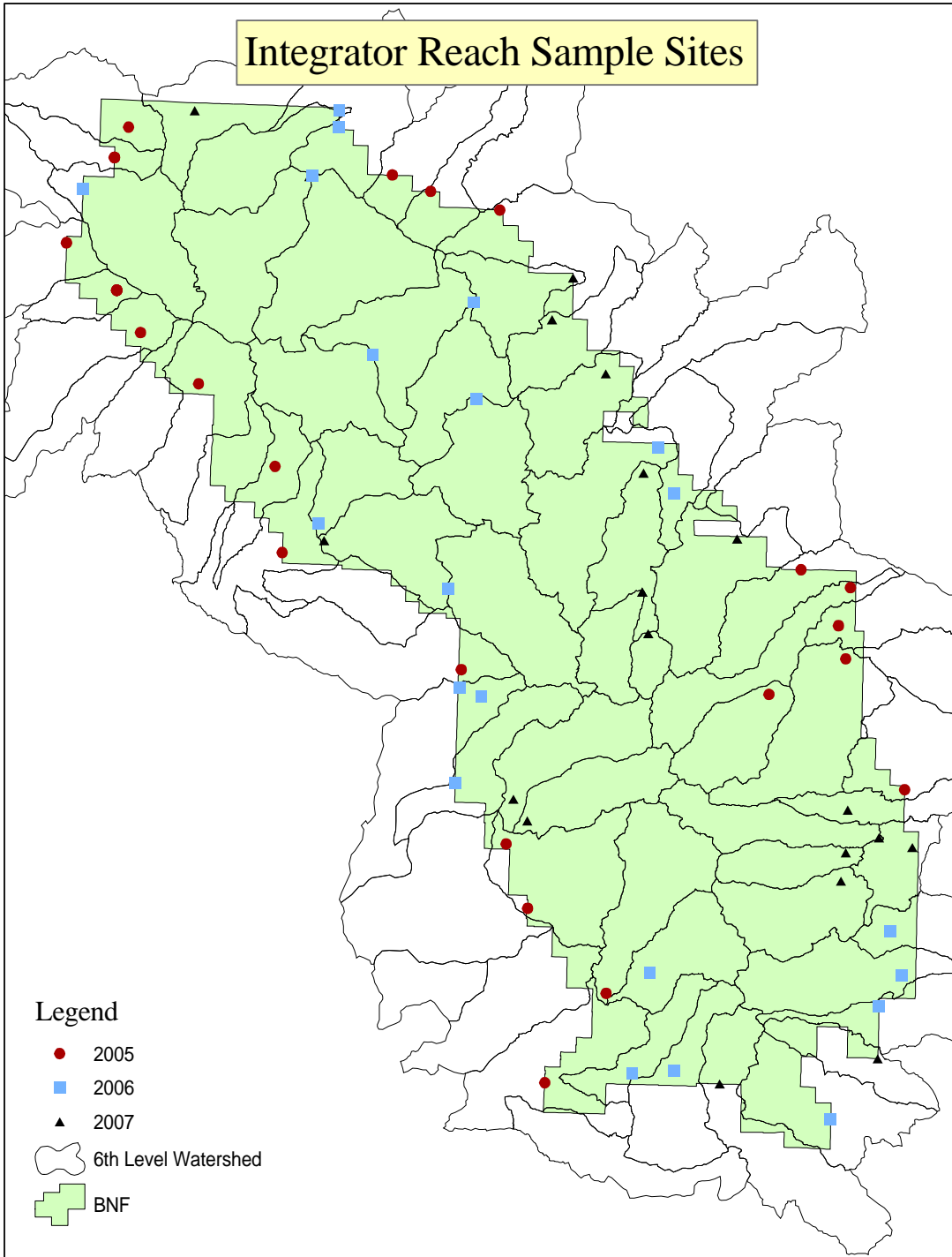
The Aquatics Program on the Bighorn National Forest is becoming a leader for aquatic resource conservation in the Rocky Mountain Region. The Forest has three full-time professionals that demonstrate a high level of interdisciplinary and technical proficiency and operational capability. The program has clearly stated goals and objectives that are designed to help guide the Program

into the future. Accomplishments are designed to reflect a balanced program, including emphasis on resource protection, restoration, and enhancement of multiple use opportunities. The Forest has an active inventory program to characterize aquatic resource conditions and restoration priorities at the watershed scale. It also has a monitoring program to evaluate Forest Plan objectives as well as overall implementation and effectiveness of the Program. The Program will continue to develop or maintain effective working relationships with other Federal, State, and private organizations. These relationships will help accomplish program goals through cooperation and shared resources.



Kids Fishing Day, Sheridan Co. Fairground (bullhead bonanza)

Figure 1. (NEED TO UPDATE in FALL 2007)



Possible sites for Forest-wide inventory

**APPENDIX A
(SCHEDULED AND POTENTIAL PROJECTS)**

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
NA	Budget review	Develop employee spreadsheets and budget summary (allocation of supplies, training, and other project \$\$) at beginning of fiscal year. Review expenditures and days charged, by BLI, in January, April, and July.	Quarterly	NA	Hydrologist
G6 O1/2	Employee performance and development reviews	Conduct performance evaluations for both Fisheries Biologist positions. Mid year evaluations in March and year end evaluations in September. Forms AD-435 (Performance Appraisal), FS 6100-37 (Performance Plan and Appraisal), and FS 6100-2 (Individual Development Plan) will be used in review process.	Biannually (March & September)	NA	Hydrologist
G1 O2	Permanent monitoring sites	Establish new and re-survey exiting, longitudinal and cross-sections, developed for project level information and Forest-wide monitoring network. These sites may also include monitoring of fish populations (including MIS) and riparian info.	Annually	NA	Hydrologist and Fisheries Biologist(s)
G3 O1	Best Management Practices monitoring	Conduct BMP reviews in accordance with monitoring requirements in Chapter 4 of the revised Forest Plan. Recommend One pasture/District each year (see 5 yr. plan for allotments in monitoring folder) and at least one timber sale.	annually	NA	Hydrologist and Fisheries Biologist(s)

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
G5 O1	Wyoming Game and Fish Department & Wyoming Department of Environmental Quality coordination meeting	Host coordination meeting to improve program efficiency and maintain relationships and open communication between agencies.	annually	NA	Hydrologist and Fisheries Biologist(s)
G3 O1	Forest Plan Monitoring and Evaluation Report	Provide documentation of monitoring efforts as identified in revised Forest Plan and provide information that evaluates effectiveness of those efforts.	annually	NA	Hydrologist
All	Program Accomplishment Report	Continue efforts, initiated in 2006, to provide accomplishment reporting based on activities in any given year. The report is distributed to FLT and RO program managers for Hydrology, Fisheries, Air, Soils and Minerals & Geology resources.	annually	NA	Hydrologist and Fisheries Biologists
G3 O2	Water Quality Monitoring	Monitor Granite Creek and North Tongue River for bacterial contamination. Both streams are on the 303(d) list of impaired streams. Objective is to have streams de-listed.	annually	NA	Hydrologist, Fisheries Biologists(s), and District Range Conservationists
G2 O3	Chapter 33 Collection Permit and Report	Apply for collection permit and report to WG&F results of previous year's population monitoring efforts, as required by that permit.	annually	NA	Fisheries Biologists

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
G5 O2	Kid's Fishing Day	Participate and help organize Kid's Fishing Day in coordination with WG&F, Trout Unlimited, Wal-Mart and Quick Stop. Typically held first weekend in June to acknowledge National Fishing Week.	annually	NA	Fisheries Biologists
G2 O2	Basin-wide conservation plans for native Yellowstone cutthroat trout	Develop conservation plans for cutthroat trout populations on a watershed basis	Pending WG&F plans		Fisheries Biologist (W. Young)
G5 O1	USGS stream gages	Provide operational support to USGS in the amount of \$2,000.00/yr for five years (2004-2008). This funding will contribute to maintenance costs for two stream gages on Coney Creek. FS Agreement #: 04-IA-11020200-011	2004 – 2008		Hydrologist (D. Scaife)
G3 O3	Water rights investigation	Work on east side of Forest (Water Division 2) cleaning up water rights to complete adjudication of entire Forest. Water Division 3 was completed in 2005. TIN money was requested from the RO to fund some of this effort in 2006, 2007, and 2008.	2006 – completion		Hydrologist (D. Scaife)
G2 O3	Yellowstone cutthroat trout restoration (South Trapper Creek)	Work in coordination with Wyoming Game and Fish departments to expand the current range of native cutthroat trout on the Forest	2006/2007	2006	Fisheries Biologist (W. Young)
G1 O4	Yellowstone cutthroat trout restoration (Dry Medicine Lodge)	Work in coordination with Wyoming Game and Fish departments to expand the current range of native cutthroat trout on the Forest	2006/2007	2007	Fisheries Biologist (W. Young)

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
G3 O1	BMP Review, Cold Springs Timber Sale	Review implementation of Cold Springs Timber Sale	2007	2007	Hydrologist (D. Scaife)
G4 O2	Piney Allotment Management Plan revision EA	Provide specialist input for revision of AMP	2007	2007	Fisheries Biologist (W. Young)
G3 O1	BMP Review, trail reroutes	Review implementation of trail reroute projects in coordination with trails program manager Schutt's Flats Trail #	2007	2007	Fisheries Biologists (W. Young)
G4 O2	West Ten II Fuels EA	Provide specialist input for fuels project	2007	2007	Fisheries Biologist (W. Young)
G4 O2	Southwest Fuels EA	Provide specialist input for fuels project	2007	2007	Hydrologist (D. Scaife)
G4 O2	Battle Park Allotment Management Plan revision EA	Provide specialist input for revision of AMP	2008		Fisheries Biologist (W. Young)
G4 O2	Rock Allotment Management Plan revision EA	Provide specialist input for revision of AMP	2008		Fisheries Biologist (A. Nowakowski)

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
G3 O1	BMP Review, Bench Fuels/Timber	Review implementation of Bench Fuels Reduction and Salvage Sale	2008		Hydrologist (D. Scaife)
G3 O1	BMP Review, trail reroutes	Review implementation of trail reroute projects in coordination with trails program manager. North High Park Trail #059.	2008		Fisheries Biologists (W. Young and A. Nowakowski)
G3 O1	BMP Review, trail reroutes	Review implementation of trail reroute projects in coordination with trails program manager. Kinky White Trail #116.	2008		Fisheries Biologists (W. Young and A. Nowakowski)
G4 O2	Babione Timber Sale EA	Provide specialist input for timber sale	2008	2008	Fisheries Biologist (W. Young)
G4 O2	Dullknife Fuels EA	Provide specialist input for fuels project	? Check with Jon Warder on this one.		Fisheries Biologist (W. Young)
G4 O2	Beaver Creek Allotment Management Plan revision EA	Provide specialist input for revision of AMP	2008		Fisheries Biologist (A. Nowakowski)
G2 O2	Mill Creek culvert	Install bottomless arch culver on Forest Road 17 crossing with Mill Creek and design for aquatic organism passed by reconstructing a natural channel through structure. Purchased 2007 install 2008.	2008		Fisheries Biologist (A. Nowakowski)

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
G2 O2	Little Tongue River YCT restoration	Evaluate potential for establishment of populations of YCT in coordination with Wyoming Game and Fish Department (Sheridan Region). Treatment planned for 2009.	2008		Fisheries Biologist (W. Young)
G2 O2	Cutler Creek YCT restoration	Evaluate potential for establishment of populations of YCT in coordination with Wyoming Game and Fish Department (Sheridan Region)	2008		Fisheries Biologist (W. Young)
G2 O2	Buckskin Ed Creek YCT restoration	Initiate removal of competing species for establishment of populations of YCT in coordination with Wyoming Game and Fish Department (Cody Region)	2008		Fisheries Biologist (W. Young)
G2 O3	North Tongue habitat structures	Review habitat structures identified in the Tongue AMP, with Wyoming Game and Fish, for effectiveness and recommend replacement, removal, or no action	2008		Fisheries Biologist (W. Young)
G3 O3	Meadowlark Lake gaging network	Establish a network of stream gaging stations on tributaries entering reservoir and continue to develop rating curve at outlet structure to more effectively late season flow releases to Tensleep water users.	2008	2007	Hydrologist (D. Scaife)
G4 O2	Goose Allotment Management Plan revision EA	Provide specialist input for revision of AMP	2008		Fisheries Biologist (W. Young)

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
G1 O4	Tongue stream channel stabilization/restoration (phase II – build)	Initiate <i>build</i> contract for stream stabilization/restoration on South Tongue River – Boy Scout section. South Tongue will take precedence because of excessive sediment; North Tongue could take precedence due to high recreational values. Plan for construction 2009.	2008		Hydrologist (D. Scaife)
G1 O4	South Tongue watershed restoration	Develop watershed scale plan for improving watershed conditions in the South Tongue River drainage. This will also help to leverage future funding from WWNRT and WG&FD.	2008		Hydrologist (D. Scaife)
G2/3 O1/3	Spring and fen inventory	Initiate field surveys of springs and fens. This should be done on a 6 th level watershed basis, with priority given to spring developments. Evaluate flows and petition State Engineer’s Office to change application for true discharge if necessary.	2009		Hydrologist and Fisheries Biologist
G1 O4	Shell crossing inventory	Complete forest-wide inventory of stream crossings by roads and trails in the Shell drainage.	2009		Hydrologist and Fisheries Biologist
G1 O4	Porcupine Creek watershed improvement	Design/contract improvements for impaired stream crossings identified during the Devil’s Canyon AMP revision	2009		Hydrologist (D. Scaife) and Fisheries Biologist (W. Young)
G1 O4	Clear/Crazy watershed improvement	Design/contract improvements for impaired stream crossings identified during the Clear/Crazy C Area EA	2009		Hydrologist and Fisheries Biologist

Goal Objective	Project	Description	FY scheduled	FY completed	Assigned
G1 O4	Piney/Rock watershed improvement	Design/contract improvements for impaired stream crossings identified during the Piney/Rock AMP revision	2009		Hydrologist and Fisheries Biologist
G1 O4	Paint Rock Creek watershed improvement	Design/contract improvements for impaired stream crossings identified during the Paint Rock and Battle Park AMP revisions	2010		Hydrologist (D. Scaife) and Fisheries Biologist (W. Young)
G2 O2	Soldier Creek YCT restoration	Evaluate potential for establishment of populations of YCT in coordination with Wyoming Game and Fish Department (Cody Region)	2010		Fisheries Biologist (W. Young)
G2 O1	Bull Creek exclosure	Extend Bull Creek exclosure for YCT populations and channel rehabilitation, in accordance with Tongue AMP. This should be dependent upon future monitoring results from population trends, greenline, utilization, etc.. Evaluate cost effectiveness vs. resource gains from additional fencing.	2010		Fisheries Biologist (A. Nowakowski)
G1 O4	Tensleep Creek watershed improvement	Design/contract improvements for impaired stream crossings identified during the Southwest Fuels EA	2010		Hydrologist (D. Scaife) and Fisheries Biologist (W. Young)
G1 O4	Big Goose watershed improvement	Design/contract improvements for impaired stream crossings identified during the Big Goose AMP revision	2010		Hydrologist and Fisheries Biologist

Recommendation: Only keep 2 previous years of record, to minimize the size of table. I.e. if in calendar year 2008, delete all projects completed earlier than 2006.

Recommendation: Post updated versions to Forest website

**APPENDIX B
(MANUAL DIRECTION)**

NATIONAL DIRECTION

WATERSHED AND AIR MANAGEMENT – FSM 2500

CHAPTER 2510 – Watershed Planning

Coordination with Land and Resource Management – FSM 2511

Soil and Water Surveys for National Assessment – FSM 2512

Data Management – FSM 2513

CHAPTER 2520 – Watershed Protection and Management

Watershed Condition Assessment – 2521

Watershed Improvement – FSM 2522

Burned Area Emergency Rehabilitation (BAER) – FSM 2523

Support – FSM 2524

Monitoring – FSM 2525

Riparian Areas – FSM 2526

Floodplain Management Wetland Protection – FSM 2527

Emergency Watershed Protection Programs – FSM 2528

Natural Disaster and Flood Damage Surveys – FSM 2529

CHAPTER 2530 – Water Resource Management

Water Resource Investigations – FSM 2531

Water Quality Management – FSM 2532

Water Resource Management Services – FSM 2533

Cooperation in other Water Related Activities – FSM 2534

Water Resource Development Programs – FSM 2535

CHAPTER 2540 – Water Uses and Development

National Forest System Water Rights – FSM 2541

Municipal Supply Watersheds – FSM 2542

Groundwater Management – FSM 2543

CHAPTER 2550 – Soil Management – FSM 2550

Soil Resource Inventories – FSM 2551

Soil Management Support Services – FSM 2552

Soil Resource Improvement – FSM 2553

Soil Quality Monitoring – FSM 2554

Soil Resource Data Management and Analysis – FSM 2555

Special Soil Investigations and Studies – FSM 2556

CHAPTER 2580 – Air Quality

CHAPTER 2590 – Weather Program

MINERALS AND GEOLOGY – FSM 2800

CHAPTER 2810 – Mining Claims

Basic Elements of General Mining Laws – FSM 2811

Provision of 1955 Multiple-Use Mining Act – FSM 2812

Rights and Obligations of Claimants – FSM 2813

Rights and Obligations of United States – FSM 2814

Acquisition of Title – FSM 2815

Mining Activities in Special Areas – FSM 2816

Surface Management Procedures Under 36 CFR Part 228, Subpart A – FSM 2817

Occupancy on Mining Claims – FSM 2818

Mining Claim Contests – FSM 2819

CHAPTER 2820 – Mineral Leases, Permits, and Licenses

Mineral License, Permits, and Leases Administered by Dept. of the Interior – FSM 2822

CHAPTER 2830 – Mineral Reservations and Outstanding Mineral Rights

Mineral Reservations – FSM 2831

Outstanding Mineral Rights – FSM 2832

CHAPTER 2840 – Reclamation

Reclamation Components for Plans of Operations – FSM 2841

Reclamation Performance Standards – FSM 2842

Reclamation Bonding – FSM 2843

Reclamation Monitoring – FSM 2844

Reclamation and Information and Technology Transfer FSM 2845

Cooperative Agreements – FSM 2846

CHAPTER 2850 – Mineral Materials

To meet the demand for mineral materials consistent with the management of other surface resources.

Sales – FSM 2851

Free Use – FSM 2852

In-Service Use – FSM 2853

Community Sites and Common-Use Areas – FSM 2854

Operating Plans – FSM 2855

Appraisal – FSM 2856

Bonding – FSM 2857

Reclamation – FSM 2858

Reporting – FSM 2859

CHAPTER 2860 – Forest Service Authorized Prospecting and Mineral Collecting

Determining Forest Service Jurisdiction – FSM 2861

Exceptions and Special Situations – FSM 2862

CHAPTER 2870 – (RESERVED)

CHAPTER 2880 – Geologic Resources and Services

Orders of Geologic Inventory – FSM 2881

Geologic Resources Program Activities – FSM 2882

Geologic Services Program Activities – FSM 2883

Standards – FSM 2884

Monitoring – FSM 2885

Technical Development and Application – FSM 2886

CHAPTER 2890 – Certification

Promote increased competence and professionalism. Maintain an effective professional and technically competent workforce that is knowledgeable of:

- a. Geologic characteristics of mineral deposits.
- b. Techniques of mineral exploration and development.
- c. Mineral laws, regulations, and policies.

Certification of Locatable Minerals Administrators – FSM 2891

Certification for Mineral Examiners and Review Mineral Examiners – FSM 2892

Certification for Oil and Gas Resource Specialists – FSM 2893

REGIONAL DIRECTION

WATERSHED AND AIR MANAGEMENT – FSM 2500

CHAPTER 2510 – Watershed Planning

**APPENDIX C
(HANDBOOK DIRECTION)**

NATIONAL DIRECTION

WATERSHED AND AIR MANAGEMENT – FSH 2500

Burned Area Emergency Rehabilitation Handbook (BAER) – FSH 2509.13
Chapter 10 – Burned Area Survey Team Organization
Chapter 20 – Burned Area Survey and Emergency Treatment Strategy
Chapter 30 – Cost-Risk Analysis and Evaluation of Alternatives for Emergency Rehab.
Chapter 40 – Burned Area Report
Chapter 50 – Emergency Treatment Implementation
Chapter 60 – Monitoring and Evaluation

Water Resource Inventory Handbook – FSH 2509.16
Chapter 1 – Water Resource Inventory Process

Soil Management Handbook – FSH 2509.18
Chapter 1 – Soil Resource Inventories
Chapter 2 – Soil Quality Monitoring

REGIONAL DIRECTION

WATERSHED AND AIR MANAGEMENT – FSH 2500

Burned Area Emergency Rehabilitation Handbook (BAER) – FSH 2509.13

Water Resource Inventory Handbook – FSH 2509.16

Soil Management Handbook – FSH 2509.18

National Forest System Water Rights Handbook – FSH 2509.21

Watershed Conservation Practices Handbook – FSH 2509.25

LITERATURE CITED

- Kershner, J.L., M. Coles-Ritchie, E. Cowley, R.C. Henderson, K.Kratz, C. Quimby, D.M. Turner, L.C. Ulmer, and M.R. Vinson. *In press*. A plan to monitor the aquatic and riparian resources in the area of PACFISH/INFISH and the biological opinions for bull trout, salmon, and steelhead. U.S. Forest Service General Technical Report, Rocky Mountain Region, Ogden, Utah.
- Roper, B.B., J.L. Kershner, E. Archer, and R. Henderson. 2003. The value of using permanent sites when evaluating stream attributes at the reach scale. *Journal of Freshwater Ecology* 18:585-592.
- Winters, D.S., technical coordinator, [and others]. 2004. Aquatic, riparian, and wetland ecosystem assessment; for the Bighorn National Forest, Wyoming. U.S. Forest Service, Golden, Colorado.



South Tongue River, Dead Swede