Montana Department of Justice
Natural Resource Damage Program

MEMORANDUM

TO: Members of the Butte Natural Resource Damage Restoration Council (BNRC)

FROM: Pat Cunneen, NRDP

DATE: June 6, 2014

SUBJECT: Materials for June 10, 2014 BNRC Meeting

The Butte Natural Resource Damage Restoration Council (BNRC) will meet Tuesday, June 10, 2014, starting at 6:00 p.m. in the Second Floor Conference Room of the Thornton Building at 65 East Broadway in Uptown Butte. Enclosed are the agenda, the draft 4/24/14 meeting notes, and other back-up materials for this meeting. Following is a summary of the 6/10/14 agenda topics:

Agenda Item #1: Introductions and Administrative Items — Action Item

BNRC Chair Elizabeth Erickson will provide an overview of the meeting agenda. BNRC members will then consider and take action on the 4/24/14 meeting notes.

Agenda Item #2: Small Projects – Amendment of Butte Area One Restoration Plan – Consideration of Public Comment – Action Item

The BNRC will consider the public comment received during a 30 day public comment period, and then take action on making a recommendation on the Small Projects Amendment, which proposes new language for Section 3.2.7 of the Butte Area One Restoration Plan that will replace the existing section. The Trustee Restoration Council will consider the BNRC recommendation at their meeting to be held on June 26, 2014 in Helena. The TRC will then make a recommendation for the governor to consider as he takes the final action regarding the proposed amendment to the Butte Area One Restoration Plan.

Agenda Item #3: Blacktail Creek Tracer Study Presentation

Mr. Nicholas Tucci from the Montana Bureau of Mines and Geology will present the findings of his study entitled "Stream Characterization of Blacktail and Silver Bow Creeks: A Continuous Tracer Injection Investigation Conducted During Base Flow Conditions in an Urban Area Impacted by Mining: Butte, Montana." This study was commissioned by the BNRC/NRDP to gain a better understanding of the impacts that a century of mining/milling operations and urban development have had on the creek and identify areas that could be targeted for potential restoration actions. Mr. Tucci will then field questions from the Council and then the audience.

Natural Resource Damage Program
State of Montana
Department of Justice

Butte Office
65 East Broadway
Butte, MT 59701

Phone: 406-533-6882
Cell: 406-498-7584
PCunneen@mt.gov

Agenda Item #4: Program Updates

Pat Cunneen, NRDP, will update the council on the Montana Tech Native Plant and Butte-Silver Bow Tree Planting Projects and the new task order with Confluence Consulting Incorporated to develop a conceptual plan for "Restoration of the Upper Silver Bow Creek Corridor."

BUTTE NATURAL RESOURCE DAMAGE RESTORATION COUNCIL (BNRC)

BNRC Members:

Elizabeth Erickson, Chair

Bill Callaghan

Mark Gollinger

Helen Joyce

John McKee

Edie McClafferty

Chad Okrusch

Emmett Riordan

Dave Williams

Tuesday June 10, 2014
6:00 to 8:00 pm
2nd Floor Conference Room
Thornton Building
65 East Broadway
Butte, Montana

AGENDA

Introduction and Administrative Items
- Meeting overview – Elizabeth Erickson, BNRC Chair
- 4-24-14 Meeting Summary – Action Item

Small Projects – Amendment of BAO Restoration Plan
– BNRC Discussion - Action Item
- Review public comment on proposed amendment language
- Opportunity for public input

Blacktail Creek Tracer Study Presentation
– Nicholas J. Tucci, MBMG Hydro-geologist
- Questions/Comments from the Council
- Questions/Comments from the Public

Program Updates
– Pat Cunneen, NRDP
- Reveg Projects
- Restoration of Upper Silver Bow Creek Corridor
- Questions/Comments from the Council
- Questions/Comments from the Public

Open Floor for Public Comment on Relevant Subjects

Draft April 24, 2014 BNRC Meeting Notes

Previous meeting notes with suggested edits were approved unanimously.

1) Butte Hill Tree Diversity Project: 2012 – 200 mature trees (12 pods); 2013 – 240 mature trees (11 pods)

Greg Mullen asked that soil samples be taken at bottom of each pod. R: Okay.

Pine cone question. R: Hold soil in place is main purpose of trees.

Texas Ave pod; near Parrot wastes? R: No.

Chad asked is it random where the trees go? R: Tom: Bid will be flexible (design build) so species can have variation on where they are planted.

Irrigation is needed, right? R: Will run drip line irrigation to all pods, so with water taps, trees will get plenty of water. Part of the cost is a three year minimum of watering. Many use drip line to expand.

Any coordination with Tech? R: Tom: Yes, plants from Tech are being used. Forb sods put in with pods.

Mortality rates of year one? R: Mostly good, but the junipers are not doing very well.

Greg asked if seed source is known. R: No

Pat: Planting at fishing pond does not fit within scope of project as it is not a reclaimed site nor is it in Butte Area One or on the Hill.

$300,000 is the proposed budget, but only $90,000 is being used? R: Pat: Copper Mountain does qualify for legal threshold. Opportunity to improve at Copper Mountain as it is a reclaimed mill site.

$90,000 this year? R: Tom: Yes, we may come back in with fall planting plan.

2) MT Tech Project (Restoration stewardship is good; ecological restoration).

Provide clean roles and responsibilities

Fed work study pays some labor hours.

2014 6/1/14 through 12/31/2014

Kriss Douglass: Imported soil is much different than native areas.

1) Dispersal islands; 2) What species most likely re-establish

6 pounds of seed collected, Seed cleaning explanation, 5,000 plants/year

Task 4 = 36 forb sods are under production

Weeds come first/we take them out.

Each mat has a few species; 4 species per sod mat

Task 5 = plant seed directly along with sod.

Takes several years to see plants disperse.

Chad

Why did Matt leave? R: I had not heard.

An exit interview? R: Bev: working hard to make sure next person will stick around.

No measureable objectives, don't know if we are succeeding? R: Bev: Will hire someone to evaluate the dispersal success. Hopefully, see success in grasses.

Kriss – now we can show you what we planted. There is some establishment. If we do quantitative assessment.

Are the practices based in science? R: Kriss: some work on this in literature.

Don't know if sod has been used before. R: Cristal's idea. Sod mats= good. K: Riparian areas = have sod mats. We propose to water for three years.

Future time when you will do both mats and direct seeding? R: K: Need to do more in that but off hand, the ones we tried were not watered. We'd need to do it in the late fall to mimic nature. Have not tried this yet. Take grasses off Hill in little areas.

Resiliency of two or more species, have you seen some challenges?

What have been the challenges administering this project? R: Pat: we don't want to or like to micro-manage any project. We worked with Tech to develop the scope of work with objectives, goals and a budget and let them get to work. One goal deliverable was to have a work plan out in January, we'd review/approve that before spring and then they would start putting plants on the ground. We had asked the tree project and plant project to get together, that didn't seem to be happening, so we then stepped in and facilitated three joint meetings.

Plan is due in January. Why wasn't that met? R: Bev: No meeting happened, so no sense without NRD/BSB there because coordination was so important.

Bev – 2014: Need to agree on sites site sheets. $24,000 ecologist and more gone; what did we get and will Tech repay us? R: We gained his knowledge with other things. I am disappointed he left.

25% indirects are what? R: Bev: Telephone/computers/library/Ben's time/cell are all indirects.

K: "She knows everything." How much has K been involved? R: This is one of the reasons this was funded.

Bev: extraordinary expertise to the project and not a contract with.

John: Folks here that will not want to fund this if the next person leaves. K: Will work with next person.

Was Matt becoming PI? R: Bev: Co-PI in January and was going to become. Need NRD OK for change of PI if all conditions are met.

BSB = go by site and then come to the program. My advice is per hour/per site, not just hours billed.

Bev: We can have the greenhouse costs. Done a budget by task and can capture labor by task.

Mary: What is going to be restored? We should know this.

Chad: We are being patient, but many of us are confused and not sure if we should continue to fund this project.

K: do you want a GPS location of these areas? We can do that.

Evaluation a report of what was done where and what happened? R: Bev: Yes. Pat: Page 9, see E.

CFWEP comment: glad to see a qualification. We saw some dispersal. R: Bev: Happy to take people out.

Munday: Could PI go to say Dillon and do this work? R: Bev: No. (NRDP and Tech)

Munday: Science Advisory Board? R: K: Yes, a board.

Need someone like Rich Prodgers to assist in evaluating this project so need a science advisory board to evaluate this.

So five years of this, how many dispersal islands? R: K: About thirty.

$600,000 on first project=$20,000 per island.

How much money on ground so $20,000 per dispersal island. Each sod is 1 M, 10-30 sod squares per island plus. Collection of seed = lots of time too.

Norm: I ordered four pounds = $350.

K: Lots we can't order.

Norm: I can buy much of this by a seed person.

K: Wind River = lots of sod but does not have all of them. This altitude of seed to buy = no.

Norm: PI paid by MT Tech. Who makes final decision if this project works? Should you have an outside person? R: Bev: Task 8 = evaluation person, who is independent.

Pat C.: We see that need as well.

Norm: What you are doing is in – same or not. Need to find that out.

3) Small/misc. project.

John: Big changes are what?

1) Pat – small projects = are now other than other categories. All renewed by legal. (Pat read it.)

A ceiling for A? R: Pat: All meet legal. Process is to the TRC. Approved language goes public then to the TRC. In fall = first workshop for this.

2nd Paragraph – legal and policy
Criteria to any ideas.

Bill: Put some dates/deadlines. R: Pat: not dates in plan, just process here. Need to pick the date carefully. We'll pick sometime in September.

Emmett: We had some dates/process discussed at last meeting.

TRC – Governor – then a contract.

Discussion of specific language.

All agreed the language is ok.

Pat just explained various scenarios of how the small project process will work.

John: B: How is it done? R: Petition to keep going in 2016 if not spent.

Elizabeth: Matching fund language a little stronger.

Emmett: Same problem as last time if we don't make it clear on what we will approve.

John: Need to be specific with clear examples of what was offered before and why it failed. We need to have it as an example.

Emmett: Need to have them know before the meeting what may work. Workshop will need planning for sure.

Comments from Public:

Pat Munday: Long overdue – good to do this.

Motion on language: Chad moved and Mark seconded the motion, and it passed unanimously.

Proposed Amendment to the December 2012 Butte Area One Final Restoration Plan Sec. 3.2.7 on Funding of Small Projects

3.2.7 Small/Miscellaneous Projects (p. 32) – proposed language

The *December 2012 Butte Area One Final Restoration Plan* allocates $1 million toward implementing future small projects and specifies a maximum amount of funding for any small project of $100,000. Eligible types of small projects include mine waste removal, mine waste area improvements, revegetation, stream restoration, municipal water system improvements, storm water, education or research projects that are specific to and can benefit from restoration of Butte area natural resources, or recreation projects that will provide or enhance public hunting, fishing, wildlife viewing, or hiking opportunities.

Small project proposals will be solicited and funded on an annual basis. Project solicitation will occur in the fall and funding decisions will be made in the spring of each year to allow for project implementation during the construction season. Beginning in the fall of 2014, the Butte Natural Resource Damage Restoration Council (BNRC), with assistance from the NRDP, will host an outreach workshop and make a call for small project proposals from the public. The NRDP, in consultation with the BNRC, will first screen each proposal to assure that it meets the legal threshold of restoring or replacing the injured natural resources of the Butte Area One site, namely groundwater and the aquatic resources of Butte Area One, and assure that it does not unduly conflict, duplicate, or overlap with other restoration and remediation projects. The BNRC and NRDP will then evaluate the eligible funding proposals using the evaluation criteria specified in the *March 2012 Butte Area One Final Restoration Process Planning*

Document. Following consideration of input from the public and the NRDP, the BNRC will decide on its funding recommendations for small projects.

The BNRC's funding recommendations, as well as input from the public and NRDP on those recommendations, will be the subject of consideration by the Trustee Restoration Council. The Governor will make the final funding decision. Opportunities for public comment on the funding of small projects will be provided at BNRC and Trustee Restoration Council meetings. The public notice for each of these meetings will identify the small projects to be considered at these meetings and will be issued at least 10 days in advance of each meeting.

The consideration of small projects for funding may continue on an annual basis through 2016, by which time all of the money in this account should be spent or allocated to specific projects. A match of funds would be strongly encouraged for this small project funding process.

3.2.7 Small/Miscellaneous Projects (p. 32) – existing language

The BNRC Restoration Recommendation would allocate $1 million toward implementing future small/miscellaneous projects. The maximum amount of funding for any small project would be $100,000. Beginning in the spring of 2013, the BNRC would make a call for project ideas from the public and ideas submitted would be evaluated by the BNRC and NRDP staff. Consideration of such projects may continue through 2016 by which time all of the money in this account should be spent or allocated to specific projects. A match of funds would be strongly encouraged under this alternative. At this point, none of the public restoration project ideas are specifically earmarked to receive funding through the small/miscellaneous project reserve.

Draft Response to Public Comment on Proposed Amendment to the December 2012 Butte Area One Restoration Plan Section 3.2.7 on Funding of Small Projects

PREPARED BY:
STATE OF MONTANA
NATURAL RESOURCE DAMAGE PROGRAM
1301 EAST LOCKEY
P. O. BOX 201425
Helena, MT 59620-1425

June 2014 Draft

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Draft Response to Public Comments on Butte Area One Restoration Plan Draft Small Projects Section Amendment

Section I. Introduction

On April 28, 2014, the Montana Natural Resource Damage Program (NRDP) released the *Proposed Amendment to Section 3.2.7 (for Small Projects) of the December 2012 Butte Area One Final Restoration Plan* for public comment through May 30, 2014. For outreach on this public comment period, the NRDP sent notices of this opportunity for public comment to over 160 individual/entities on the NRDP's Butte mailing list and placed two display ads in The Montana Standard and the Butte Weekly.

During the public comment period, one individual submitted an e-mail to the NRDP on April 28, 2014. See Attachment A for a list of commenter and Appendix 1 for a copy of the comment letter. This document further summarizes the comment provided on the *Draft Small Project Amendment* and provides the NRDP's draft response. This draft response may be revised based on input from the Trustee Restoration Council and a final decision by the Governor.

Section II. Comment Summary and Responses

Category 1: Comments in Support of the *Draft Small Project Amendment*

Pat Munday, Ph.D., Department Head of Technical Communications at Montana Tech commented in support of the *Draft Small Project Amendment* and stated that it is "excellent as a clarification" and "appears to streamline the process." Dr. Munday encouraged the BNRC and NRDP to simplify the paperwork for submission of a small project idea.

Response: The NRDP acknowledges the support of the *Draft Small Project Amendment to the Butte Area One Restoration Plan* and recommends the amendment for approval by the Governor.

Appendix 1

Public Comment Received

From: Munday, Pat [mailto:PMunday@mtech.edu]
Sent: Monday, April 28, 2014 9:30 PM
To: Natural Resource Damage Program
Subject: BNRC ³Small Project² amendment

I support the amendment. It is excellent as a clarification for the "Small Project" process and appears to streamline the process.

Along with the amendment, I encourage the BNRC and NRD to simplify the paperwork for this category of submission.

Pat Munday, PhD
Department Head of Technical Communication
Professor of Science & Technology Studies Fulbright Scholar, Spring 2012,
China Montana Tech Butte MT 59701

Voice Mail: 406.565.1826/Office: EngHall 103B

EcoRover Blog, http://ecorover.blogspot.com

Butte Area One
BSB Tree Planting
Site Improvement Plan

Site Name: Butte Anaconda & Pacific Copper Way trail **Date:** April 23, 2014

Site Location/Size:
Trail portions from Montana to Main (3 Pods of 400 sq ft); Henry to Emmet (1 Pod of 400 sq ft)

BRES Site #/Name:
BRES Site 2000/Tourist Trail

BSB Zoning Classification(s) at Site:
The site is Zoned Open Space – Developable.

Vegetative Deficiencies/Problems at this Site:
Henry to Emmet – The Henry to Emmet Site forms the perimeter between the BA&P Copper Way Trail and serves as the vegetative buffer between the trail and the adjacent alley. The site is continually plagued by poor stewardship and unauthorized motorized use resulting in the site's deteriorating vegetation and soil erosion.

Montana to Main – the Montana to main portion of the walking trail is one of the most highly used portions of the trail. Along this extent, minimal vegetation is present, providing very little prevention against soil erosion.

Proposed Efforts to Improve the Site:
In response to requests for better erosion prevention measures, BSB proposes the installation of tree pods and native plant dispersal islands along the Copper Way trail.

Boulders have been used to deter motorized access at the Henry Street site, which have failed. Along the trail between Montana and Main, retaining walls and chain link fences have been used to manage soil erosion, but these efforts have been largely unsuccessful.

Vegetation in the vicinity of the Copper Way trail will help retain stormwater run off and provide ample root zones to anchor the sediments in the area. The project will create root zones for the trees (AKA Tree Pods), fill those zones with clean fill dirt and will proceed with the planting of several species of trees including Douglas Fir and Lodge pole Pines, and Quaky Aspen.

Scope of Work:
The project scope of work is as follows:

Butte Area One
BSB Tree Planting
Site Improvement Plan

A. Prepare 4 Tree Pod Root Zones
   a. Excavate tree pod root zones and dispose of mine waste contamination at the Mine Waste Repository.
   b. Line bottom of root zones with 2 inches of limerock per the EPA's Butte Hill Revegetation Specifications.
   c. Backfill root zones with topsoil (blended) and amended with organic compost.

B. Procure Vegetation
   a. Henry to Emmet
      i. 1 B&B Aspen
      ii. 4 Containerized Aspen
      iii. 2 Douglas Fir
      iv. 1 Lodge pole Pine
      v. 1 Mountain Ash
      vi. 3 Choke Cherry shrub or similar
   b. Main to Montana (3 Pods)
      i. 12 B&B Aspen
      ii. 16 Containerized Aspen
      iii. 14 Lodge pole Pine
      iv. 18 Douglas Firs
      v. 9 Mountain Ash
      vi. 17 Shrub or similar

C. Install irrigation water taps and drip-line irrigation systems to drip irrigate the tree pods at all four pods.

D. Plant and anchor trees, where necessary.

Efforts to Coordinate with other Entities:

As evidenced in our past projects, collaboration is essential to project success. Residents in areas of plantings have been very happy with the tree planting success. To that end, residents will continue to be the eyes and ears monitoring the security of the tree pods, and the final execution of the project will rely on Butte-Silver Bow Planning, Parks and Public Works departments, the Montana State University Extension Agency, and representatives from the Montana Tech Native Plant Diversity Project.

Materials and Labor Estimate and Estimated Cost:

See Page 4.

Proposed Start Date: Spring 2014 **Proposed Evaluation Date:** Spring 2015

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

Butte Area One
BSB Tree Planting
Site Improvement Plan

Copper Way Trail Tree Planting Budget Estimate

Tree Plantings

24-Apr-14

Description	Volume	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Vegetation						
B&B Aspen		15	172.00	2,580.00		
Containerized Aspen		20	59.00	1,180.00		
Lodge pole Pine		15	170.00	2,550.00		
B&B Douglas Fir		20	200.00	4,000.00		
Other Species						
B&B Mountain Ash		10	100.00	1,000.00		
B&B Choke Cherries		10	100.00	1,000.00		
Total				**12,310.00**	-	12,310.00
Soils						
Limerock	30 cyds		30.00	900.00		
Pod Excavation & Disposal	300 cyds		5.00	1,500.00		
Tree Pods	300 cyds		16.00	4,800.00		
Total				**7,200.00**	2,400.00	4,800.00
Watering System						
Water Tap Installations		4	1,000.00	4,000.00		
Drip Line Installations		4	1,000.00	4,000.00		
Total				**8,000.00**	4,000.00	4,000.00
Labor						
Tree Planting & Anchoring				12,000.00		
Total				**12,000.00**		12,000.00
		Project Total		**39,510.00**	**6,400.00**	**33,110.00**

Butte Area One
BSB Tree Planting
Site Improvement Plan

Site Name: Texas Avenue HDD Site **Date:** April 23, 2014

Site Location/Size:
Intersection of Texas Avenue & Civic Center Boulevard. (3 pods totaling ¼ acre)

BRES Site #/Name:
Includes BRES Site 2310, Metro Storm Drain as well as its adjacent areas.

BSB Zoning Classification(s) at Site:
The site is zoned as R3 – Multi-family Residential. The site is located on a utility corridor which includes the Silver Lake Water transmission line, silver bow creek drainage, storm water, storm sewer, and the Texas Avenue hydro-dynamic device. The presence of these utilities support industrial operations at Montana Resources as well as residents living in the vicinity of the site, which precludes the site's residential development.

Vegetative Deficiencies/Problems at this Site:
The Texas Avenue HDD Site is a vacant, barren site containing underground and surface-level utilities. The site is frequently subject to access by unauthorized motor vehicles causing damage to the site's vegetation, posing threats to the utilities present on site, and acting as a neighborhood nuisance creating noise and dust that disturbs area residents.

Proposed Efforts to Improve the Site:
In response to neighborhood requests, Atlantic Richfield and Butte-Silver Bow created a site plan to implement surface improvements that would revitalize the site's vegetation and put in place perimeter controls to limit access to the site by unauthorized vehicles.

To date, the entirety of the 2.5 acre site has been graded, properly engineered to provide for stormwater drainage from the site, and prepared for vegetation seeding. In addition, three tree pods measuring in size between 691 and 2,190 sq ft and one approximately 150 foot perimeter hedge pod have been prepared to make way for tree and shrub plantings.

Upon completion, the entire site will be bounded with a split rail fence to completely enclose the site and preclude entry by vehicles.

The site plan was reviewed and approved by the Potentially Responsible Parties, Natural Resource Damage Program, as well as neighborhood residents.

Butte Area One
BSB Tree Planting
Site Improvement Plan

The project scope of work is as follows:

Task A:

Procure the following trees:

a. 10 B&B Aspen Trees of 2.5" caliper, or similar
b. 22 Containerized Aspen Trees, or similar
c. 6 Lodge Pole Pine Trees 6 feet in height, or similar
d. 3 Ash Trees 6 feet in height, or similar
e. 5 Service Berry Bushes 4 to 6 feet in diameter, or similar
f. 160 10-gallon Lilac Bushes

Task B:

Install irrigation system to drip irrigate the tree pods and hedge.

Tack C:

Plant and, where necessary, anchor trees according to the site plan and tree pod specifications included in the scope of work.

Efforts to Coordinate with other Entities:

The project has been completed in partnership with the Environmental Protection Agency, Atlantic Richfield and its contractors, Butte-Silver Bow Public Works, Parks and Planning Departments. In addition, an effort was made to meet directly and frequently with neighborhood residents, particularly those living directly adjacent to the project area, to ensure the project timeline and proposed design would meet their needs.

This site welcomes coordination with the Montana Tech Native Plant Diversity Project, and would be a suitable site for it.

Materials and Labor Estimate

See page 4.

Estimated Cost:

See page 4.

Proposed Start Date: Fall of 2013 (In Progress) **Proposed Evaluation Date:** Spring 2015

Submitted by: Julia Crain, Butte-Silver Bow Special Projects Planner

Butte Area One
BSB Tree Planting
Site Improvement Plan

Texas Avenue Site Improvement Buget Estimate
Tree Pod and Perimeter Hedge Materials & Labor
4/23/2014

Description	Volume/Area	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials						
Gravel	23 cyds		14.50	**333.50**	333.50	
Fence	570 feet		11.00	**6,270.00**	6,270.00	
Vegetation				**11,814.00**		
Butte Hill Seed Mix	2 acres	40	5.00	200.00	200.00	
Lilac		160	39.00	6,240.00		6,240.00
B&B Aspen		10	172.00	1,720.00		1,720.00
Containerized Aspen		22	59.00	1,298.00		1,298.00
Lodgepole Pine		6	170.00	1,020.00		1,020.00
Ash Tree		3	82.00	246.00		246.00
Service Berry Bush		5	218.00	1,090.00		1,090.00
Cover Material & Soils				**60,569.00**	60,569.00	
Site	5,905			54,239.00	54,239.00	
Cover Soil	4,292		7.00	30,044.00		
Top Soil	1,613		15.00	24,195.00		
Tree Pods	60 cyds		15.00	900.00	900.00	
Lilac Berm	362 cyds		15.00	5,430.00	5,430.00	
Watering System		1	2,060.00	**2,060.00**		2,060.00
Labor				**6,677.00**		
Road				1,000.00	1,000.00	
Tree Planting & Anchoring				4,677.00		4,677.00
Cover Material				1,000.00	1,000.00	
		Project Total		**87,723.50**	69,372.50	18,351.00

Butte Area One
BSB Tree Planting
Site Improvement Plan

Site Name: Missoula Gulch – 3 Sites **Date:** April 24, 2014

Site Locations / Site Sizes:
Three tree pods are proposed for Upper Missoula Gulch and are described as follows;

BRES Site No.: 35 **BRES Site Name:** Del Monte
Two small tree pods are proposed along Ryan Road, west of the intersection with 5th Street. Each of the two tree pods will be approximately 400 to 500 square feet each.

BRES Site No.: 160 **BRES Site Name:** NE Syndicate Dump – Oro Butte Shaft
A single small tree pod is proposed along Missoula Avenue, north and east of the reclaimed Missoula Baseball Fields. Tree pod size will be approximately 400 square feet, possibly split into two smaller pods, dependent on site specific topographies.

BRES Site No.: n.a. **Site Name:** Caledonia Street
A single small tree pod is proposed along Caledonia Street, north and east of the reclaimed Scown Baseball Fields. Proposed tree pod size will be approximately 400 square feet, possibly split into two smaller pods, dependent on site specific topographies.

BSB Zoning Classifications at 3 Missoula Gulch Sites:
The **Del Monte Site No. 35**, is zoned Open Space Conservation.
The **NE Syndicate Pit Dump Site No. 160** is zoned Open Space Developable.
The **Caledonia Street Site** is zoned R2 Two-Family Residential.

Vegetative Deficiencies / Problems at 3 Missoula Gulch Sites:
The Del Monte Site is in the uppermost reaches of Missoula Gulch and the topography is steep. The Del Monte Site includes two concrete-lined stormwater ditches which are tributaries to the main Missoula Gulch storm water channel. The site is on the side of the Butte Hill and subject to storm water run-off from the Ryan Road, 5th Street (steep), and other steep uphill properties.

The NE Syndicate Pit Dump Site is immediately adjacent to Missoula Avenue (i.e., steep terrain) and subject to significant stormwater run-on events from Missoula Avenue and other steep uphill properties.

The Caledonia Street Site is located in the bottom of Missoula Gulch with several steep streets and steep uphill properties contributing to significant stormwater run-off events.

Butte Area One
BSB Tree Planting
Site Improvement Plan

Proposed Efforts to Improve the 3 Missoula Gulch Sites:

The three proposed sites are all within the upper reaches of Missoula Gulch on the Butte Hill. The Del Monte Site and the NE Syndicate Pit Dump Site are both reclaimed BRES Sites. The Del Monte and the NE Syndicate Pit Dump Site were both originally reclaimed by ARCO in 1995. The Caledonia Street Site is bounded on the north by BRES Site No. 71, the Anselmo Mineyard, and on the east by BRES Site No. 172, the Caledonia Triangle.

The primary purpose of the proposed BNRC work in 2014 is to diversify native species on and adjacent to reclaimed areas on the Butte Hill. Through diversification of native shrub and tree species, it is anticipated that more native communities of plants will be established, thereby promoting reduced soil erosion and protection of the site soil caps. Diverse communities of native grasses, trees and shrubs are less susceptible to soil erosion, droughts, fires and invasive weeds. The reduced soil erosion serves primarily to protect the soil and vegetated caps installed under the EPA Superfund Program. Protection and preservation of the caps serves to contain the hazardous wastes left in-place on the Butte Hill, and thereby, prevent hazardous contamination from migrating with storm-water and snow-melt runoff, and thereby, serves to protect the water quality in Silver Bow Creek and the Clark Fork River.

Previous efforts to improve the NE Syndicate Pit Dump Site have included several tree pods and native shrubs (potentilla) installed in 2013 along the southern edge of the Site under the BNRC program. Previous efforts to improve the Del Monte Site have included installing numerous Rocky Mountain Juniper trees and potentilla shrubs installed in 2013 under BNRC funding. Additionally, the Montana Tech Native Plant Program has installed several pods of native plants immediately south of the Del Monte in BRES Site No. 45, the Garfield.

Scope of Work

The project scope of work is as follows:

Task A: Prepare 3 Tree Pod Root Zones

1. Excavate tree pod root zones and dispose of mine waste contaminated materials in the Mine Waste Repository.
2. Line bottom of root zones with 2 inches of limerock per the EPA's Butte Hill Revegetation Specifications.
3. Backfill root zones with topsoil (blended) and amended with organic compost.

Task B: Procure the following trees:

Del Monte Site:

8 Douglas Fir Trees, B&B, 6 feet in height, or similar

8 Aspen Trees, B&B, of 2.5" caliper, or similar
8 Aspen Trees, containerized, or similar

NE Syndicate Pit Dump Site:

4 Douglas Fir Trees, B&B, 6 feet in height, or similar
8 Aspen Trees, B&B, of 2.5" caliper, or similar
8 Aspen Trees, containerized, or similar

Caledonia Street Site

8 Aspen Trees, B&B, of 2.5" caliper, or similar
8 Mountain Ash Trees, B&B, of 2.0" caliper, or similar

Task C: Install irrigation Water Taps and drip-line irrigation systems to drip irrigate the tree pods at all three Missoula Gulch Sites.

Tack D: Plant and, where necessary, anchor trees.

Efforts to Coordinate with other Entities:
The success of 2013 BNRC tree plantings in Missoula Gulch was extremely well received by residents in the Missoula Gulch neighborhoods and other Butte residents. The project has been complimented by numerous parties in the Butte community, both for its added plant diversity and its function in reduced soil erosion and protection of the soil caps.

The project has been and will continue to be a collaborative effort with numerous Butte-Silver Bow Departments, including Public Works, Parks & Rec., and Planning Departments. Additionally, the B-SB Weed Department continues to cooperate in implementing appropriate "No Spray Zones – No Mow Zones" in the vicinity of the tree pods and the native forb plantings.

All three Missoula Gulch Sites are highly recommended for collaboration with the Montana Tech Native Plant Diversity Project. These sites are upgradient and generally upwind of many other reclaimed areas on the Butte Hill. Dispersion of native forbs, shrub and other native seeds will occur over time onto adjacent BRES Sites.

Materials and Labor Estimates
See attached spreadsheet.

Estimated Costs:
See attached spreadsheet.

Proposed Start Date: Spring 2014 **Proposed Evaluation Date:** Spring 2015

Submitted by: Tom Malloy, Butte-Silver Bow Reclamation Manager

Butte Area One
BSB Tree Planting
Site Improvement Plan

Missoula Gulch Tree Planting Budget Estimate

Tree Plantings
4/24/2014

Description		Volume/Area	Number	Cost	Total	PRP Share	BNRC Share
Supplies & Materials							
Vegetation							
B&B Aspen			24	172.00	4,128.00		
Containerized Aspen			16	59.00	944.00		
B&B Douglas Fir			12	200.00	2,400.00		
Other Species							
B&B Mountain Ash			8	100.00	800.00		
	Total				**8,272.00**	-	8,272.00
Soils							
Limerock		30 cyds		30.00	900.00		
Pod Excavation & Disposal		250 cyds		5.00	1,250.00		
Tree Pods		250 cyds		16.00	4,000.00		
	Total				**6,150.00**	2,150.00	4,000.00
Watering System							
Water Tap Installations			3	1,000.00	3,000.00		
Drip Line Installations			3	1,000.00	3,000.00		
	Total				**6,000.00**	3,000.00	3,000.00
Labor							
Tree Planting & Anchoring					8,000.00		
	Total				**8,000.00**		8,000.00
			Project Total		**28,422.00**	**5,150.00**	**23,272.00**

Native-Plant Restoration Project
Year 2 Annual Plan: June – December 2014 (Revised)

The Project Sponsor proposes to perform the following tasks during Project Year 2 (through December 31, 2014) in order to accomplish the objectives.

1. *Coordinate with stakeholders to select priority planting and optimize project impact.*

   Coordinate with NRDP, BSB, DEQ, and BNRC to identify planting locations and opportunities. A representative of Montana Tech and this project will attend and participate in all meetings held to coordinate this project with stakeholders and regulators and report to NRDP and BNRC. Information gained from the meetings will guide priorities for 2014 and the development of the Year 3 (2015) plan.

2. *Propagate native plants for use in ecological restoration in Butte Area One and the associated watershed.*

   a. *Maintain and expand the seed orchard on the Montana Tech campus. The expansion will accommodate shrubs and a greater variety of forbs.* The seed orchard will be maintained and operated. Seed collection will continue this summer in the seed orchard.

      The seed/forb orchard will be maintained:
      - Watering is on a timer but must be checked regularly according to environmental conditions and to check for necessary repairs.
      - Weeding primarily involves maintaining the edges free from grass encroachment. In the past we have used herbicide carefully to keep grass out of the plots. The general area requires occasional mowing and weed whacking.

      Plants in cold sheds and nursery will be cared for and handled appropriately:
      The plants that we 'pot-up' from treated seeds are moved outside to the nursery early in the spring to harden and acclimatize. During the winter months (mid Nov – April) these plants are moved inside the cold sheds, insulated with sawdust (which the sawmill gives us), and covered with thermal blankets. The plants must be watered occasionally during the winter even though they are dormant. Approximately 5,000 plants from previous years in various size pots have been over-wintered. In 2014 we intend to plant enough to replace the number planted, so the inventory at the start of next year (January 2015) would be at least 5000.

   b. *Operate and maintain the Montana Tech greenhouse, which will function as the center of seed and plant management. Seeds will be dried, cleaned and stored; then treated to initiate germination. Those seedlings that 'pot up' will be grown in the greenhouse until they are mature enough to be hardened outside.*

      The greenhouse will be cleaned, operated routinely and maintained in functioning condition. The newly acquired, used, plastic-covered hoophouse/cold shed will be completely constructed including benches, watering system and cooling fans. The

hoophouse, expected to be completed and put into operation this spring, will increase our overwintering capacity.

Of the approximately 85 species of forbs and approximately 26 species of shrubs, all but 25 forb species and 4 shrub species require treatment before they will germinate. Cleaned seeds are sealed in Ziploc bags and placed in a cold chamber at about 40 degrees F for storage. Seed treatment will continue so that they will sprout when they are planted in individual containers. "Conetainers" are tubes of various sizes within which treated seeds grow into individual plants for the project.

3. *Plant and evaluate native forb and shrub dispersal islands. These dispersal islands will be maintained until some degree of self-sufficiency is established.*

   a. *Plant at least 9 dispersal islands at approved locations.* Montana Tech met with BSB's Tom Malloy in early April to coordinate 2014 sites. The proposal for 2014 is to plant dispersal islands in three or more of the 2013 tree pods planted by BSB. An additional three dispersal islands will be developed near the sites of BSB tree plantings for this summer along the Copper Walking Trail between Montana St. and Main St. We are also planning to coordinate with BSB and NRDP to identify a shrub site in upper Missoula Gulch and two specific sites for areal broadcast seeding in the fall. Containerized plants and seeds will be included within each dispersal island. The 30 square meters of forb sods produced by Montana Tech during spring for dispersal islands will be placed in three of the dispersal islands associated with BSB tree pods. Site sheets for the proposed locations will be provided.

   In coordination with the dispersal islands to be established along the Copper Trail, we recommend including two small islands of primarily small native grasses. Inclusion of the grasses will help address one of the difficulties this native plant project faces: interference/competition from the large-stature, established, introduced species of grasses planted during remediation. It will be instructive to future efforts to compare how the native grasses perform compared to the grasses on the remediated sites, and how the forbs fare in competition/proximity to the native grasses in these plantings.

   The initial watering that the new dispersal islands require will be performed by BSB, where necessary, using watering devices at the same time they water their nearby plantings. This coordination will reduce labor time and costs to establish the plantings. Weeding will be performed by Montana Tech as needed.

   Some additional dispersal island sites have been recommended for consideration. Their inclusion will depend on how well they meet the selection criteria as determined by NRDP, BSB, and BNRC.

   1) Upper Missoula Gulch and other newly released sites: Shrubs, primarily mountain mahogany (*Cercocarpus ledifolius*) could be planted at up to three sites in upper Missoula Gulch or other newly released areas on the Butte Hill. The mountain mahogany would be planted along with wild rose (*Rosa woodsii*) and skunkbrush

sumac (*Rhus trilobata*). Approximately 15 forb species would be planted among the shrubs, while grass plugs of small stature native grasses would be planted around the edges. The inclusion and exact location of these sites would be determined by NRDP. Upper Missoula gulch is comparatively recently remediated, so the non-native grasses are less established, and it may be possible to demonstrate that native plant communities can establish better in such locations.

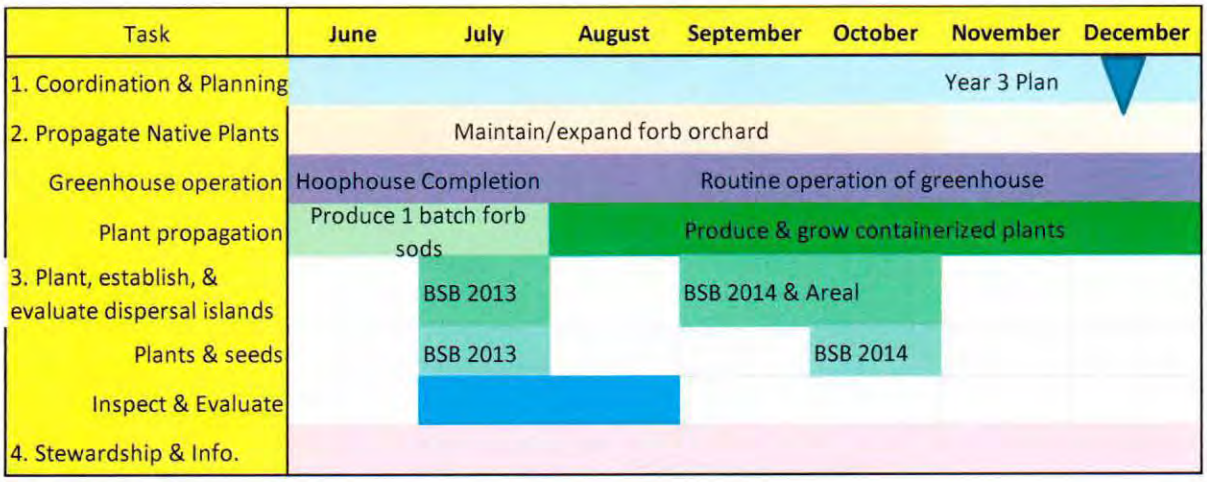
2) We will seek approval to modify our approach by creating dispersal sinks in the expanse of remediation species surrounding the dispersal islands. The purpose is to facilitate spreading and establishment of native plants from the dispersal islands. If approval is granted, we will establish permanently marked transects at various distances from the new dispersal islands. We will use standard methods to record frequency of occurrence of dispersing species. The final plan for this effort needs to be established in conjunction with the restoration working group.

b. Inspect and evaluate the dispersal islands. Determine which species are surviving, propagating and spreading. Determine which planting techniques and which locations are producing the greatest success. Make subsequent adaptations to increase the probability for achieving the project goal. This inspection and evaluation should be performed by or under the direction of a qualified restoration ecologist. This task includes monitoring and evaluating dispersal islands established under the previous contract, and it is expected that NRDP will place the subcontract with a qualified person for this work. Montana Tech will provide assistance/coordination to help the contractor find the prior sites and obtain information on their establishment, design, and treatments. No funding for this subcontract is included in the budget proposed. If Montana Tech is to administer this subcontract, additional funding would be needed.

4. Promote stewardship among the community and make information about this project available locally by attending and presenting information at community meetings and symposiums and by preparing outreach materials.

Stewardship promotion will be minimized this year. Preparation of outreach materials is planned for Year 3, after the new restoration ecologist is in place.

Proposed Overall Schedule and Budget for Project Year 2 (June 1-December 31, 2014)



Restoring Native Plant Diversity Project
Montana Tech Budget
June 1, 2014 - December 31, 2014

Expense Category			Budget
Salaries & Wages:	**Rate**	**Hours**	
Restoration Ecologist		-	$ -
Principal Investigator	$ 30.00	300	$ 9,000.00
Greenhouse Manager	$ 16.00	820	$ 13,120.00
Project Manager	$ 34.25	90	$ 3,082.50
Students	$ 10.00	1,110	$ 11,100.00
Subtotal		$ 2,320.00	$ 36,302.50
Fringe Benefits:			
Restoration Ecologist (46% of salary)			$ -
Principal Investigator (25% of salary)			$ 2,250.00
Technician & Project manager (46% of salary)			$ 7,453.00
Students (3% academic year/10% summer)			$ 900.00
Subtotal			$ 10,603.00
Other:			
Contracted Services			
Suplies/Materials			$ 5,000.00
Communications			$ -
Travel			$ 250.00
Other			$ -
Subtotal			$ 5,250.00
Direct Cost Subtotal			$ 52,155.50
Miscellaneous:			
Indirect Cost (25% of Direct Costs)			$ 13,039
Grand Total			**$ 65,195**

Butte Area One
Native Plant Diversity
Site Improvement Plan

Site Name: 2014 Site A Date: 5/15/14

Site Location/Size: Missoula St. ball Field, lower Missoula Gulch

GPS: 112 32 43.923 W 46 1 22.229 N

BRES Site #/Name: #159, NW Syndicate Pit

BSB Zoning Classification(s) at Site: Open space conservation

Vegetative Deficiencies/Problems at this Site: Remediation species do not represent local native plant diversity

Proposed Efforts to Improve the Site: Montana Tech dispersal island will provide source of local native plant seed dispersal and dispersal island will become a part of the vegetation mosaic on the Butte Hill.

Efforts to Coordinate with other Entities:

Coordinated with Butte-Silver Bow and their tree pod project manager

Materials and Labor Estimate: Materials: 10 forb sods, 100 tubelings of forbs and shrubs, 2 oz local native seed; 30 ft^2 plastic weed materials plus staples. Labor estimate: 40hrs

Estimated Cost: $4,000 (including propagation/preparation of plants & sods)

Proposed Start Date: June 15, 2014 Proposed Evaluation Date: June 2017

Submitted by: Montana Tech

Butte Area One
Native Plant Diversity
Site Improvement Plan

Site Name: 2014 Site B Date: 5/15/14

Site Location/Size: 112 32 44.115 W 46 1 20.414 N . Near Missoula Ballfields

BRES Site #/Name: #159, NW Syndicate Pit

BSB Zoning Classification(s) at Site: Open space conservation

Vegetative Deficiencies/Problems at this Site: Remediation species do not represent local native plant diversity

Proposed Efforts to Improve the Site: Montana Tech dispersal island will provide source of local native plant seed dispersal and dispersal island will become a part of the vegetation mosaic on the Butte Hill.

Efforts to Coordinate with other Entities:

Coordinated with Butte-Silver Bow and their tree pod project manager

Materials and Labor Estimate: Materials: 10 forb sods, 100 tubelings of forbs and shrubs, 2 oz local native seed; 30 ft^2 plastic weed materials plus staples. Labor estimate: 40hrs

Estimated Cost: $4000 (including propagation/preparation of plants & sods)

Proposed Start Date: June 22, 2014 Proposed Evaluation Date: June 2017

Submitted by: Montana Tech

Butte Area One
Native Plant Diversity
Site Improvement Plan

Site Name: 2014 Site C Date: 5/15/14

Site Location/Size: 112 32 20.043 W 46 1 50.074 N

BRES Site #/Name: 18/Walkerville Ballfield

BSB Zoning Classification(s) at Site: Open space conservation

Vegetative Deficiencies/Problems at this Site: Remediation species do not represent local native plant diversity

Proposed Efforts to Improve the Site: Montana Tech dispersal island will provide source of local native plant seed dispersal and dispersal island will become a part of the vegetation mosaic on the Butte Hill.

Efforts to Coordinate with other Entities:

Coordinated with Butte-Silver Bow and their tree pod project manager

Materials and Labor Estimate: Materials: 10 forb sods, 100 tubelings of forbs and shrubs, 2 oz local native seed; 30 ft^2 plastic weed materials plus staples

Labor estimate: 40 hrs

Estimated Cost: $4000 (including propagation/preparation of plants & sods)

Proposed Start Date: July 1, 2014 Proposed Evaluation Date: June 2017

Submitted by: Montana Tech

Butte Area One
Native Plant Diversity
Site Improvement Plan

Site Name: 2014 Site D Date: 5/15/14

Site Location/Size: 112 32 18.337 W 46 1 50.213 N

BRES Site #/Name: 18/Walkerville Ballfield

BSB Zoning Classification(s) at Site: Open space conservation

Vegetative Deficiencies/Problems at this Site: Remediation species do not represent local native plant diversity

Proposed Efforts to Improve the Site: Montana Tech dispersal island will provide source of local native plant seed dispersal and dispersal island will become a part of the vegetation mosaic on the Butte Hill.

Efforts to Coordinate with other Entities:

Coordinate with Butte-Silver Bow and their tree pod project manager

Materials and Labor Estimate: Materials: 400 tubelings of forbs and shrubs, 2 oz local native seed; 150 ft^2 plastic weed materials plus staples

Labor estimate: 80 hrs

Estimated Cost: $4,500 (including propagation/preparation of plants)

Proposed Start Date: July 7, 2014 Proposed Evaluation Date: June 2017

Submitted by: Montana Tech

Butte Area One
Native Plant Diversity
Site Improvement Plan

Site Name: 2014 Site E Date: 5/15/14

Site Location/Size: 112 32 19.397 W 46 1 7.057 N

BRES Site #/Name: 76/Waste Dump #20

BSB Zoning Classification(s) at Site: Open space conservation

Vegetative Deficiencies/Problems at this Site: Remediation species do not represent local native plant diversity

Proposed Efforts to Improve the Site: Montana Tech dispersal island will provide source of local native plant seed dispersal and dispersal island will become a part of the vegetation mosaic on the Butte Hill.

Efforts to Coordinate with other Entities:

Coordinated with Butte-Silver Bow and their tree pod project manager

Materials and Labor Estimate: Materials: 400 tubelings of forbs and shrubs, 2 oz local native seed; 150 ft^2 plastic weed materials plus staples

Labor estimate: 80 hrs

Estimated Cost: $4,500 (including propagation/preparation of plants)

Proposed Start Date: July 15, 2014 Proposed Evaluation Date: June 2017

Submitted by: Montana Tech

Assessment

Butte Area One
Native Plant Diversity
Site Improvement Plan

Site Name: 2014 Site F Date: 5/15/14

Site Location/Size: 112 32 14.664 W 46 1 8.602 N

BRES Site #/Name: #79/Late Acquisition

BSB Zoning Classification(s) at Site: Open space conservation

Vegetative Deficiencies/Problems at this Site: Remediation species do not represent local native plant diversity

Proposed Efforts to Improve the Site: Montana Tech dispersal island will provide source of local native plant seed dispersal and dispersal island will become a part of the vegetation mosaic on the Butte Hill.

Efforts to Coordinate with other Entities:

Coordinate with Butte-Silver Bow and their tree pod project manager

Materials and Labor Estimate: Materials: 400 tubelings of forbs and shrubs, 2 oz local native seed; 30 ft^2 plastic weed materials plus staples
Labor estimate: 80hrs

Estimated Cost: $4,500 (including propagation/preparation of plants)

Proposed Start Date: After BSB tree pod work is completed. Proposed Evaluation Date: 2017

Submitted by: Montana Tech

Butte Area One
Native Plant Diversity
Site Improvement Plan

Site Name: 2014 Site G Date: 5/15/14

Site Location/Size: 112 32 13.600 W 46 1 7.81 N

BRES Site #/Name: #80/West Steward Parking Lot

BSB Zoning Classification(s) at Site: Open space conservation

Vegetative Deficiencies/Problems at this Site: Remediation species do not represent local native plant diversity

Proposed Efforts to Improve the Site: Montana Tech dispersal island will provide source of local native plant seed dispersal and dispersal island will become a part of the vegetation mosaic on the Butte Hill.

Efforts to Coordinate with other Entities:

Coordinated with Butte-Silver Bow and their tree pod project manager

Materials and Labor Estimate: Materials: 400 tubelings of forbs and shrubs, 2 oz local native seed; 150 ft^2 plastic weed materials plus staples

Labor estimate: 80 hrs

Estimated Cost: $4,500 (including propagation/preparation of plants)

Proposed Start Date: After BSB completes tree pod. Proposed Evaluation Date: 2017

Submitted by: Montana Tech