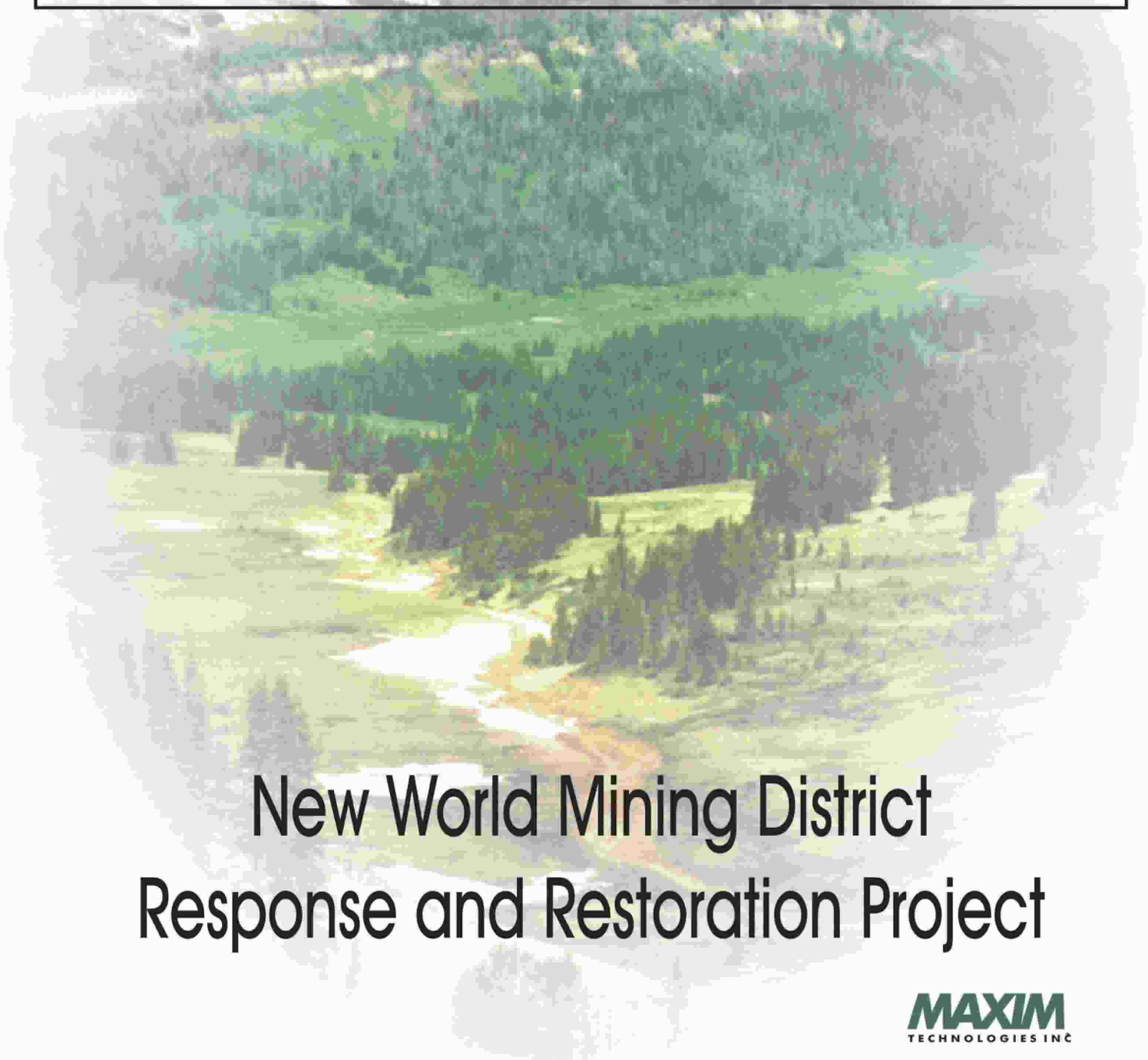
United States Department of Agriculture
Forest Service
Northern Region

FINAL

2003/2004 Work Plan



New World Mining District Response and Restoration Project

MAXIM TECHNOLOGIES INC

Final

2003/2004 WORK PLAN
NEW WORLD MINING DISTRICT
RESPONSE AND RESTORATION PROJECT

Prepared for:

USDA Forest Service
Northern Region
Missoula, Montana

Prepared by:

Maxim Technologies, Inc.
303 Irene Street
P.O. Box 4699
Helena, Montana 59604

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1.0 INTRODUCTION

This document provides descriptions of work tasks to be completed in 2003/2004 in conjunction with response and restoration activities at the New World Mining District Response and Restoration Project in Park County, Montana (**Figure 1**). The 2003/2004 Work Plan complements the Overall Project Work Plan (Maxim, 1999a) by providing a description of specific work elements that will be completed in 2003/2004. This work plan initiates the project cycle for the fifth year of the project. Project activities conducted by the U.S. Department of Agriculture Forest Service (USDA-FS) began in 1999. Those activities are described in the 1999, 2000, 2001, and 2002/2003 Work Plans (Maxim, 1999b; 2000; 2001a; 2002a).

During 2002 it was determined, given the short summer field and construction season in the New World District, that planning and work years were more useful when designated from the beginning of a field or construction season through the next twelve months, rather than on a calendar year basis. In turn, work can be conducted in the summer, with results being interpreted and reports of results being prepared throughout the fall and winter months, followed by finalizing plans for the next year's field or construction season in the spring prior to initiating the next field or construction season. Therefore, this year's work plan has been designated as the 2003/2004 Work Plan.

A general description of the site, project objectives, and project organization are provided in this introduction. More detailed descriptions of the project are described in the Overall Project Work Plan (Maxim, 1999a), the Project Summary 2001(Maxim, 2001b), and the Project Summary 2002 (Maxim, 2002b), which are available on the project website ***(http://www.fs.fed.us/r1/gallatin)*** and at the three project information repositories located at the Gallatin National Forest Supervisor's Office in Bozeman, Montana; the Gardiner Ranger District Office in Gardiner, Montana; and at the Cooke City Chamber of Commerce office in Cooke City, Montana. The reader is encouraged to review these three documents to gain a better understanding of the overall project.

1.1 PROJECT BACKGROUND

On August 12, 1996, the United States signed a Settlement Agreement (Agreement) with Crown Butte Mining, Inc. (CBMI) to purchase CBMI's interest in their New World Mining District (District) holdings. This transfer of property to the U.S. government effectively ended CBMI's proposed mine development plans and provided $22.5 million to cleanup historic mining impacts in the district. In June 1998, all interested parties and CBMI signed a Consent Decree (Decree). The Decree, approved by the United States District Court, finalized the terms of the Agreement and made available the funds that are being used for mine cleanup. Monies available for cleanup will be spent first on District Property, which, as defined in the Decree, includes all property or interests in property that CBMI relinquished to the United States (**Figure 1**). As funds are available after District Property is cleaned up to the satisfaction of the United States, other mining disturbances in the District may be addressed.

The USDA-FS, as the lead agency responsible for implementing the cleanup, has assembled a management team and has published objectives to guide reclamation and restoration of the historic mining impacts in the New World Mining District. Under their Superfund authority, the USDA-FS will execute the response and restoration project by following guidance provided by the EPA for non-time-critical removal actions (EPA, 1993). Non-time-critical removal actions are defined by CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as actions that are implemented by the lead agency to respond to "the cleanup or removal of released hazardous substances from the environment … as may be necessary to prevent, minimize, or mitigate damage to

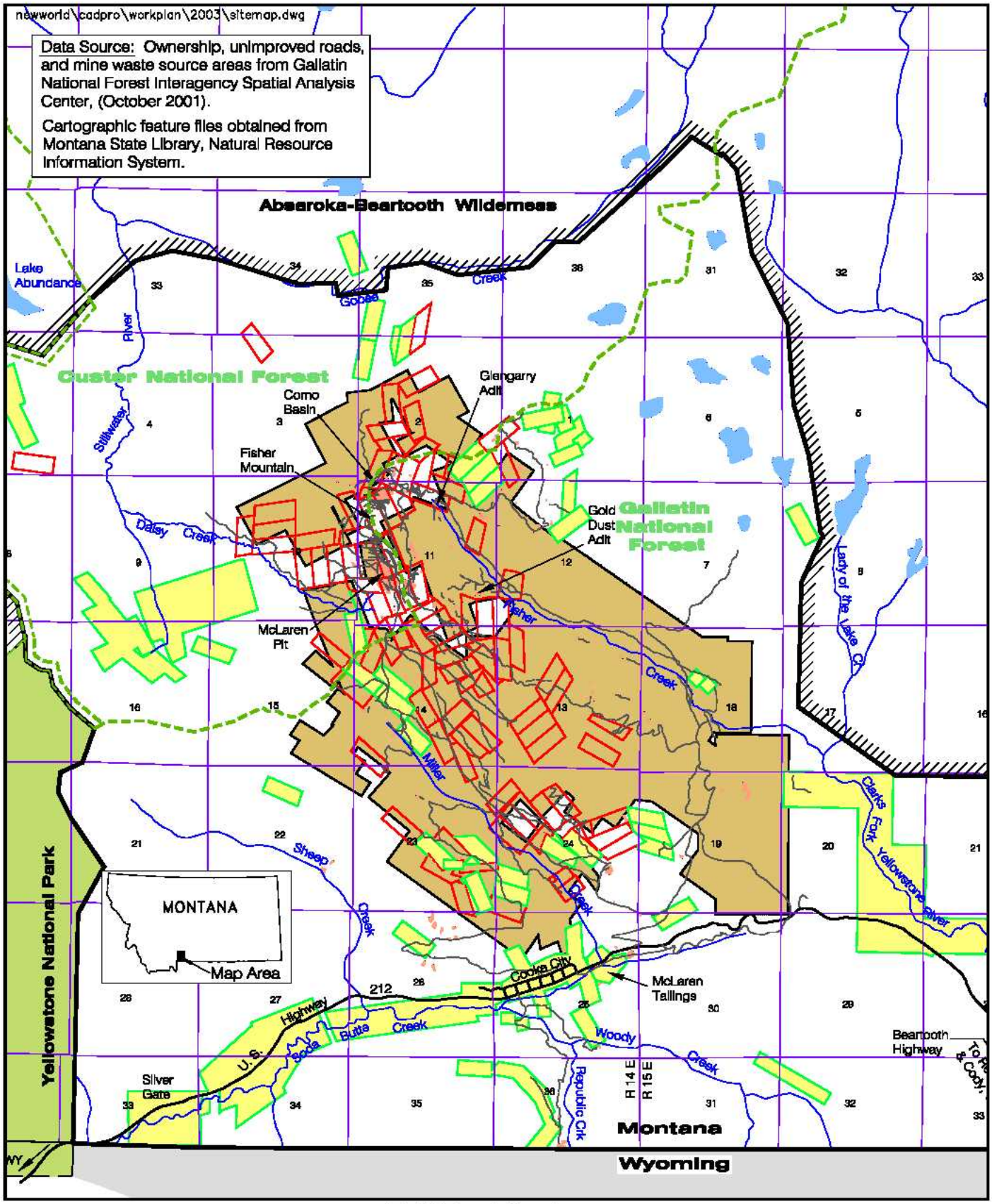
the public health or welfare or to the environment…" (EPA, 1993). Non-time critical removal actions respond to releases that can start six months after the determination that a response is necessary.

In 1995, EPA began a site investigation after the initial announcement of the property transfer from CBMI. The EPA investigation involved installation of monitoring wells, surface water sampling, groundwater monitoring, and completion of a groundwater tracer study. In October 1998, the USDA-FS assisted CBMI in completing and submitting a Support Document and Implementation Plan to support the CBMI petition for temporary modification of water quality standards. Under the Decree and Agreement, CBMI is required to submit petitions regarding temporary standards if requested by the USDA-FS. The Support Document and Implementation Plan (Stanley and Maxim, 1998) were submitted to the State of Montana Board of Environmental Review (Board) on January 22, 1999. The petition for the adoption of temporary standards for Fisher Creek, Daisy Creek, and a portion of the upper Stillwater River was accepted by the Board and noticed for public hearing. The proposed rule was modified to reflect public comment and the temporary water quality standards were approved and adopted by the Board on June 4, 1999. The goal of the temporary standards is to allow the project to proceed so that water quality in Fisher Creek, Daisy Creek, and the Stillwater River improves to the point where these streams meet the uses for waters classified B-1 under the classification standards established by the State of Montana.

The temporary standards are subject to change as improvements in water quality are realized. They are reviewed every three years to determine if changes are desirable, and the first review was required in 2002. The Board of Environmental Review held a meeting on July 26, 2002, to review the long-term water quality data collected since the standards became effective in June 1999, and compared project progress with that presented in the implementation plan (Maxim, 2002c). As a result of this review, the Board took no action to modify the temporary standards as originally defined in June 1999.

In March 1999, the USDA-FS initiated the planning process for the project. Planning documents were in place in June 1999, and work was begun on the project with the monitoring of surface water and groundwater quality at selected monitoring points. In March 2000, June 2001, and July 2002, the USDA-FS finalized the 2000, 2001, and 2002/2003 Work Plans, respectively, that detailed work to be conducted in the second, third, and fourth years of the project. Activities that have been conducted to date include the following:

- Establishing a database management system for the project.
- Cataloging existing information available for the site.
- Completing a technical evaluation of existing information and data.
- Improving portions of the Daisy Pass and Lulu Pass roads to accommodate construction traffic.
- Improving a previously constructed surface water diversion around the Como Shaft.
- Developing a suitable map base of District Property to support engineering design.
- Evaluating areas of erosion contributing excessive sediment to area drainages.
- Completing a repository siting evaluation report and collecting hydrogeologic data on two prospective repository sites.
- Completing a surface water tracer study by the U.S. Geological Survey on Daisy Creek and Miller Creek to determine surface water inputs of metal contaminants.
- Preparing a Selective Source Response Action Engineering Evaluation/Cost Analysis (EE/CA) for potential response alternatives.



Project Vicinity Map
New World Mining District
Response and Restoration Project
Cooke City Area, Montana
FIGURE 1

Figure 1- back page

- Removing approximately 25,000 cubic meters (32,700 cubic yards) of mine waste rock and mill tailings (nine percent of the total District waste) from seven mine waste areas, disposing of these wastes in an engineered repository, and revegetating about 1.9 hectares (4.6 acres) of the former waste areas for the Selective Source Response Action.
- Obtaining data to fill identified data gaps for proposed response actions at the site.
- Identifying unrecorded mine waste dumps, adits, and boreholes, and developing a database of site characteristics.
- Geochemical sampling of mine wastes throughout the district.
- Ranking mine waste sources according to a modified Hazard Ranking System to aid in the prioritization of sites slated for clean up.
- Identifying unrecorded cultural features.
- Reopening the Glengarry Adit and Como Raise to more fully characterize underground sources of water within the mine.
- Evaluating water quality treatment alternatives for acid mine discharges.
- Preparing a McLaren Pit Response Action EE/CA (Maxim, 2001c).
- Consolidating waste rock dumps from the Daisy Creek headwaters area into the McLaren Pit. These three waste source areas account for about 67% of the District's total waste rock volume on public lands. Construction activities were initiated in 2002 with the consolidation of the wastes, and capping of the consolidated wastes with an impermeable cap is scheduled for completion in 2003.
- Satisfying the requirements of the petition for temporary standards submitted by CBMI.
- Preparing a report for the Board of Environmental Review with respect to their review of the temporary water quality standards.
- Preparing a Como Basin/Glengarry Adit/Fisher Creek Response Action EE/CA (Maxim, 2002d).
- Preparing a design package including engineering drawings and specifications for closure of the Glengarry Adit, where contaminated outflows from the mine flow into Fisher Creek. Clean-up goals for the Glengarry Mine are based on eliminating or minimizing contaminated inflows and outflows from the mine. The Glengarry adit source area reclamation work was put out for bid in January 2003 with construction to be initiated in the summer of 2003 and completed in 2004.
- Installing shallow monitoring wells downgradient of the McLaren Pit.
- Installing shallow monitoring wells in the Como Basin.
- Plugging and abandoning historic monitoring wells in the McLaren Pit.
- Reopening and evaluating the McLaren Adit.
- Begin preparation of the Miller Creek Response Action EE/CA.

1.2 SITE LOCATION AND DESCRIPTION

The New World Mining District falls within the Gallatin and the Custer National Forests, and abuts Yellowstone National Park's northeast corner. The Absaroka-Beartooth Wilderness Area bounds the District to the north and east. The Montana-Wyoming state line forms the southern boundary of the District. The District lies entirely within Park County, Montana (**Figure 1**).

The communities of Cooke City and Silver Gate, Montana are the only population centers near the District. The neighboring communities of Mammoth, Wyoming and Gardiner, Montana are located about 80 kilometers (50 miles) to the west. Red Lodge, Montana is located about 105 kilometers (65 miles) to the northeast, via the Beartooth Highway, and Cody, Wyoming is located 95 kilometers (60 miles) to the southeast.

The District is located at an elevation that ranges from 2,400 meters (7,900 feet) to over 3,170 meters (10,400 feet) above sea level. The site is snow-covered for much of the year and only one route of travel is open on a year-round basis -- the highway between Mammoth and Cooke City. The Sunlight Basin road accesses the District from northwestern Wyoming during the spring, summer and fall but only allows access to within a few miles of the District in winter. The Beartooth Highway is closed during winter, as is Highway 212 from Cooke City eastward to Pilot Creek near the Montana/Wyoming state line.

The District covers an area of about 10,360 hectares (25,600 acres). Historic mining disturbances affect about 20 hectares (50 acres) located on District Property, which includes all lands or interest in lands transferred to the United States by CBMI. Mining disturbances on non-District Property include the McLaren Tailings and McLaren Mill Site, which cover an additional 6.9 hectares (17 acres), as well as the Great Republic Smelter.

The topography of the District is mountainous with dominant glacial features, and is situated at the headwaters of three river systems that all flow into the Yellowstone River. The three tributaries are the Clark's Fork of the Yellowstone, the Stillwater, and the Lamar. The Lamar River flows through Yellowstone Park. The major tributary streams in the District include Daisy, Miller, Fisher, Goose, Sheep, Lady of the Lake, Republic, Woody, and Soda Butte creeks.

1.3 WORK PLAN ORGANIZATION

This work plan is organized into several sections. Following this introductory section is a description of the project goals and objectives (Section 2.0). Section 3.0 describes work tasks that will be completed during 2003/2004. The project schedule for 2003/2004 and project deliverables are presented in Sections 4.0 and 5.0, respectively.

2.0 PURPOSE AND OBJECTIVES

The primary purpose of the 2003/2004 Work Plan is to guide project activities that are directed toward completing response and restoration actions to mitigate impacts or the threat of impacts that result from historic mining activities in the District. The objectives for the 2003/2004 Work Plan are consistent with those detailed in the Overall Project Work Plan (Maxim, 1999a) and those generally described in "Year 4 Activities" of the Support Document and Implementation Plan (Stanley and Maxim, 1998). The primary objectives for work done in 2003/2004 include: conducting response actions; preparing response action construction packages; collecting sufficient information to support engineering analyses and designs for response actions; measuring water quality, vegetation success, and erosion parameters to document the results of response and restoration actions; and, satisfying requirements of the rule allowing adoption of temporary water quality standards.

3.0 SCOPE OF WORK

To meet the objectives for 2003/2004, the following activities will be performed:

- Maintain community relations by implementing activities described in the Community Relations Plan (Maxim, 1999c).
- Maintain the project database and the project website.
- Continue long-term monitoring of surface water areas as described in the respective long-term planning documents (Maxim, 1999d).
- Monitor water quality at supplemental surface water and adit locations.
- Monitor water quality in stream reaches below the McLaren Pit and Glengarry Adit construction areas.
- Monitor groundwater at selected locations in July 2003.
- Complete the installation of monitoring wells in the McLaren Pit area.
- Monitor germination success and cover at sites reclaimed in 2001.
- Complete construction of the McLaren Pit Response Action
- Initiate construction for the Glengarry Adit Response Action
- Collect additional soil samples from the Great Republic Smelter area to supplement sampling work done in 2002.
- Complete the Miller Creek EE/CA to evaluate alternatives for cleanup of mining-related sources in the Miller Creek drainage.
- Prepare Response Action construction packages for the preferred clean up alternatives for the Como Basin, remaining work in the Fisher Creek drainage, closure of the McLaren Adit, and any work identified for mining-related impacts in Miller Creek.
- Prepare the 2004/2005 Work Plan.

A more complete description of each of these activities is presented below.

3.1 COMMUNITY RELATIONS

A Community Relations Plan (CRP) has been developed for the project and is included in the Overall Work Plan (Maxim, 1999a). The CRP describes community relation strategies that will be used to share information with the public and obtain timely input on proposed project activities. Community relation techniques include preparing news releases, preparing fact sheets, conducting technical workshops and public meetings, making project documents readily available to interested parties, and accepting and responding to public comment on project documents.

Community relation activities described in the CRP will be used in 2003/2004 to keep the public informed of project activities. Events expected for 2003/2004 with the anticipated timing of the events are listed in **Table 1**. As other events arise during the year, the public will be informed in a timely manner in accordance with the CRP. If necessary, the CRP will be modified to insure all interested citizens are kept informed of project activities and are afforded ample opportunities to provide input to the response and restoration process.

TABLE 1
COMMUNITY RELATION ACTIVITIES
2003/2004 Work Plan

Event/Task	Timing
Release Updated Project Summary Report	June 2003
Public Meeting	June/July 2003 - Cooke City
Public Meeting	August/September 2003 - Cooke City
Technical Workshop on Work Plan Activities	December 2003/January 2004 – Bozeman

3.2 MAINTAIN PROJECT WEBSITE AND DATABASE

The USDA Forest Service has maintained a project website since project inception. The website address is:

http://www.fs.fed.us/r1/gallatin

The project website contains general information on the project as well as a library of archived information specific to the work that has been conducted over the past four years. The library contains downloadable versions of all documents that have been released to the public for review as well as important maps and graphics. A page on current activities lists the time and place of project meetings. Project information stored at the New World Response and Restoration Project document repository in Bozeman is also listed on the website, and analytical data for surface water and mine waste samples collected since 1989 is available for downloading from the project database.

The project website will be maintained to disseminate information, reports, and data related to the project. The website currently includes information relative to project status, schedule, description, background, contacts, and other general information. The website includes a page where most project

documents, including maps and graphics, can be accessed. Relevant reports prepared during 2003/2004 will be posted to the website after the hard copy documents are released to the public. Some reports are not released to the public in hard copy but are available on the project website (e.g. technical memoranda).

The considerable amount of environmental data that has been collected at the New World site is cataloged in a Microsoft Access® database. This database will continue to be updated as new project information is collected during 2003/2004. The project database is available to the public through the project website, allowing interested persons to view and query project data.

3.3 SURFACE WATER QUALITY MONITORING

3.3.1 Long-Term Surface Water Quality Monitoring

Surface water quality monitoring will be conducted in 2003 at the 12 sampling stations identified in the Long-Term Surface Water Quality Monitoring Plan (Maxim, 1999d). Long-term surface water sampling sites are shown on **Figure 2** and listed in **Table 2**. Samples will be collected before the onset of snowmelt (late April/early May), before construction begins during higher flow conditions (June/July), and during low flow (September/October).

Surface water samples will be collected and analyzed in accordance with procedures and methods described in the Site-Wide Sampling and Analysis Plan (SAP) (Maxim, 1999f). **Table 3** lists surface water field parameters and standard operating procedures from the Site-Wide SAP. **Table 4** lists preservation and bottle requirements and **Table 5** lists surface water analytical requirements.

3.3.2 Construction Monitoring

Surface water quality monitoring will also be performed during response action construction in 2003. Monitoring will be conducted during construction below the McLaren Pit at Daisy Creek stations DC-2 and DC-5 and at two sites downstream of the Glengarry Adit (site SW-3 and an additional site downstream of the Glengarry dump) during underground and surface reclamation activities (**Figure 2**).

Field personnel will visually monitor surface water adjacent to construction sites regularly for turbidity. Water quality samples will be collected at construction monitoring stations on a daily basis in Fisher Creek when construction work is active in the Glengarry workings, and during significant earthmoving activities at the two stations below the McLaren Pit. The objective of construction water quality monitoring is to document water quality conditions and make appropriate adjustments to construction practices if water quality is significantly affected by construction activities. The following field parameters will be measured:

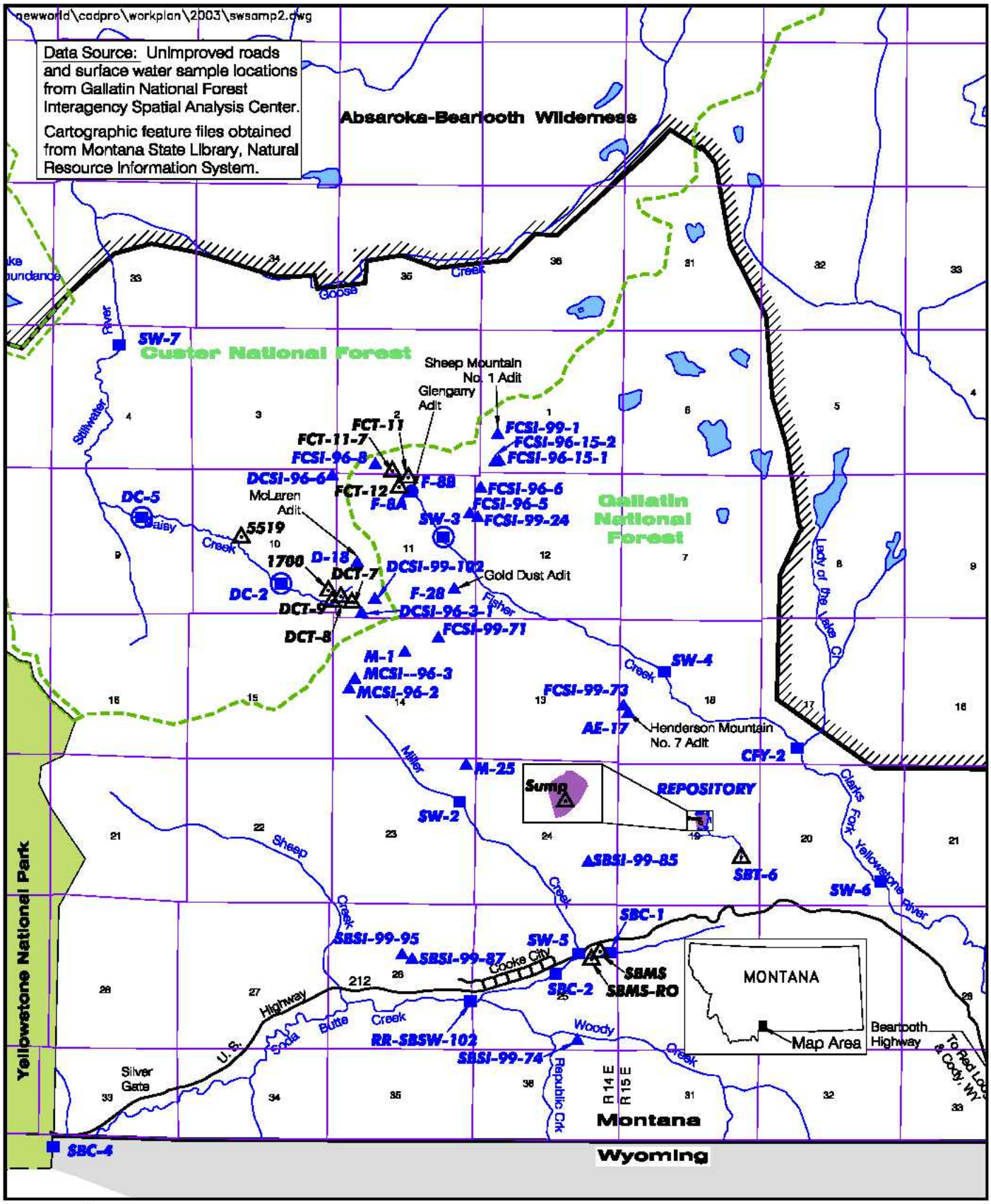
- pH, specific conductance, and turbidity
- Total iron concentration
- Total copper concentration

Field parameters will be measured according to procedures and methods described in the Site-Wide SAP (Maxim, 1999f). Depending on the results of field measurements, selected samples will be split and analyzed at an analytical laboratory for parameters listed in the Site-Wide SAP. **Table 3** lists the SOPs for construction monitoring parameters, and **Tables 4 and 5** list preservation, bottles, and analytical requirements for sample splits that will be sent to the laboratory.

TABLE 2
2003 SURFACE WATER SAMPLE SITES

Site Name	Location	April/ May	June/ July	Sept/ October	Constr-uction	Supple-mental*
Daisy Creek Drainage						
DCT-7	Daisy Cr. tributary south of McLaren Pit	--	X	--	--	X
DCT-8	Daisy Cr. tributary south of McLaren Pit	--	X	--	--	X
DCT-9	Daisy Cr. tributary south of McLaren Pit	--	X	--	--	X
USGS-1700	Daisy Cr. tributary south of McLaren Pit	--	X	--	--	X
USGS-5519	Daisy Cr. tributary west of McLaren pit	--	X	--	--	X
DC-2	Daisy Creek below confluence of McLaren tributaries	X	X	X	X	--
DC-5	Daisy Creek above confluence with Stillwater River (DNRC-127)	X	X	X	X	--
SW-7	Stillwater River at Stillwater Trail Crossing	X	X	X	--	--
Fisher Creek Drainage						
FCT-12	Tributary south of Glengarry Adit	--	X	--	--	X
FCT-11	Tributary below Como Basin	--	X	--	--	X
FCT-11-7	Tributary below Como Basin	--	X	--	--	X
FCSW-101	Fisher Creek below pond discharge	--	--	--	X	--
SW-3	Fisher Creek below Glengarry Adit	X	X	X	X	--
SW-4	Fisher Creek at Lulu Road Crossing	X	X	X	--	--
CFY-2	Fisher Creek above Clarks Fork confluence	X	X	X	--	--
Clarks Fork River Drainage						
SW-6	Clarks Fork Yellowstone River at Saw Mill Road Crossing	X	X	X	--	--
Miller Creek Drainage						
SW-2	Miller Creek below Miller Mountain Road Crossing	X	X	X	--	--
SW-5	Miller Creek near mouth	X	X	X	--	--
Soda Butte Creek Drainage						
SBT-6	Soda Butte Creek Tributary below Repository Site	X	X	X	--	X
SBC-1	Soda Butte Creek above confluence with Miller Creek	X	X	X	--	--
SBMS	Soda Butte Creek at Millsite	--	X	--	--	X
SBMS-RO	Millsite runoff sample	--	--	--	--	X
SBC-2	Soda Butte Creek below McLaren Tailings	X	X	X	--	--
RR-SBSW-102	Soda Butte Creek below confluence with Republic Creek	X	X	X	--	--
SBC-4	Soda Butte Creek at Park Boundary	X	X	X	--	--

Notes: * Supplemental stations will be sampled three times; sample dates will depend on flow conditions



2003 Surface Water Monitoring Stations
New World Mining District
Response and Restoration Project
Cooke City Area, Montana
FIGURE 2

Figure 2 – Back page

TABLE 3
SURFACE WATER FIELD PARAMETERS
2003/2004 Work Plan

Parameter	SOP Number[1]	SOP Title	Event
Specific Conductance	SOP-05	Field Measurement of Specific Conductance	All
pH	SOP-06	Field Measurement of pH	All
Water Temperature	SOP-07	Field Measurement of Water Temperature	All
Flow	SOP-01	Streamflow Measurement; Wading Technique	All
Turbidity	SOP-35	Field Measurement of Turbidity	Construction
Iron	Hach[2]	NA	Construction
Copper	Hach[2]	NA	Construction

1. Maxim Standard Operating Procedures (Appendix A, Site-Wide SAP)
2. Field analysis will be conducted using a Hach DR 2000 Spectrophotometer following the procedures in Hach, 1992. Water Analysis Handbook

TABLE 4
SURFACE WATER SAMPLING REQUIREMENTS
2003/2004 Work Plan

Parameter	Preservation[1]	Bottle Size/Type
Total Recoverable Metals	HNO_3 to pH < 2; Iced to 4°C	1 liter polyethylene
Dissolved Metals	Filtered through 0.45 micron filter; HNO_3 to pH < 2; Iced to 4°C	1 liter polyethylene
Common Ions	Iced to 4°C	1 liter polyethylene

1. HNO_3 = nitric acid; H2SO4 = sulfuric acid

TABLE 5
SUMMARY OF SURFACE WATER ANALYTICAL REQUIREMENTS
2003/2004 Work Plan

Parameter	PQL (mg/l)[1]	EPA Method No.	Max. Holding Time
Physicochemical			
Specific Conductivity	None	2310B	28 days
pH	None	150.1	Upon arrival at lab
Total Dissolved Solids	None	2340C	7 days
Total Suspended Solids	None	160.2	7 days
Hardness	None	2340B	6 months
Acidity	None	305.1	14 days
Metals[2]			
Aluminum	0.1	200.8/200.7	6 months
Cadmium	0.0001	200.8/200.7	6 months
Copper	0.001	200.8/200.7	6 months
Iron	0.01	200.8/200.7	6 months
Lead	0.001	200.8/200.7	6 months
Manganese	0.003	200.8/200.7	6 months
Zinc	0.01	200.8/200.7	6 months
Common Cations[2]			
Calcium	1.0	200.8/200.7	6 months
Magnesium	1.0	200.8/200.7	6 months
Potassium	1.0	200.8/200.7	6 months
Sodium	1.0	200.8/200.7	6 months
Common Anions[2]			
Sulfate	None	375.2	28 Days
Bicarbonate	None	2320B	14 Days
Carbonate	None	2320B	14 Days
Chloride	None	325.3	28 Days

1 PQL = Practical Quantitation Limit in milligrams per liter (mg/L)
2 Surface water parameters will be analyzed as total recoverable (unfiltered) unless otherwise specified; dissolved metals (filtered) will be done on an as specified basis.

3.3.3 Supplemental Water Quality Monitoring

Eleven supplemental surface water stations will be sampled in 2003 (Table 2). Five stations are located in the Daisy Creek drainage and will be sampled to augment groundwater monitoring in the McLaren Pit area. Three stations are located in the Fisher Creek drainage (FCT-11, FCT-11-7, and FCT-12). Station FCT-12 is being sampled to augment evaluation of the Glengarry Adit construction. Stations FCT-11 and FCT-11-7 are being sampled to correlate surface flows in the Como Basin with water level

measurements being taken in the Como Basin wells. Three stations are located in the Soda Butte Creek drainage. Stations SBMS and SBMS-RO will be sampled to determine the contribution of metals in runoff from the McLaren Millsite. Station SBT-6 was established to monitor water quality downstream of the repository.

Samples will be collected from all supplemental surface water stations three times in 2003. The initial sampling event will be held in conjunction with the high flow event in June/July. The other two events will be timed to capture lower flow conditions in late July and early August, as many of the supplemental surface water stations are in smaller tributary streams that tend to dry up as the season progresses. Surface water flows will be monitored periodically to determine the exact dates of the other two sampling events. Sampling at stations SBMS and SBMS-RO will be timed to coincide with thunderstorm events. Station FCT-11-7 will be monitored for flow and field parameters only, and the timing of measurements will be done in conjunction with measurements of water levels in the Como Basin wells. Supplemental stations will be sampled and analyzed in accordance with procedures and methods described in the Site-Wide SAP (Maxim, 1999f). **Tables 3, 4, and 5** list field parameters, SOPs, bottles and preservation, and analytical requirements.

3.3.4 Selective Source Repository Sump Monitoring

Water quality and water level in the sump will be monitored during the months of April, May, and June 2003. Water level will initially be monitored in conjunction with the April surface water sampling event, and then bi-weekly through the month of June. Water quality will be sampled in June and analyzed for parameters listed in **Table 5**. Water in the sump will be pumped into appropriate water trucks in late July or August and disposed at the Cody, Wyoming sewage treatment ponds.

If water levels in the sump continue to rise at a rate that is greater than the calculated rate for draindown of the repository, further corrective action may be required to repair leaks or tears in the cover liner. This work would likely be contracted and conducted in late summer 2003, if necessary.

3.3.5 Adit Water Quality Monitoring

Drainage from 25 adits within the New World District will be sampled one time during the June/July sampling event to provide additional data to the long-term water quality record from these sites. **Table 6** lists the adits to be sampled.

At the Gold Dust and McLaren adits, samples will also be collected from the underground workings. Samples will be collected from two stations in the McLaren workings that were established in 2002, and up to five samples will be collected from the Gold Dust workings. Adit water samples will be collected and analyzed in accordance with procedures and methods described in the Site-Wide SAP (Maxim, 1999f). **Tables 3, 4, and 5** list field parameters, SOPs, bottles and preservation, and analytical requirements.

3.4 GROUNDWATER MONITORING

3.4.1 Long-Term Groundwater Monitoring

Monitoring wells present on District Property that have historically been monitored for water quality parameters will be monitored once in 2003. This monitoring event is scheduled in July 2003 when water levels are typically at seasonal highs. Monitoring will include water level measurement, measurement of field parameters, sampling, and laboratory analysis. **Tables 7, 8, and 9** list monitoring wells targeted for the 2003 sampling events. Well locations are shown on **Figures 3 and 4**.

Groundwater monitoring will be conducted using methods and procedures described in the Site-Wide SAP (Maxim, 1999f). **Tables 10 and 11** list field parameters and SOPs, and preservation and bottle requirements for groundwater samples. **Table 12** lists groundwater analytical parameters and practical quantitation limits (PQLs).

Water levels will be measured in each monitoring well immediately before purging the wells. Groundwater samples will be submitted to an analytical laboratory for analysis of parameters listed in **Table 12**. Groundwater monitoring results will be presented in the annual monitoring report.

TABLE 6
ADIT SAMPLING STATIONS
2003/2004 Work Plan

Site Name	Site No. (Adit Sample No.)	Location	Flow (gpm)[1]	pH (s.u.)[2]
Gold Dust Adit	FCSI-96-1A (F-28)	Middle Fisher Creek Valley	30	7.3
Glengarry Adit	FCSI-96-2A (F-8A)	Glengarry Mine, base of Lulu Pass	38	2.9
Glengarry Mill Site Adit	FCSI-96-4 (F-8B)	Glengarry Mine Mill site adit	<1	3.8
Upper Tredennic Dump 1	FCSI-96-15-1	Upper Tredennic basin	<1	--
Upper Tredennic Dump 2	FCSI-96-15-2	Upper Tredennic basin	0.6	5.4
Middle Tredennic Dump 1	FCSI-96-6 (F-11A)	Lower Tredennic basin	3	4.9
Lower Tredennic Dump 1	FCSI-96-5 (F-11)	Lower Tredennic Basin	0.6	7.0
Lower Tredennic Dump 2	FCSI-99-24	East of Lower Tredennic	<1	6.6
Lower Spaulding Dump	FCSI-96-8 (F-1)	NE of Lulu Pass	0.1	2.6
Sheep Mountain #1 (NDP)[3]	FCSI-99-1	Upper Tredennic basin, flank of Sheep Mountain	0.6	7.2
Henderson Mountain Dump 10	FCSI-99-71	Above upper road to Homestake Mine	<1	--
Henderson Mountain Dump 13	FCSI-99-73	SE Henderson Mtn, off Henderson Mtn. Rd.	6	--
Henderson Mountain Dump 7	FCSI-99-68 (AE-17)	SE Henderson Mtn, off Henderson Mtn. Rd.	2	7.3
McLaren Adit	DCSI-96-1 (D-18)	McLaren Mine, W flank of Fisher Mountain	8	6.6
Near McLaren Pit	DCSI-99-102	Headwall below county road east of McLaren Pit	5	--
Daisy Pass Dump 1	DCSI-96-3-1	Below Daisy Pass	<1	--
West of Como Dump 1	DCSI-96-6	West side of Lulu pass, Goose Creek	<1	--
Black Warrior Adit	MCSI-96-2	SE Bull of the Woods Pass, Miller Creek	0.1	7.5
Upper Miller Creek Dump	MCSI-96-3	Near Black Warrior, private land	0.5	--
Little Daisy Adit	MCSI-96-6 (M-1)	SE Daisy Pass, Miller Creek	2	7.0
M-25 (Henderson Mtn. Adit)	(M-25)	SW Henderson Mountain, Miller Creek	--	--
Woody Creek Mine Dump 1 (NDP)[3]	SBSI-99-74	Woody CK., Mohawk claim, private land	10	7.8
Alice E. Mill Site seep (NDP)[3]	SBSI-99-85 (AE-6)	S Henderson Mountain, Miller Creek	6.7	6.3
Soda Butte Dump 8 (NDP)[3]	SBSI-99-87	Off Miller Mtn. Road, near Cooke City	--	8.2
Soda Butte Dump 1 (NDP)[3]	SBSI-99-95	Off Miller Mtn. Road, near Cooke City	1	8.0

Notes: 1 Most recent available data; gpm = gallons per minute
2 most recent available data; pH in standard units
3 NDP = non-District Property

TABLE 7
MCLAREN PIT AREA MONITORING WELLS SCHEDULED FOR SAMPLING
2003/2004 Work Plan

Well No.	Year Installed	Completion Formation	July[1]	Biweekly[2]
DCGW-100	2003	Meagher Limestone	X	X
DCGW-111S	2003	Colluvium	X	X
DCGW-111D	2003	Bedrock	X	X
DCGW-112	2003	Bedrock	X	X
Tracer-2	1997	Fisher Mtn. Intrusive	X	X
MW-2	1989	Wolsey Shale	X	X
MW-3	1989	Wolsey Shale	X	X
DCGW-101S	2001	Glacial Till	X	X
DCGW-101D	2001	Lulu Pass Rhyodacite Porphyry	X	X
DCGW-102S	2001	Glacial Till	X	X
DCGW-102D	2001	Wolsey Shale	X	X
DCGW-103S	2001	Glacial Till	X	X
DCGW-103D	2001	Park Shale	X	X
DCGW-104	2001	Waste Rock	X	X
DCGW-105	2001	Waste Rock	X	X
DCGW-106	2002	Colluvium	X	X
DCGW-107	2002	Colluvium	X	X
DCGW-108	2002	Colluvium	X	X
DCGW-109	2002	Colluvium	X	X
DCGW-110	2002	Colluvium	X	X
DCGW-131	2002	Colluvium	X	X
DCGW-132	2002	Colluvium	X	X
DCGW-133	2002	Colluvium	X	X
DCGW-134	2002	Colluvium	X	X
DCGW-135	2002	Colluvium	X	X
DCGW-136	2002	Colluvium	X	X
DCGW-137	2002	Colluvium	X	X
DCGW-138	2002	Colluvium	X	X

Note: (1) July sampling event involves measuring depth to water and field parameters and collecting samples for chemical analysis.
(2) Biweekly sampling to involve measuring depth to water and field parameters only from mid-July through September

TABLE 8
COMO BASIN AREA MONITORING WELLS SCHEDULED FOR SAMPLING
2003/2004 Work Plan

Well No.	Year Installed	Completion Formation	July(1)	Biweekly(1)
EPA-11	1996	Tertiary Intrusive Dike	X	X
EPA-12	1996	Scotch Bonnet Diorite	X	X
MW-1	1989	Wolsey Shale	X	X
MW-8	1989	Lulu Pass Rhyodacite	X	X
Tracer-4	1997	Fisher Mtn. Intrusive	X	X
Tracer-6	1997	Scotch Bonnet Diorite	X	X
FCGW-111	2002	Colluvium	--	X
FCGW-112	2002	Colluvium	--	X
FCGW-113	2002	Colluvium	--	X
FCGW-114	2002	Colluvium	--	X
FCGW-115	2002	Colluvium	--	X
FCGW-116	2002	Colluvium	--	X
FCGW-117	2002	Colluvium	--	X
FCGW-118	2002	Colluvium	--	X
FCGW-119	2002	Colluvium	--	X
FCGW-120	2002	Colluvium	--	X
FCGW-121	2002	Colluvium	--	X
FCGW-122	2002	Colluvium	--	X
FCGW-123	2002	Colluvium	--	X
FCGW-124	2002	Colluvium	--	X
FCGW-125	2002	Colluvium	--	X
FCGW-126	2002	Colluvium	--	X
FCGW-127	2002	Colluvium	--	X
FCGW-128	2002	Colluvium	--	X
FCGW-129	2002	Colluvium	--	X
FCGW-130	2002	Colluvium	--	X

Note: (1) July sampling event involves measuring depth to water and field parameters and collecting samples for chemical analysis.
(2) Biweekly sampling to involve measuring depth to water and field parameters only from mid-July through September

TABLE 9
OTHER DISTRICT MONITORING WELLS TO BE SAMPLED IN JULY
2003/2004 Work Plan

Well No.	Year Installed	Completion Formation
Fisher Creek Area		
MW-9A	1990	Alluvium
MW-9B	1990	Precambrian
MW-10A	1990	Alluvium
MW-10B	1991	Precambrian
MW-11	1990	Precambrian
SB-16	1991	Precambrian
Tracer-5	1997	Fisher Mtn. Intrusive
Miller Creek Area		
MW-5A	1989	Glacial Till/Dolomite
MW-5P	1989	Wolsey Shale
MW-6	1989	Flathead Sandstone
SB-4B(B) Repository		
SBGW-105T	1999	Till
SBGW-105	1999	Granite
SBGW-107T	1999	Till
SBGW-107	1999	Granite
SBGW-108T	1999	Till
SBGW-108	1999	Granite

Note: July sampling event involves measuring depth to water and field parameters and collecting samples for chemical analysis.

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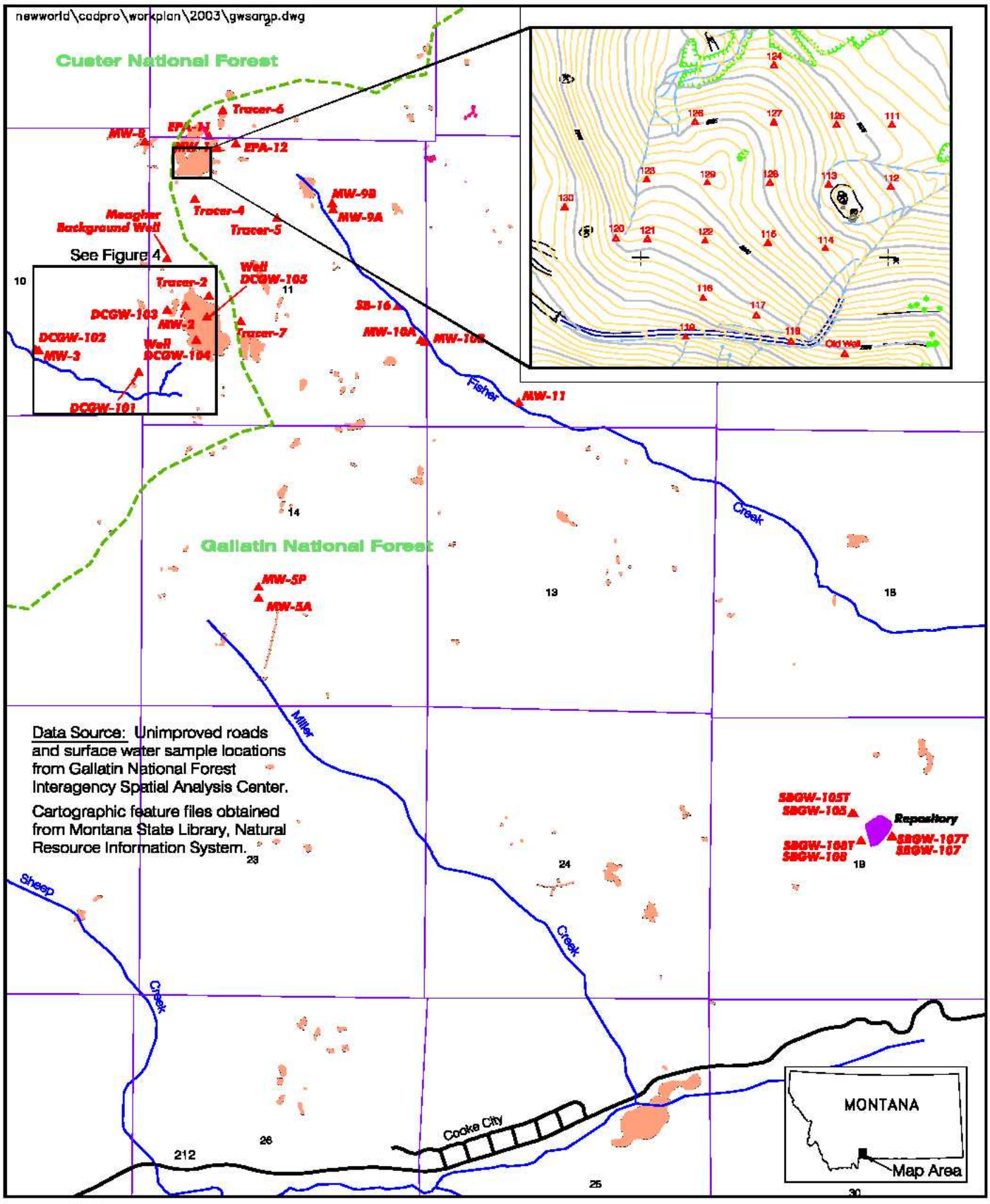

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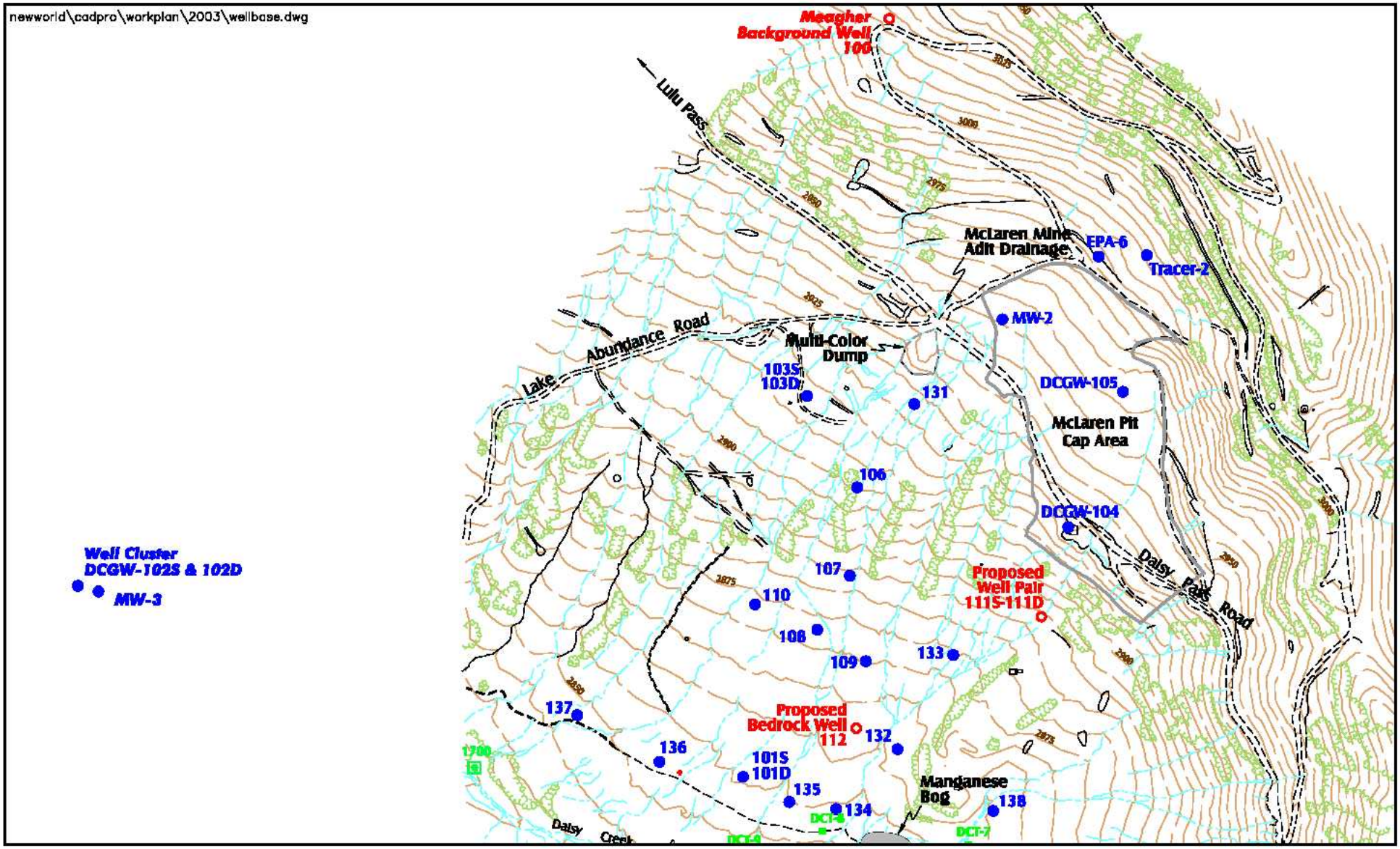
2003 Groundwater Monitoring Stations
New World Mining District
Response and Restoration Project
Cooke City Area, Montana
FIGURE 3



N

0 10 Meters 50
1:5000

Contour Interval = 5 meters

- Nimick 2000 Surface Water Site
- Historic Surface Water Station
- Proposed Well
- 101 Monitoring Well (DCGW prefix not included)
- Creek/Drainage
- Road/Trail

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2003 McLaren Pit Monitoring Wells
New World Mining District
Response and Restoration Project
Cooke City Area, Montana
FIGURE 4

TABLE 10
GROUNDWATER FIELD PARAMETERS
2003/2004 Work Plan

Parameter	SOP Number(1)	SOP Title	Event
Specific Conductance	SOP-05	Field Measurement of Specific Conductance	All
pH	SOP-06	Field Measurement of pH	All
Water Temperature	SOP-07	Field Measurement of Water Temperature	All
Oxidation-Reduction	SOP-28	Field Measurement of Redox Potential (Eh)	All
Dissolved Oxygen	SOP-08	Field Measurement of Dissolved Oxygen	All
Depth to Water	SOP-20	Field Measurement of Groundwater Level	All

1. Maxim Standard Operating Procedures (Appendix A, Site-Wide SAP)

TABLE 11
GROUNDWATER SAMPLING REQUIREMENTS
2003/2004 Work Plan

Parameter	Preservation(1)	Bottle Size/Type
Dissolved Metals	Filtered through 0.45 micron filter; HNO_3 to pH < 2; Iced to 4°C	1 liter polyethylene
Common Ions	Iced to 4°C	1 liter polyethylene
Physicochemical	Iced to 4°C	1 liter polyethylene

1. HNO_3 = nitric acid

TABLE 12
SUMMARY OF GROUNDWATER ANALYTICAL REQUIREMENTS
2003/2004 Work Plan

Parameter	PQL (mg/l)[1]	EPA Method No.	Max. Holding Time
Physicochemical			
Specific Conductivity	None	2310B	28 days
pH	None	150.1	Upon arrival at lab
Total Dissolved Solids	None	2340C	7 days
Hardness	None	2340B	6 months
Acidity	None	305.1	14 days
Metals[2]			
Aluminum	0.1	200.8/200.7	6 months
Cadmium	0.0001	200.8/200.7	6 months
Copper	0.001	200.8/200.7	6 months
Iron	0.01	200.8/200.7	6 months
Lead	0.001	200.8/200.7	6 months
Manganese	0.003	200.8/200.7	6 months
Zinc	0.01	200.8/200.7	6 months
Common Cations[2]			
Calcium	1.0	200.8/200.7	6 months
Magnesium	1.0	200.8/200.7	6 months
Potassium	1.0	200.8/200.7	6 months
Sodium	1.0	200.8/200.7	6 months
Common Anions[2]			
Sulfate	None	375.2	28 Days
Bicarbonate	None	2320B	14 Days
Carbonate	None	2320B	14 Days
Chloride	None	325.3	28 Days

1. PQL = Practical Quantitation Limit in milligrams per liter (mg/L)
2. Groundwater parameters will be analyzed as dissolved constituents as filtered through a 0.45 micron filter

3.4.2 Supplemental McLaren Pit, Como Basin, and Repository Groundwater Monitoring

Supplemental groundwater monitoring will be conducted at the McLaren Pit, Como Basin, and Selective Source Repository in 2003. For the McLaren Pit area and the Como Basin, monitoring wells will be sampled every two weeks (as access permits) from June through October for field parameters (**Table 10**). McLaren Pit monitoring wells are listed in **Table 7** and Como Basin monitoring wells are listed in **Table 8**. Well locations are shown on **Figures 3 and 4**.

At the Selective Source Repository, water samples will be collected from six monitoring wells in July 2003 in conjunction with long-term groundwater monitoring activities. Wells that will be monitored are listed in **Table 9** and are shown on **Figure 3**. **Tables 10 and 11** list field parameters and SOPs, and preservation and bottle requirements for samples to be collected from wells at the Selective Source Repository. **Table 12** lists groundwater analytical requirements.

3.5 MCLAREN PIT MONITORING WELL INSTALLATION

The McLaren Pit groundwater investigation was initiated in the fall of 2001 with the installation of eight monitoring wells. In 2002, 13 monitoring wells were installed in colluvial material and shallow bedrock below the McLaren Pit. The remaining 2003 work associated with this task is to install one upgradient background monitoring well as described in the 2001 Work Plan (Maxim, 2001a). Installation of three additional groundwater monitoring wells is also proposed below the McLaren Pit to complete the monitoring well network in the McLaren Pit area.

A background monitoring well will be completed in the Meagher Limestone upgradient of the McLaren Pit to determine water quality in the mineralized Meagher Limestone from an area unaffected by mining. The proposed general location for the well is shown on **Figure 4** (DCGW-100). The location of the well takes into account the presumed direction of groundwater flow in the Meagher Limestone, and the fact that the Meagher Limestone is cut by the Crown Butte fault and the Fisher Mountain intrusive to the north and west of the proposed location. The well is located on the same side of the Crown Butte fault as the McLaren Pit. Available geologic information (from an adjacent CBMI exploration drill hole) indicates that this background-monitoring well will be drilled to a depth of approximately 70 meters (230 feet). The well will be completed using a nominal 10 cm (4-inch) diameter casing and screened through the upper water bearing and mineralized interval (7.6 meters, 25 feet thick zone at the bottom of the hole) within the Meagher Limestone. The borehole diameter will be sufficient to allow a completion of well with 10-centimeter (4-inch) diameter casing using rotary drilling methods.

Three groundwater monitoring wells will be drilled below the McLaren Pit in the vicinity of monitoring wells DCGW-104 and DCGW-132. Southwest of DCGW-104, a new colluvium/bedrock well pair will be drilled (DCGW-111S and –111D). The depth of the bedrock well is expected to be about 15 meters (50 feet), with a completion in the upper 4.5 meters (15 feet) below the colluvium-bedrock interface. This pair of wells will permit monitoring of bedrock and colluvium water quality southwest (down-dip) of the mined pit and waste rock but still on the upthrown side of the Crown Butte Fault. The other well (DCGW-112) will be drilled near DCGW-132 to a total depth of about 10.5 meters (35 feet), with the well completed in the upper 4.5 meters (15 feet) below the colluvium-bedrock interface. This well will allow monitoring of groundwater in bedrock downgradient of the pit, but on the downthrown side of the fault.

During the fall sampling event, an apparent obstruction prevented the bailer used for sampling from reaching the bottom of monitoring well DCGW-104. The well may have been damaged or the ground settled during construction activities in the McLaren Pit. This well will be examined during the 2003 field season and replaced, if necessary.

Monitoring wells will be drilled, developed, and purged using methods and procedures described in the Site-Wide SAP (Maxim, 1999f) and in the 2001 Work Plan (Maxim, 2001a). Following purging, a sample will be collected and submitted for laboratory parameters listed in **Table 12**. Water quality parameters and analytical methods are the same as those used for long-term groundwater monitoring.

3.6 CHARACTERIZE MINE WASTE SOURCES

Over the past four years, more than 150 mine waste dumps in the District have been characterized and evaluated in the project mine waste inventory. This task involves characterizing any remaining sites that are not listed in the inventory. Characterization activities may include plotting the location of the waste areas, estimating mine waste volumes, and collecting and analyzing samples.

Field personnel will locate sites using resource-grade GPS equipment and provide volume estimates using field estimation techniques described in the project Site-Wide SAP (Maxim, 1999f). Attribute information about each mine waste source will be recorded with the GPS unit and on standard field forms. Locations will also be recorded on a field map. In addition, a material sample may be obtained from source areas where analytical data do not exist.

One specific area included in this task is National Forest System (NFS) land that lies adjacent to the Great Republic Smelter site. A sampling program was initiated by the USDA-FS on NFS land surrounding the smelter in 2002, and this study identified four areas in the vicinity of the smelter that contained concentrations of lead in soil exceeding the project human health guideline for recreational use (Maxim, 2002e). These four areas are shown on **Figure 5**.

To determine the eastern extent of elevated lead concentrations, and to refine the areas containing elevated lead, additional sampling will be conducted. A 50-foot grid will be used to extend and augment the existing grid-sampling network in the three areas east of the smelter shown on **Figure 5**. The one area on the north of the smelter waste pile terminated in Soda Butte Creek and will not be sampled further. Only NFS land will be sampled.

Samples will be collected from the 0-2-inch depth interval of mineral soil with a stainless steel trowel. If duff is present at a sample location, the duff will be carefully removed from the mineral soil prior to sampling. At each area containing elevated lead concentrations, a minimum of two locations will be sampled at two additional depths. The additional two depth intervals are 2 to 6-inchs and the 6 to 12-inchs. These samples will be collected to verify that metals contamination at the surface does not continue with depth. Field sampling personnel will randomly locate sample points where deeper samples will be collected. A total of approximately 70 samples will be collected.

Soil samples will be collected in accordance with the procedures described in the project Site-Wide SAP (Maxim, 1999f). Based on the results of 2002 sampling in the Great Republic Smelter area, surface soil samples will be shipped to an analytical laboratory for analysis of total arsenic and lead only. Subsurface samples will be analyzed for the parameters and according to the methods listed in **Table 13**. Results of the data collected for this task will be summarized in a technical memorandum.

Two additional sites where work will be conducted are the Gold Dust waste rock dump and the McLaren Mill Site. A topographic survey of the Gold Dust dump will be completed to assist in the planning of the dump removal, realignment of the surface drainage, and regrading and reclamation of the site. At the McLaren Mill Site, test pit locations excavated in 2000 by the USDA-FS will be surveyed, along with test pits excavated by the Montana Department of Environmental Quality in 2001. Surveying these locations will permit a more accurate calculation of mining-related waste at the mill site.

Figure 5 – Phase II Soil Sampling Locations - Great Republic Smelter Area

Figure 5 – back page

TABLE 13
MINE WASTE ANALYTICAL METHODS AND DETECTION LIMITS
2003/2004 Work Plan

Parameter	Method[1]	PQL[2]
Saturated Paste pH (s.u.) and Electrical Conductivity (mmhos/cm)	USDA Handbook 60 - 2, 3a, 21a	--
Sulfur Fractionation (%)	Modified Sobeck	0.1
Neutralization Potential (tons/1,000 tons)	Modified Sobeck	1
SMP Lime Requirement (tons/1,000 tons)	Methods of Soil Analysis	--
Total Arsenic (mg/Kg)	SW-846 – 6010B	2
Total Cadmium (mg/Kg)	SW-846 – 6010B	2
Total Chromium (mg/Kg)	SW-846 – 6010B	5
Total Copper (mg/Kg)	SW-846 – 6010B	10
Total Lead (mg/Kg)	SW-846 – 6010B	20
Total Mercury (mg/Kg)	SW-846 – 7471A	0.5
Total Silver (mg/Kg)	SW-846 – 6010B	20
Total Zinc (mg/Kg)	SW-846 – 6010B	10

1. USDA Handbook 60 - Diagnosis and Improvement of Saline and Alkali Soils (USDA, 1954)
   Sobeck - Field and Laboratory Methods Applicable to Overburdens and Minesoils (EPA, 1978)
   Methods of Soil Analysis - American Society of Agronomy, Parts I and II. Monograph No. 9 (1982)
   SW-846 - Test Methods for Evaluating Solid Waste-Physical Chemical Methods (EPA, 1986)
2. PQL = Practical quantitation limit

3.7 MCLAREN PIT CONSTRUCTION

Construction associated with the initial phase of the McLaren Pit Response Action was completed in October 2002. Most of the earthwork required to prepare the area for capping was completed in this first year of construction, including consolidating mine waste into the main pit area, and compacting and regrading as necessary. Upgradient surface water diversions and downgradient drainage channels also were constructed.

The URS construction group will be completing construction during the summer of 2003. This work will include completion of the regrading and shaping of final waste slopes, completion of the surface water drainage network, and placement of a geomembrane cover, drain layer, and a soil cover. The soil cover will be borrowed from a nearby area and placed over the capped surface.

As part of the work that will be completed in the pit prior to placing the geomembrane cover, 10 soil moisture monitoring access tubes will be installed in the cap area. The objective of installing soil moisture access tubes is to allow performance monitoring of the McLaren Pit cap and cover system after construction is complete. Soil moisture measurements will be made using a neutron probe to determine if the cap and cover system are operating as designed. Soil moisture monitoring, in conjunction with monitoring groundwater levels in the covered pit waste (monitoring wells DCGW-104

and DCGW-105) will provide data to assist in the determination of whether further corrective measures are required to reduce the loading of metals from the McLaren Pit into Daisy Creek.

Access tubes will be installed in borings drilled with an auger drill rig capable of installing 5-centimeter (2-inch) access tubes. Spacing of the tubes will be about one per half hectare to an average depth of six meters. Tubes will be installed on the outside edges of the benches that will become part of the final graded surface. During drilling, samples will be collected every meter to determine in-place moisture content. In-place moisture content will be used to calibrate a soil moisture gauge following installation of the access tubes. Calibration information will be maintained on the gauge.

3.8 SELECTIVE SOURCE RESPONSE ACTION RECLAMATION MONITORING

Mine waste removal areas reclaimed in 2001 will be monitored for potential erosion problems and revegetation success. Reclamation monitoring will be conducted in accordance with monitoring procedures that are described in the Long-Term Revegetation Monitoring Plan (Maxim, 1999e). Monitoring will be completed in one event timed to coincide with the period of maximum plant growth.

The following reclaimed areas will be monitored using cover monitoring procedures:

- Upper Tredennic Dumps 1 and 2
- Upper Tredennic access road and loading area
- Middle Tredennic Dump 1
- Lower Tredennic Dump 1
- Small Como Dump
- Lower Spaulding Dump and access road
- Upper and Middle Spaulding Dump
- Soda Butte Tailings
- Rommel Tailings area and borrow area

A technical memorandum will be prepared describing the results of revegetation monitoring. The memorandum will contain a summary of field data and recommendations for maintenance, treatment, or monitoring.

Based on the results of monitoring, the Forest Service may determine that reseeding or refertilization is necessary. Reseeding and refertilization would be carried out in 2003, if necessary. If serious or extensive erosion problems are identified, maintenance may be required, which may include earthwork, drainage control, reseeding, refertilization, and reinstallation of erosion matting. Prescriptions for seeding, fertilization, mulching, and installation of erosion controls would follow the same prescriptions as specified under the original reclamation contract.

3.9 GLENGARRY ADIT RESPONSE ACTION CONSTRUCTION

Construction of the Glengarry Adit closure will begin in the summer of 2003. Work in 2003 will involve preparing the site for construction, installing sediment controls, cleaning muck out of the underground workings, rehabilitating the portal, grouting the Como raise, and drilling and grouting the 1050 roof leak. Backfilling and plugging of the adit will be completed in 2004. Surface reclamation, including dump removal, regrading, and revegetation, will be completed in 2005.

3.10 COMPLETE THE MILLER CREEK EE/CA AND NATURAL RESOURSE DAMAGE INVENTORY

An EE/CA for sources located on District Property in the Miller Creek drainage will be completed during early 2003. This EE/CA will evaluate response options and technologies to mitigate potential impacts from mine waste areas that contribute to surface water quality degradation. The primary sources of information to make this determination are existing water quality data, a USGS report on metal concentrations in Miller Creek (Cleasby and Nimick, 2000), and the Abandoned and Inactive Mine Scoring System (AIMSS) ranking for waste sources located in Miller Creek.
This EE/CA will evaluate response action alternatives that specifically address mining impacts, including remaining mine waste sources present in the Miller Creek watershed. Based on the assessment work completed in Miller Creek during the 2002 field season, several potential Response Action alternatives will be developed for each of the mine waste areas including in-situ treatment and total removal. Response Action alternatives will be developed to specifically address human health and environmental problems that occur in each of the mine areas. Key sections of the EE/CA will include:

- Executive Summary
- Site Background
- Waste Characteristics
- Streamlined Risk Assessment
- Removal Action Goals and Objectives
- Screening and Development of Alternatives
- Detailed Analysis of Alternatives
- Comparative Analysis of Alternatives

The EE/CA will contain figures and tables summarizing supporting information and will have appendices of laboratory analytical data and cost estimates. The EE/CA will be prepared in accordance with EPA guidance for preparing non-time-critical removal actions (EPA, 1993). A preferred alternative will be selected for each of the mine areas. Response to significant comments on the draft EE/CA will be provided in a separate submittal or will be incorporated into the final EE/CA.

The Miller Creek EECA will also be used to identify areas of Natural Resource Damage on District Property. One of the major natural resource damages in the district is sediment loading from poorly vegetated natural soils and road sources that impact water quality. Sediment from roads particularly impact the Miller Creek drainage as 90% of total sediment load in Miller Creek is from roads.

The review of natural resource damages in the Miller Creek EECA will disclose impacts and geographic areas impacted. Remedies for various categories of resource damages will be developed and included as ancillary items to the preferred alternative selected.

3.11 PREPARE RESPONSE ACTION CONSTRUCTION PACKAGES

Response Action construction packages will be prepared in 2003 for the preferred alternatives selected for the Como Basin, remaining work at waste rock dumps in the Fisher Creek drainage, and any work identified by the Miller Creek EE/CA. Construction packages will include engineering drawings, USDA-FS specifications, and bid items. Conceptual design memoranda will be developed during the initial stages of the design and will be used to guide design of construction elements. Bidding and contracting of Response Action construction packages will be managed by the USDA-FS. **Table 14** presents a construction schedule for the Response Action projects mentioned above.

TABLE 14
REVISED CONSTRUCTION SCHEDULE
2003/2004 WORK PLAN

YEAR	PROJECT	NOTES
2001	Selective Source Response Action	Removal of waste from eight sites
2002	McLaren initial year	Construction of waste rock consolidation and drainage controls
	Monitoring and Maintenance	Surface water, groundwater, revegetation; Selective Source Repository sump repair
2003	McLaren second year	Complete waste regrading; construct cover system
	Glengarry Adit initial year	Grout Como Raise; prepare Glengarry tunnel for grouting and backfilling
	Monitoring and Maintenance	Surface water, groundwater, revegetation; as necessary maintenance
2004	Glengarry Adit second year	Backfill Glengarry Tunnel; install cemented fill
	Fisher Creek Source Controls	Regrade and revegetate waste rock dumps at eight sites
	Miller Creek Source Controls	
	Monitoring and Maintenance	Surface water, groundwater, revegetation; as necessary maintenance
2005 known projects	Como Basin Cap and Cover	
	Fisher Creek Dump Removals	Glengarry and Gold Dust dumps
	Lulu Pass Road Reclamation	
	Selective Source Repository Expansion And Final Closure	Glengarry and Gold Dust dumps
	Monitoring and Maintenance	Surface water, groundwater, revegetation; as necessary maintenance
2005 potential projects	Miller Creek Dump Removals	
	McLaren Millsite	Non-District property; State lead on private land
	Republic Smelter Removal	Non-District property; State lead on private land
	Restoration, Road Work in Miller Creek	
2006	Adit Discharge Response Action	Evaluation of cleanup alternatives for 25 remaining discharging adits in the District
	Monitoring and Maintenance	Surface water, groundwater, revegetation; as necessary maintenance
2007	Monitoring and Maintenance	Surface water, groundwater, revegetation; as necessary maintenance

3.12 PREPARE 2004/2005 WORK PLAN

A work plan similar to this plan will be prepared to guide specific work activities to be completed during 2004/2005. These activities will complement those performed under the long-term plans and will involve surface water, groundwater, and revegetation monitoring, construction monitoring, and construction activities. Other work in 2004/2005 may involve filling data gaps identified in 2003 and maintenance of response and restoration work.

4.0 PROJECT SCHEDULE

Figure 6 illustrates the schedule for 2003/2004 activities.

5.0 REPORTS

Project documents will be prepared during 2003/2004 for many of the items discussed in Section 3.0. These documents are summarized in **Table 15** along with a description of the document contents and approximate delivery schedule.

TABLE 15
PROJECT DOCUMENT LIST
2003/2004 Work Plan

Deliverable Title	Contents	Delivery Schedule
2003/2004 Work Plan	This Document	Draft – March 2003 Final – May 2003
Miller Creek EE/CA	Engineering evaluation of alternatives developed for Miller Creek source areas	Draft – April 2003 Final – June 2003
Revised Implementation Plan	Updated Implementation Plan for the Temporary Standards Rule	Draft – March 2003 Final – June 2003
Project Summary 2003	Summary document of project activities completed since 1999	June 2003
Fisher Creek/Miller Creek Surface Controls Construction Package	Engineering Drawings, Technical Specifications, and Bid Package	Draft – July 2003 Final – August 2003
Como Basin Construction Package	Engineering Drawings, Technical Specifications, and Bid Package	Draft - September 2003 Final - December 2003
Technical Memorandum – Reclamation Monitoring	Reclamation monitoring results	December 2003
Technical Memorandum – Republic Smelter Area Soils Investigation (Phase II)	Results of second phase of soil sampling	December 2003
2003 Surface Water and Groundwater Monitoring Report	Results and analyses of ongoing surface water and groundwater monitoring	January 2004
2004/2005 Work Plan	Proposed activities for 2004/2005	Draft – February 2004 Final – March 2004

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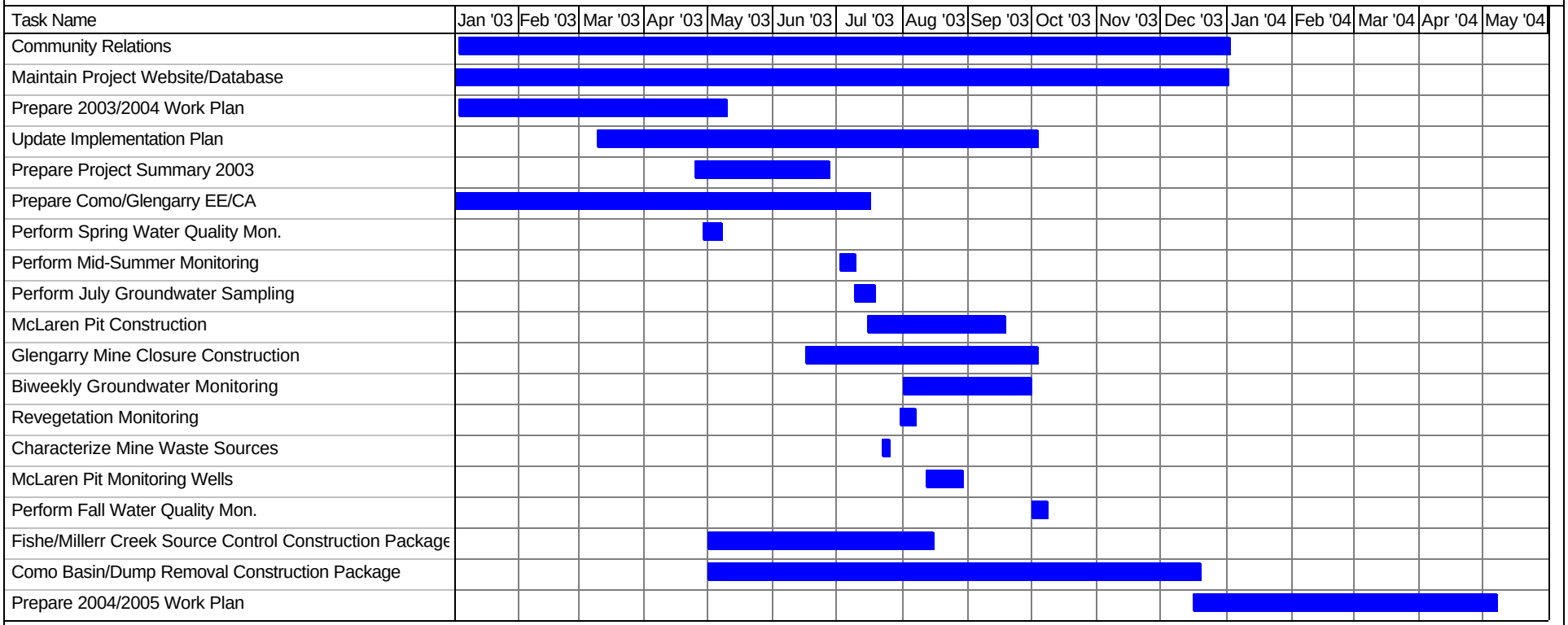
FIGURE 6

NEW WORLD MINING DISTRICT RESPONSE AND RESTORATION PROJECT

2003/2004 PROJECT SCHEDULE



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Revised: May 9, 2003

Figure 6 – back page

6.0 REFERENCES

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