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Subject: Clancy-Unionville Supplemental Information Report – Water Quality

To: District Ranger, Helena Ranger District

Introduction

Recently, new information has come about that is relevant to environmental concerns that have been expressed as part of the proposed action and its impacts. As part of the development of the Total Maximum Daily Load (TMDL) assessment for the Lake Helena Planning area, a new pollutant source assessment has been done for Lump Gulch (as well as other watersheds on the Helena National Forest), which is on the State's 303(d) list of impaired streams and within the analysis area for the Clancy-Unionville project. The following report documents the findings of this pollutant source assessment and how this information affects the February 2003, Record of Decision.

New Information Gathered as part of the TMDL Development

The Department of Environmental Quality is required to develop Total Maximum Daily Loads for all water bodies on the 303(d) list. A TMDL is the total amount of a pollutant that a water body may receive from all sources without exceeding water quality standards. A TMDL can also be defined as a reduction in pollutant loading that results in meeting water quality standards. Montana's approach is to include TMDLs as one component of a comprehensive water quality restoration plan.

The EPA has taken the lead on development of the TMDL and comprehensive water quality restoration plan for the Lake Helena Planning area of which Lump Gulch and the Clancy-Unionville Project is a part. The EPA had originally scheduled to complete development of the TMDL for the Lake Helena watershed, including Lump Gulch, by August/September of 2003. The EPA has since altered their schedule for completion of the Lake Helena TMDL. Their present schedule does not anticipate completion of the TMDL until November of 2004 (personal communication with Gary Ingman of Land and Water). Much work, however, has gone into the development of the TMDL. The Forest Service, in particular, has worked diligently to collect and provide to the EPA all data requested in a timely manner in order to complete the TMDL. In this regard, the Helena National Forest in November of 2004, completed and provided to EPA a pollutant source assessment for 303(d) listed water bodies within the administrative boundary of the Helena National Forest. This pollutant source assessment includes data on Lump Gulch, a drainage in the Clancy-Unionville project area.

This data collection has been done in cooperation with Tetra Tech, Inc. and Land and Water Consulting who have been contracted by the EPA to develop and execute the Sampling and Analysis Plan for the Lake Helena TMDL Planning Area. A pollutant source assessment identifies where the pollution is coming from and calculates the relative contribution of all point, nonpoint and natural sources. While there are other facets of the TMDL that will be completed in 2004, the most pertinent to this project is the pollutant source assessment.

Sediment Source Survey

As part of the pollutant source assessment a sediment source survey was done as part of the TMDL development for the Lake Helena TMDL planning area. While the pollutant source survey identified other sources of pollution such as mine seepage and habitat alterations due to channelization caused by mining, sediment was the pollutant of concern as it is the only pollutant that the Clancy-Unionville project has the potential to affect. This sediment source assessment was done for streams on the 303(d) list for the Lake Helena Planning area and included the following streams on the Helena National Forest: Jackson Creek, Lump Gulch, Middle Fork of Warm Springs, North Fork of Warm Springs, upper portions of Prickly Pear, and Skelly Gulch. Clancy Creek is also a 303(d) listed stream within the Clancy-Unionville project area, however, due to the vast majority of land being private, Land and Water Consulting performed the survey for this area. Only Lump Gulch is of concern for the Clancy-Unionville project. The only activities taking place on Clancy Creek for the project are several grass burns, which are not projected to produce any sediment due to their distance from the stream.

The sediment source survey included both office and comprehensive field examination of the Lump Gulch watershed (as well as other watersheds on the Helena National Forest). The office reconnaissance consisted of database queries such as Timber Stand Data Base, Roads Data Base and other databases deemed appropriate; photo and map reconnaissance; and legacy data searches. Equivalent Clear-cut Acres (ECA) and road sediment models using these databases were run.

Field reconnaissance consisted of the Helena National Forest's road sediment survey. This survey looks at the disturbed area contributing sediment and collects data to be put into the Water and Sediment (WATSED) or the Watershed Erosion Prediction Project (WEPP) roads model. This enabled us to come up with a good estimate of the tons of sediment coming from various sources such as roads.

In addition to the road sediment survey a visual, on the ground assessment of sediment sources for 303(d) streams on the Helena National Forest was conducted in spring and summer 2003. This assessment included photo documentation, geographical positioning system (GPS) location indexing, and narrative descriptions of current and potential future sources of water quality impairment in all 303(d)-listed segments of the Lake Helena TMDL planning unit which were on the Helena National Forest. Sediment sites identified through our stream survey were not quantifiable, but were characterized as to their relative contribution, i.e., low, moderate or high. Sediment amounts were estimated for this report. Each of the individual 303(d) segments was surveyed in its entirety from the Forest administrative boundary to the headwaters, and relevant

features documented. The entire length of stream below the Forest administrative boundary was also looked at, but at a coarser scale. Obvious water quality impairments associated with the identified sources were noted (e.g., turbid water, nuisance algae, sterility/toxicity, elevated water temperatures, dewatered stream channels, bank trampling and sediment sources). Examples of potential sediment source categories that were surveyed for are described below:

SEDIMENT

Road Related Sources
• road cut and fill slopes, road tread erosion, and storm water routing)
• misaligned and improperly sized culverts
• stream fords
• road-caused stream channel and stream bank alterations
• road/bridge maintenance activities/road traction sand
• noxious weed infestations

Silvicultural Sources
• sediment sources associated with forest roads and skid trails
• problematic culverts/stream crossings
• erosion/runoff from harvest units (not associated with roads)
• stream channel/stream bank alterations
• noxious weed infestations (optional)

Agricultural Non-point Sources
• riparian grazing impacts/animal confinement areas
• bank sheer/trampling
• runoff from cultivated fields
• irrigation return flows
• irrigation water diversions and pump sites/dewatering
• wholesale riparian vegetation removal
• stream channel/stream bank alterations
• noxious weed infestations

Subdivisions/Suburban Development
• access roads
• construction/excavation activities
• stream alterations
• vegetation removal
• noxious weed infestations

Historical Mining Activities
• placer tailings and associated channel/bank alterations
• runoff/erosion of waste rock dumps and tailings piles
• abandoned mine reclamation activities (grading/recontouring)

Municipal Sources

• wastewater discharges
• stormwater discharges
• snow removal/disposal sites
• road/bridge maintenance/road traction sand

Commercial/Industrial Activities
• storm runoff
• excavation activities
• access roads
• wastewater discharges

Natural Sources
• wildfire/burn areas
• naturally erosive soils/geology

In-Channel Sources
• eroding stream banks
• channel incisement/destabilization

Locations and spatial extent of the above features were recorded with a Geographical Positioning System (GPS) unit, and the information tabulated within predefined data dictionary tables. Location readings were based on the WGS 84 (similar to NAD 83) Datum. Features identified in areas where satellite coverage was not available (i.e. locations with limited horizons) were hand delineated on 7.5-minute USGS quadrangle maps.

Digital photos were taken of all significant source areas and catalogued together with the relevant GPS file number and site location information. All documented source areas were described in narrative fashion in field notes. Where possible, measurements were taken on individual sediment source areas which allowed us to describe that source's potential for contributing pollution loading to the specific 303(d)-listed receiving water body.

The source assessment information was used to generate watershed maps depicting actual pollution source areas (see maps 1 and 2). The data was also organized in a Microsoft Access database (database is available on CD upon request). Where sediment loads were not possible to calculate they were estimated. All road sediment sources inventoried by our road sediment survey procedure were calculated.

Results and Analysis

Lump Gulch as a whole is approximately 14 miles in length and is impacted by sediment, metals, and habitat and channel alterations. Roads, bare stream banks, and mine tailings contribute sediment. The granitic geology of the watershed exacerbates sediment delivery owing to rapid erosion rates. Historic hardrock mining operations in the watershed contribute metals. Historic placer mining has altered stream morphology and hydrology. Diffuse sediment sources associated with grazing, rural housing, and hay cultivation may also affect the stream.

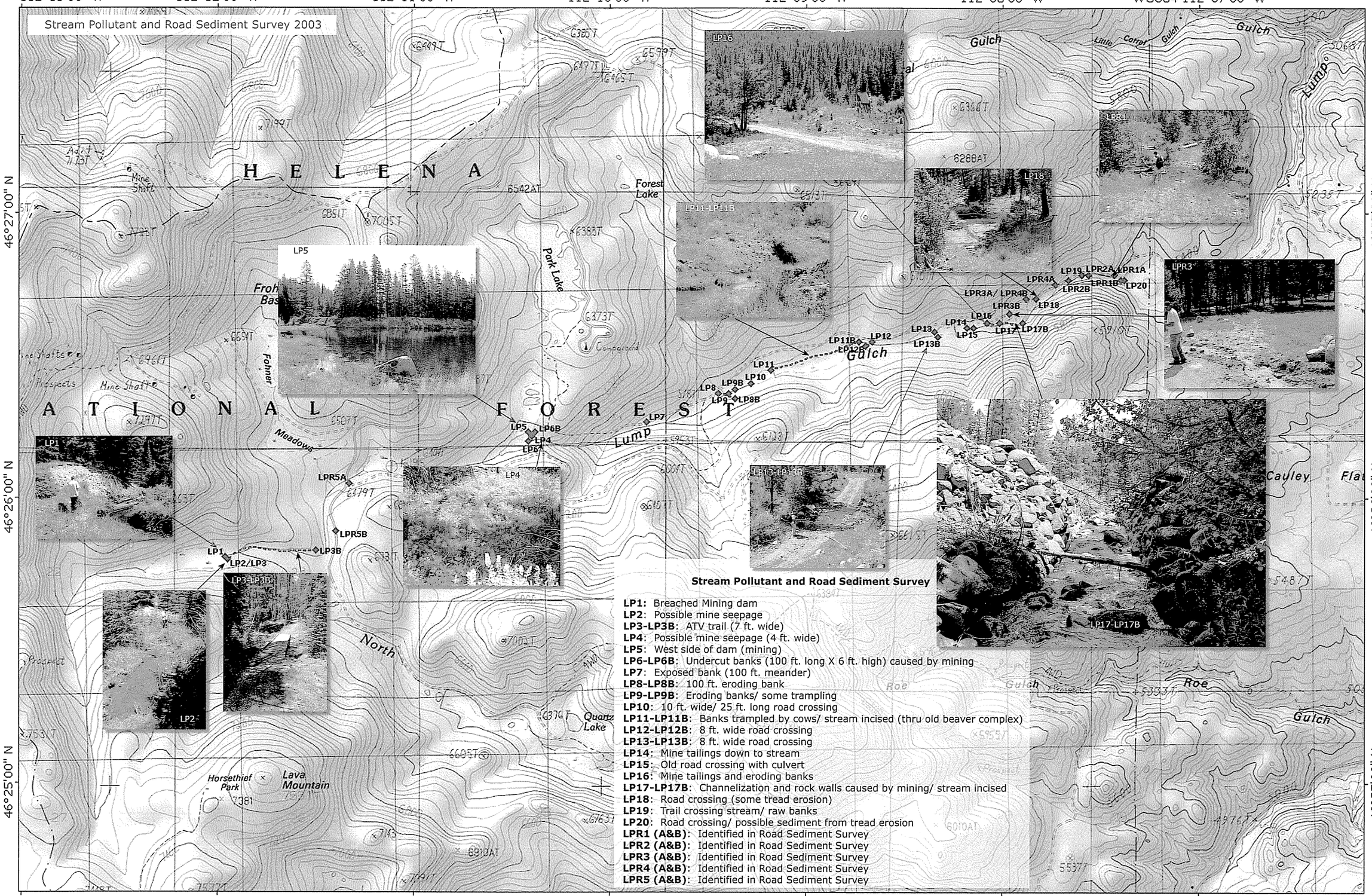
The headwaters (from the administrative boundary upstream) portion of the stream flows on the Helena National Forest, but the majority of the land surrounding the creek is private property due to patented mining claims in the valley bottom. Rosgen stream type, which classifies streams based on a variety of physical features such as gradient, entrenchment, and the size of stream bottom material, goes from an Aa (steep – 10% gradient) to altered A (steep 4 to 10% gradient) and B (moderate gradient 2 to 4 %) reaches. The primary land uses are recreation, timber harvest, and rural housing. In the headwaters area there are over ten historic hardrock mines, including four high priority (as listed in the State's abandoned mine reclamation priority list) sites in Frohner Basin. The Helena National Forest field survey team investigated the entire length of the headwaters segment. The stream was given a rating of "functional-at risk", noting sediment deposition and impacts primarily from private patented lands that are outside of our scope and jurisdiction. The "functional-at risk" rating means that the riparian area possess some or even most of the elements of a properly functioning system, but at least one of its attributes gives it a high probability of degradation with a relatively high flow event. As noted above the stream receives this rating because of the sediment deposition (aggrading stream conditions) and impacts from private patented lands beyond our jurisdiction. The GPS source assessment features documented along this stretch of the stream included road sediment delivery points, mine waste rock dumps, a mining dam, and channel constriction.

From the Helena National Forest administrative boundary to the mouth, the stream alternates from a Rosgen B (moderate gradient of 2 to 4 %) stream type to altered B and C (low gradient less than 2%) reaches. The primary land uses are hay fields and pasture, and rural housing. Housing development gradually increases towards the mouth. Riparian vegetation buffers are variable in width due to distance from roads, development close to the stream, and hay cultivation. The Helena National Forest and TetraTech/Land & Water field teams investigated a portion of this segment below Buffalo Gulch. The stream was given a rating of "functional-at risk", again noting sediment deposition and upstream impacts. Below the forest boundary, stream access was restricted due to the prevalence of home sites along the floodplain. GPS source assessment features documented along this stretch of the stream consisted of road sediment delivery points. Intermittent logging, grazing activities, hay cultivation, and removal of riparian vegetation were also witnessed.

The only measurable road sediment source found on Helena National Forest lands was a portion of forest service road 1878 that crosses Lump Gulch. The calculated amount of sediment from this source is 2 tons per year. The sediment source survey also identified 23 additional sites contributing sediment to Lump Gulch on private land (maps 1 and 2). Four of these were identified through our road sediment survey and nineteen were identified through our stream survey. The four additional road survey sites were quantifiable and are contributing a total of 0.9 tons per year. The other nineteen sites identified through our stream survey were not quantifiable, but were characterized as to their relative contribution, i.e., low, moderate or high. These nineteen sites contribute an estimated 5 tons of sediment per year. These 23 sediment sources are all on patented lands and were not surveyed in the original EIS or the Supplemental EIS.

Relationships of the New Information to the Clancy-Unionville EIS Analysis

TOPO! map printed on 01/08/04 from "lumpgulch2b.tpo" and "Lumpgulch2b.tpg"

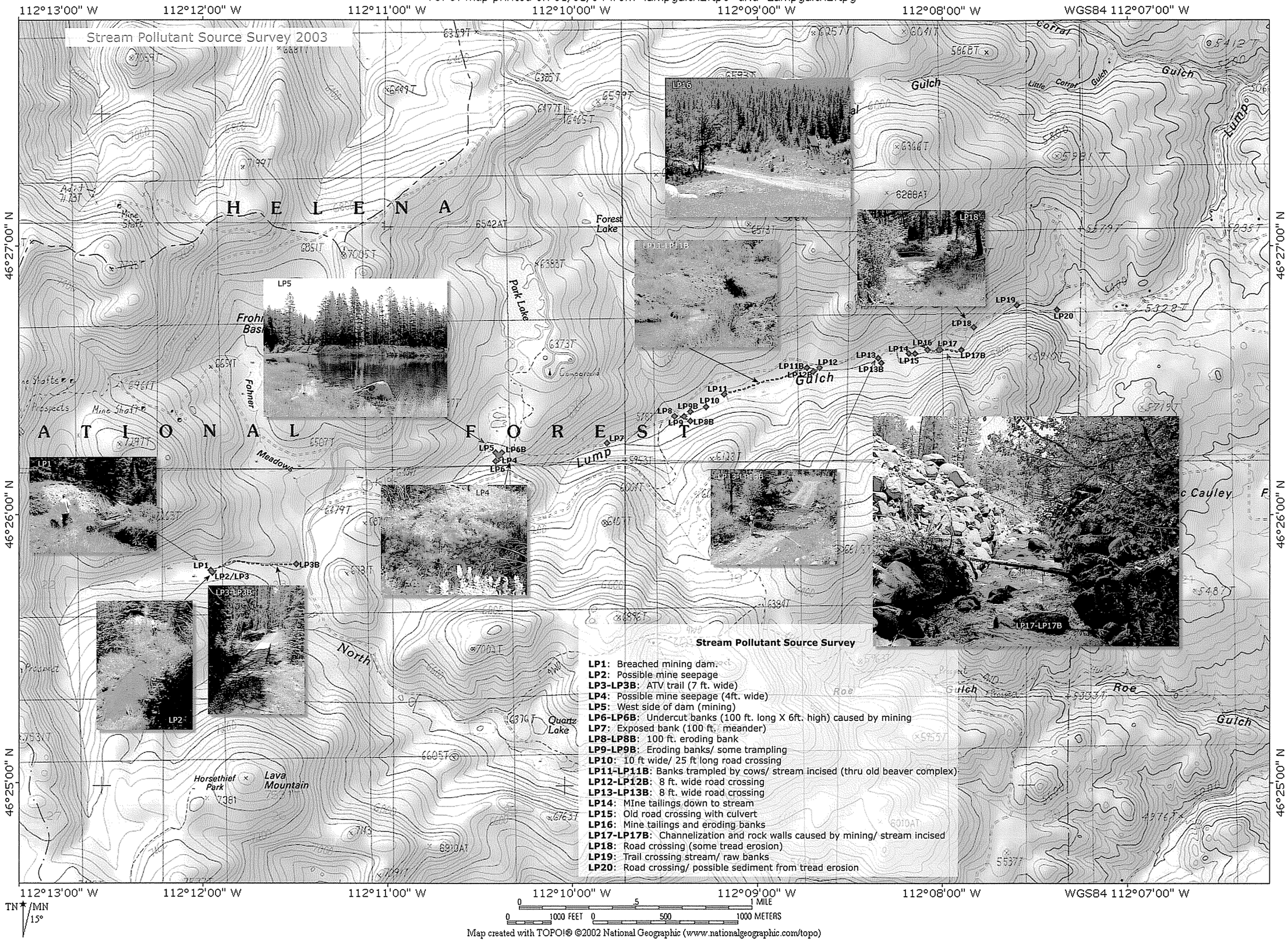


Stream Pollutant and Road Sediment Survey

LP1: Breached Mining dam
LP2: Possible mine seepage
LP3-LP3B: ATV trail (7 ft. wide)
LP4: Possible mine seepage (4 ft. wide)
LP5: West side of dam (mining)
LP6-LP6B: Undercut banks (100 ft. long X 6 ft. high) caused by mining
LP7: Exposed bank (100 ft. meander)
LP8-LP8B: 100 ft. eroding bank
LP9-LP9B: Eroding banks/ some trampling
LP10: 10 ft. wide/ 25 ft. long road crossing
LP11-LP11B: Banks trampled by cows/ stream incised (thru old beaver complex)
LP12-LP12B: 8 ft. wide road crossing
LP13-LP13B: 8 ft. wide road crossing
LP14: Mine tailings down to stream
LP15: Old road crossing with culvert
LP16: Mine tailings and eroding banks
LP17-LP17B: Channelization and rock walls caused by mining/ stream incised
LP18: Road crossing (some tread erosion)
LP19: Trail crossing stream/ raw banks
LP20: Road crossing/ possible sediment from tread erosion
LPR1 (A&B): Identified in Road Sediment Survey
LPR2 (A&B): Identified in Road Sediment Survey
LPR3 (A&B): Identified in Road Sediment Survey
LPR4 (A&B): Identified in Road Sediment Survey
LPR5 (A&B): Identified in Road Sediment Survey

Map created with TOPO!® ©2002 National Geographic (www.nationalgeographic.com/topo)

TOPO! map printed on 01/08/04 from "lumpgulch2.tpo" and "Lumpgulch2.tpg"



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A careful water quality/water quantity analysis was performed as a part of the Clancy-Unionville project and the project was modified and mitigation measures adopted to assure that the project will stay within water quantity thresholds and meet water quality standards (Record of Decision pgs. 15, 16, 27, 29, 33-34, and 53). This included, among other things, watershed improvement projects involving road obliteration, road stabilization, construction of erosion control features, culvert removal, installation of larger diameter culverts and revegetation of cut and fill slopes (ROD pg 15). Sediment delivery sites were located and depicted on the "Clancy-Unionville Project Sediment Delivery Sites" map in the FSEIS. One of the major rationales for the decision was to maintain or improve watershed conditions (ROD pgs 29, 33-34). The intent is to manage and maintain a system of roads and trails that satisfy the needs of forest resource users while still protecting other forest resources such as wildlife and water quality (ROD pgs 29, 33). In addition the decision dropped fourteen different cutting units totaling 494 acres to stay within water yield thresholds. The decision included watershed improvement projects for sediment delivery sites located on forest shown on the map in the FSEIS.

The Clancy-Unionville FSEIS identified a total of 37 sites contributing slightly over 47 tons of sediment within the project area (FSEIS pg 403). The original EIS calculated roughly 30 tons of sediment coming from various sources to Lump Gulch. Through the efforts of the sediment source survey an additional 24 sites have been identified in Lump Gulch one of which is on Forest Service land. These new sites contribute an estimated 8 tons of sediment that was not originally identified in the EIS or FSEIS. The FSEIS projected a reduction in sediment through various mitigation and rehabilitation efforts of roughly 15 tons for Lump Gulch for Alternative F (FSEIS pg 437). Mitigation applied to the one forest service site will further reduce sediment by approximately one ton. Actions to reduce sediment from the road will be done in conjunction with the implementation of this project. The original analysis showed that sediment in Lump Gulch would be reduced as a part of this project and meet state water quality standards in terms of sediment (FSEIS pg 369). As a result of the SIR sediment source survey the calculations in the FSEIS were redone. Percent fine sediment in spawning gravels change from 39.9 to 40.7 in year one and from 39.0 to 39.9 in year 6+ for Lump Gulch (FSEIS pg 413 Table 4b). This change is well within one standard deviation for percent fines in spawning gravels and does not constitute a significant change (FSEIS pg 402 Table 2a). Both the FSEIS and the SIR demonstrate a reduction in percent fines from the existing condition. While other sediment sources were identified as a part of the TMDL sediment source survey, they were on private land and beyond our control, albeit it is the intent of the decision to continue to work with Jefferson County to reconstruct the Lump Gulch road in order to increase safety and reduce sediment delivery (ROD pg 30). The following table depicts the original modeled sediment for Alternative F for Lump Gulch; Alternative F given the new information provided through our sediment survey; and Alternative F as modified in the ROD with the new sediment source information added.

Year	Original Alternative F Tons/yr (% Fines in Spawning Gravels)	Alternative F with new SIR information Tons/yr (% Fines in Spawning Gravels)	Alternative F as modified in the ROD with new SIR information Tons/yr (% Fines in Spawning Gravels)

Existing	57.5 (45.0 %)	65.5 (45.0 %)	65.5 (45.0 %)
Year 1	45.0 (39.9 %)	52.0 (40.7 %)	49.6 (39.9 %)
Year 2	43.6 (39.4 %)	50.6 (40.2 %)	49.6 (39.9 %)
Year 3	43.3 (39.2 %)	50.2 (40.1 %)	49.6 (39.9 %)
Year 4	43.1 (39.1 %)	50.0 (40.1 %)	49.6 (39.9 %)
Year 5	42.9 (39.0 %)	49.8 (40.0 %)	49.6 (39.9 %)
Year 6	42.8 (39.0 %)	49.7 (40.0 %)	49.6 (39.9 %)
Year 6+	42.7 (39.0 %)	49.6 (39.9 %)	49.6 (39.9 %)

The Final Supplemental Environmental Impact Statement (FSEIS) shows that the project will maintain and improve watershed conditions and water quality over the short and long term (FSEIS pg. 369). The FSEIS did indicate that water yield for Lump Gulch would exceed thresholds for cumulative effects, but this was addressed in the ROD by dropping 494 acres of harvest in Lump Gulch (ROD pg 16). The SIR analysis of the new information shows that the analysis and conclusions of the FSEIS are not substantially changed. The information presented in the SIR shows that percent fines in spawning gravels will go from an existing condition of 45.0 to 39.9 demonstrating a benefit to beneficial uses. While the TMDL for the Lake Helena planning area has not been completed all of the data for Helena National Forest Lands has been collected and analyzed. When the TMDL is completed we will again consider that new information in relation to the project. Based on my review of all of the information presented in the SIR and accompanying project file I have determined that the conclusions in the Final Supplemental Environmental Impact Statement are accurate and that the project will result in both short and long term sediment decreases for Lump Gulch.

Recommendations

While the TMDL for the Lake Helena planning area has not been completed all of the data for Helena National Forest Lands has been collected and analyzed. In regards to having a completed TMDL for this project, State law is clear that, "Pending completion of a TMDL on a water body listed pursuant to 75-5-702:… (c) new or expanded nonpoint source activities affecting a listed water body may commence and continue provided those activities are conducted in accordance with reasonable land, soil, and water conservation practices; and (d) for existing nonpoint source activities, the department shall continue to use educational nonpoint source control programs and voluntary measures as provided in subsections (5) and (6)". In addition, through the sediment source survey effort, the Helena National Forest has given the project the necessary hard look that is required. Every mile of the TMDL stream has been surveyed and documented through this effort. While other sediment sources were identified through this effort, most were on private land downstream and beyond our control. The sediment site within our control can be easily mitigated.

The Final Supplemental Environmental Impact Statement (FSEIS) shows that the project will maintain and improve watershed conditions and water quality over the short and long term. The SIR analysis of the new information shows that the analysis and conclusions of the FSEIS are not

substantially changed. While the TMDL for the Lalce Helena planning area has not been completed all of the data for Helena National Forest Lands has been collected and analyzed. Actions taken to reduce sediment from additional sites identified through the TMDL effort will further assure that state water quality standards will be met. Based on my analysis of all of the information collected for the ***SJR*** it is my conclusion have that the findings in the Final Supplemental Environmental Impact Statement are accurate and that the project will result in both short and long term sediment decreases for Lump Gulch.

Considering the above information, it is my recommendation that the Clancy-Unionville project will not require additional environmental analysis and the effects as depicted in the Clancy-Unionville Project FSEIS and Record of Decision are still valid. It is my recommendation that a correction, supplement, or revision to the FSEIS is not necessary and the vegetative management actions authorized by the Clancy-Unionville project will be consistent with the Helena Forest Plan and could proceed.

Submitted by:

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6/21/2004
Date