

## Clark Fork River Operable Unit of the Milltown Reservoir Clark Fork River Superfund Site

The Clark Fork River Operable Unit (CFR OU) includes the Clark Fork River from its headwaters near Warm Springs Creek to Milltown Reservoir, just east of Missoula. The primary sources of contamination are mine tailings mixed with soil in the streambanks and historic floodplain. The tailings are laden with heavy metals (Cadmium, Copper, Zinc, and Lead) and arsenic from historic mining, milling and smelting processes in Butte and Anaconda.

The contamination threatens human health and the environment. The 2004 Record of Decision describes the cleanup approach, or Selected Remedy. In addition to the ROD, the Natural Resource Damage Program (NRDP) developed a Restoration Plan to expedite the recovery time for injured aquatic and terrestrial resources in and along the Clark Fork River. To the extent practicable, the Restoration Plan will be combined with the Remedy to maximize the use of resources.



*Tailings in the river bank*



*Cleanup on the Clark Fork*

### Consent Decree and Settlement Money

In 2008, 25 years after the state sued the Atlantic Richfield Co. for damage to natural resources, a settlement was reached and a federal judge signed the consent decree. The state received \$123 million for cleanup and restoration of mining pollution in the Clark Fork River Operable Unit.



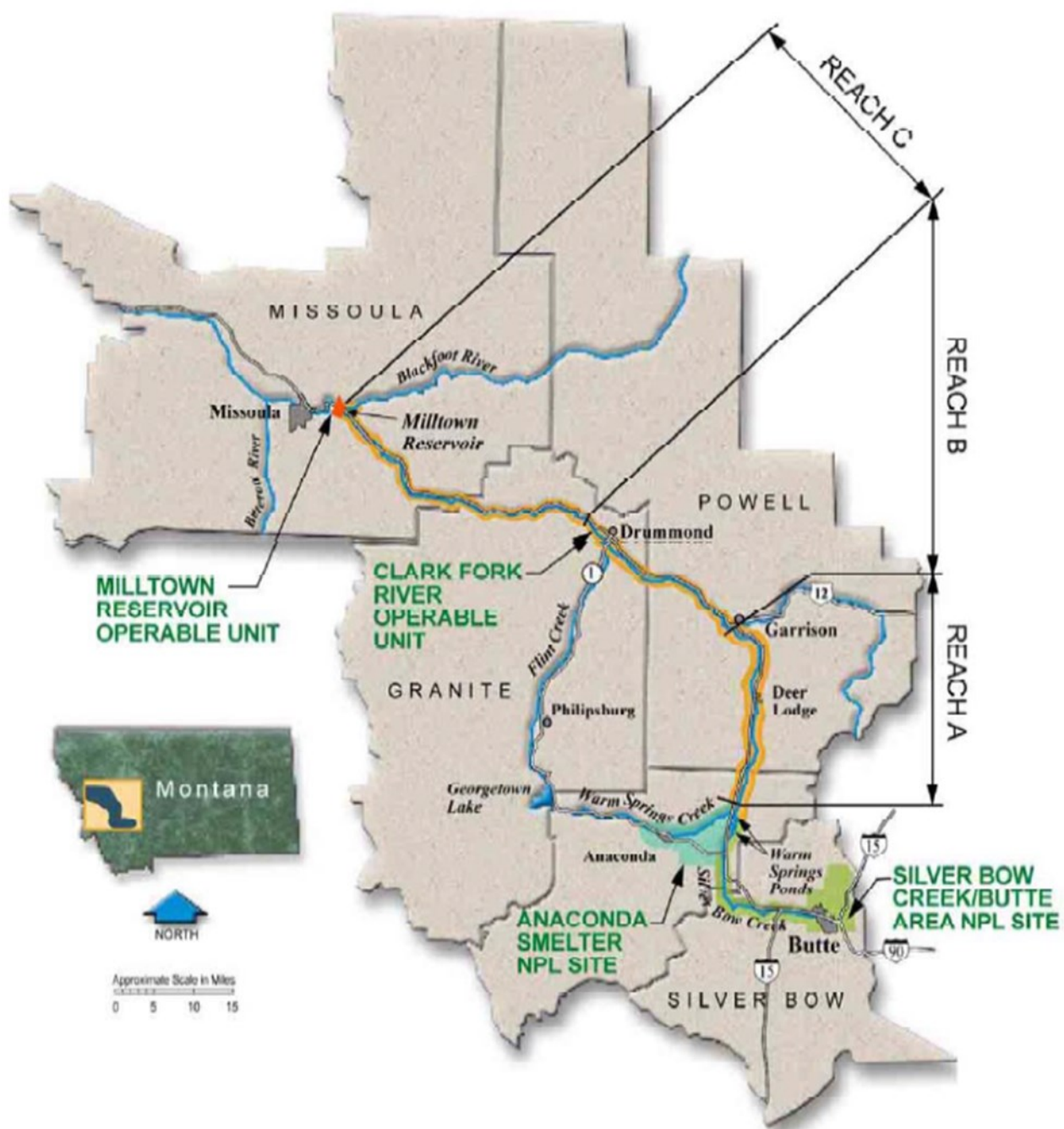
*Cleanup on the Clark Fork*

### Remedial Design/Remedial Action

The Montana Department of Environmental Quality (DEQ) and Montana Department of Justice, Natural Resource Damage Program (NRDP), with additional oversight from the U.S. Environmental Protection Agency (EPA) and National Parks Service (NPS) for cleanup activities at the Grant-Kohrs Ranch, are designing the remediation and restoration work to be done along 43 miles of the Clark Fork River from Warm Springs in Anaconda/Deer Lodge County downstream to Garrison in Powell County.

### Description of Selected Remedy

- Remove Exposed Tailings and Contaminated Soil
- Repair Streambanks and Restore Vegetation
- Opportunity Ponds Repository
- Weed Control
- Best Management Practices to Protect Cleanup
- Institutional Controls
- Monitoring
- Project Safety







# Clark Fork River Cleanup Fast Facts



## Total Project From 2011—2017

Miles of River Cleaned	Acres Cleaned	
8.19	497	
		<p>Stormwater best management practices on Milwaukee Avenue along the Clark Fork River.</p>  <p>Deer Lodge residential yards after construction.</p>

Cubic Yards of Contamination Removed	Herbaceous & Woody Plants	Total Project Cost
1.3 million	292,773 plants	\$40 million

Removing contaminants from the streambanks and the floodplain will return the river to its natural condition and create a properly functioning river system that does not pose unacceptable risks to human health and the environment.

Second year of vegetation growth surrounding protected cottonwoods.



### For More Information

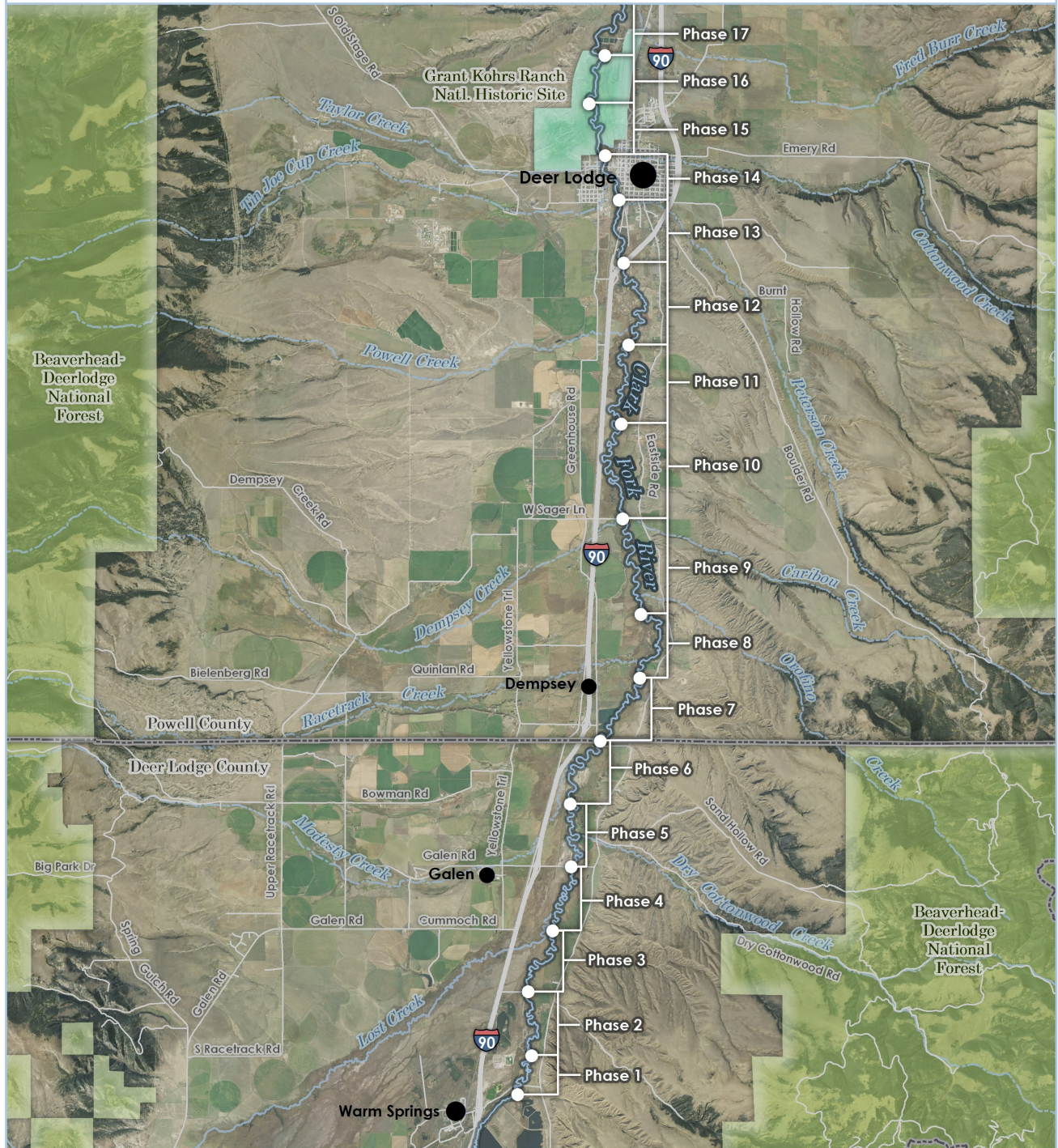
To learn more about the Clark Fork River Phase cleanup, please visit the following resources:

- [deq.mt.gov/Land/fedsuperfund/cfr](http://deq.mt.gov/Land/fedsuperfund/cfr)
- Karen Ogden, MDEQ Public Information Specialist/Community Involvement Coordinator  
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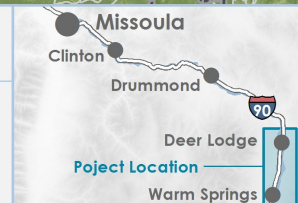




# Clark Fork River Cleanup Phase 1 to Deer Lodge



○ Phase Breaks





## Phase 1

Construction Begin – End Date	Miles of River Cleaned	Acres Cleaned	Cubic Yards of Contamination Removed
2013 – 2014	1.6	64	331,821



Heavy metals and arsenic from historic mining upstream of the site have been deposited on the floodplain and streambank of the Clark Fork River. Due to human health and environmental concerns, it is necessary to remove the mine waste. The contamination on the floodplain and streambanks is multiple feet thick and the vegetation was primarily dead and decaying. Heavy metals and arsenic present a risk to human health and negatively effect plants, animals, fish and aquatic resources (the environment).

Herbaceous & Woody Plants	Total Revegetation Cost*
129,405	\$1.9 million

Total Construction Cost*	Total Project Phase Cost*
\$6.6 million	\$8.5 million

Removing the contamination from the streambanks and the floodplain will return the river to its natural condition and create a properly functioning river system that does not pose unacceptable risks to human health and the environment.

Excavation, loading and hauling contaminated soils from the floodplain.



## For More Information

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- Karen Ogden, MDEQ Public Information Specialist/Community Involvement Coordinator

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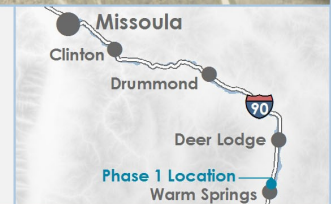
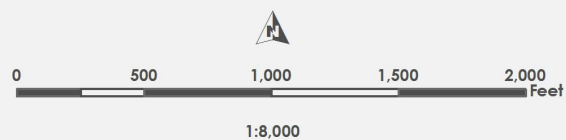
- Tom Mostad, NRDP Restoration Manager

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# Clark Fork River Cleanup Fast Facts



## Phase 2

Construction Begin – End Date	Miles of River Cleaned	Acres Cleaned	Cubic Yards of Contamination Removed
2015 – 2016	1.9	133	472,313



During construction, contaminated streambank and floodplain are removed and hauled to the Opportunity Ponds.

### Herbaceous & Woody Plants

### Total Revegetation Cost\*

44,386

\$0.9 million

### Total Construction Cost\*

\$9.5 million

### Total Project Phase Cost\*

\$10.3 million

Streambank reconstruction in Fall 2016.



Clark Fork River after Phase 2 construction in Fall 2017.



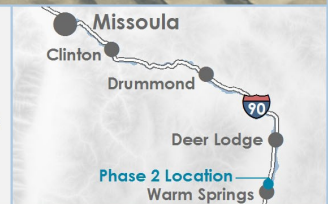
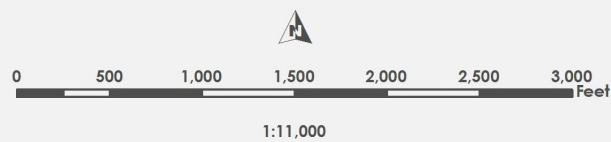
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# Clark Fork River Cleanup Phase 2





# Clark Fork River Cleanup Fast Facts



## Phase 5/6

Construction Begin – End Date	Miles of River Cleaned	Acres Cleaned	Cubic Yards of Contamination Removed
2014 – 2016	4.5	136	538,937



Prior to removal, contamination (mining waste) streambanks continually washed away into the Clark Fork River.

### Herbaceous & Woody Plants

### Total Revegetation Cost\*

111,844

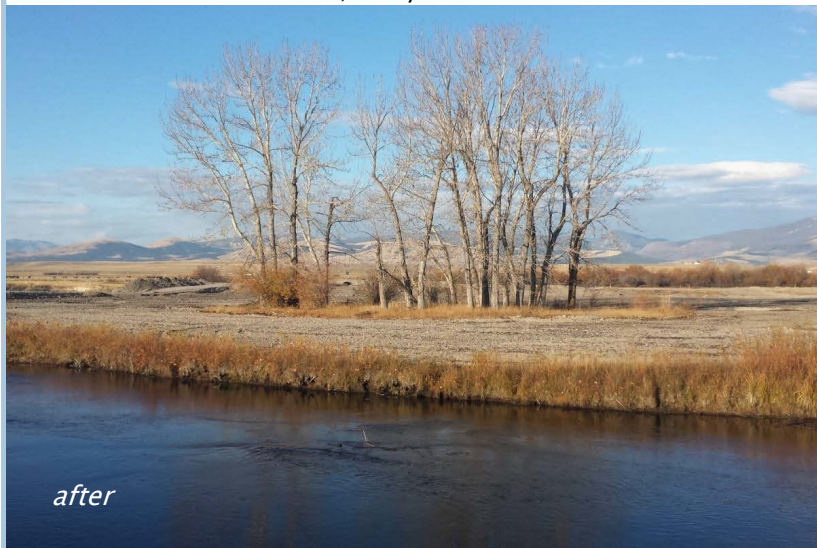
\$1.7 million

Total Construction Cost*	Total Project Phase Cost*
\$15.8 million	\$17.5 million

Reconstructing the outer banks of the Clark Fork River following removal of contamination.



Clark Fork River in Fall 2017, one year after construction.



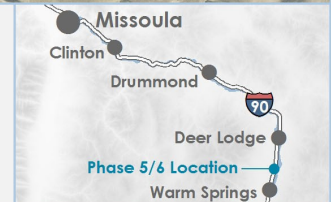
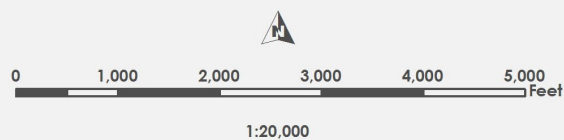
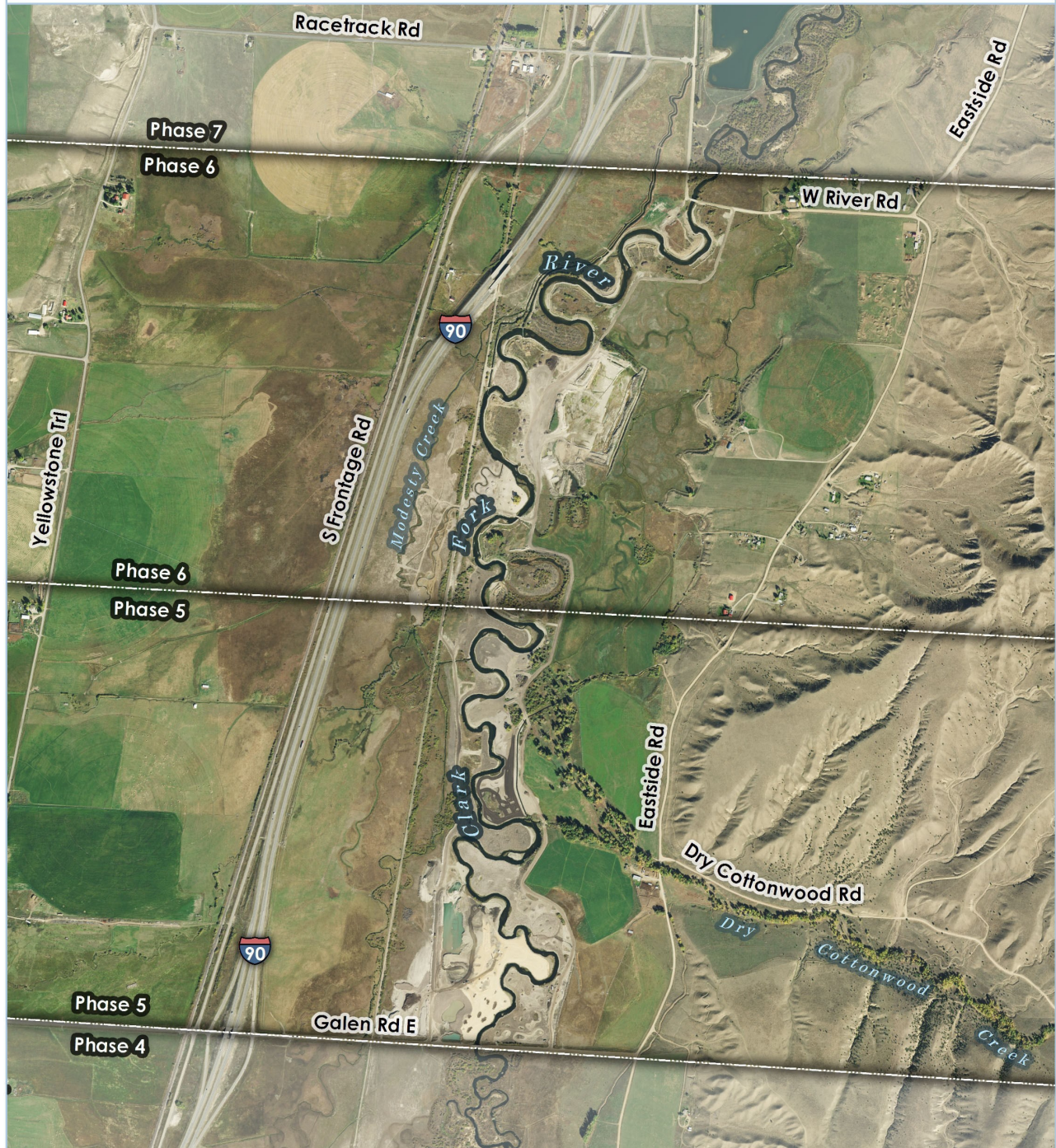
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# Clark Fork River Cleanup Phase 5/6





## Deer Lodge & East Side Road Residential Yards

Construction Begin – End Date	Acres Cleaned	Cubic Yards of Contamination Removed
2010 – 2011	9.8	12,216



Stormwater best management practices (BMPs) were used during the Mitchell Street excavation of contaminated soil along the streambank.

Herbaceous & Woody Plants	Total Construction Cost*	Total Project Phase Cost*
87 plants	\$2.7 million	\$2.7 million

Willows were planted in a trench at the north end of Mitchell Street. During construction, the trench was backfilled with clean soil, and then the willows were trimmed.



The completed Mitchell Street streambank treatment with toe river rock.



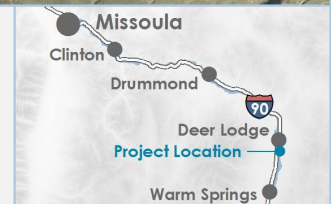
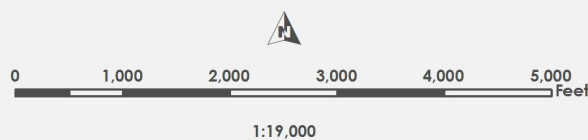
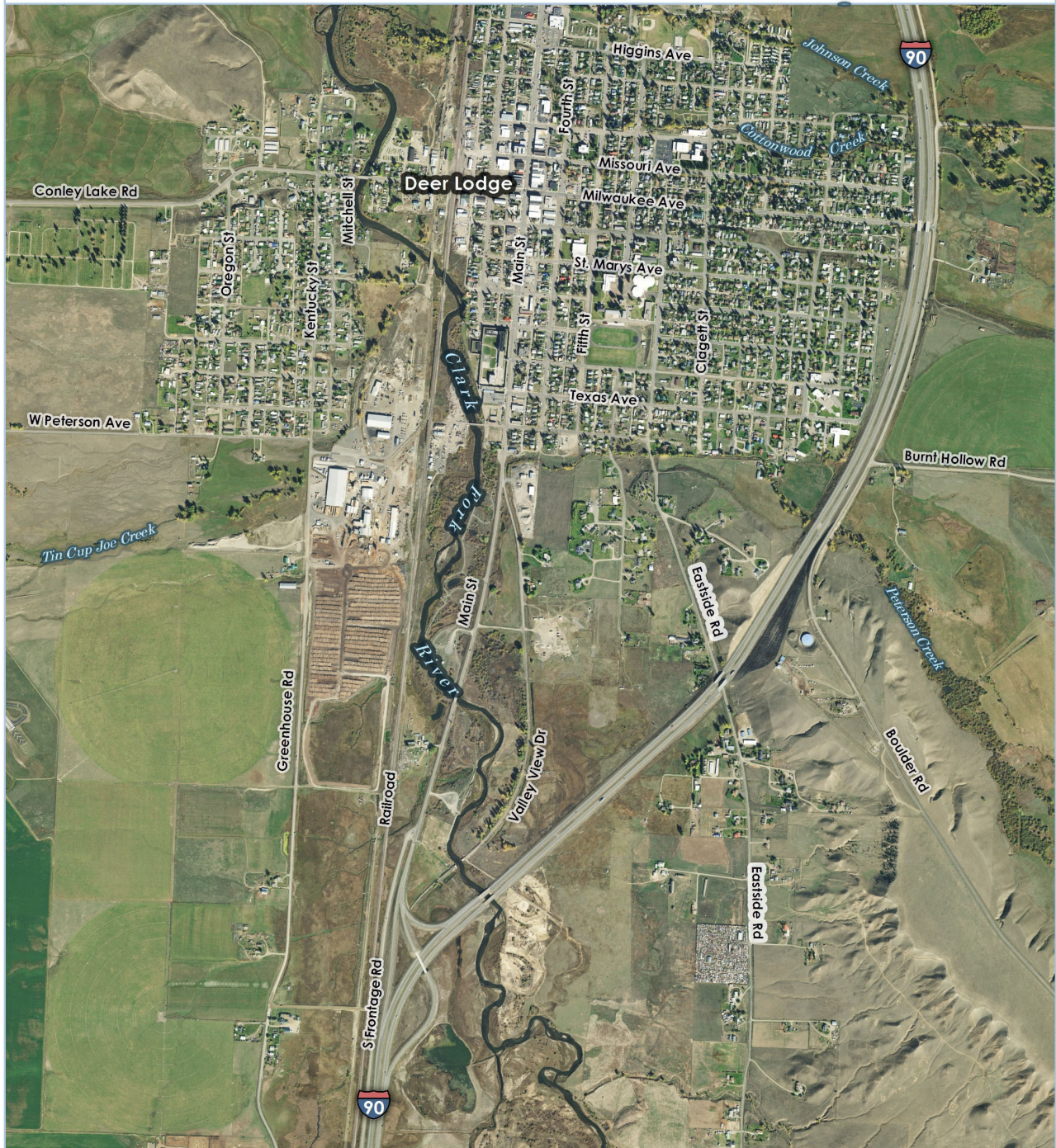
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# Clark Fork River Cleanup Deer Lodge and Eastside Road Residential Yards





# Clark Fork River Cleanup Fast Facts

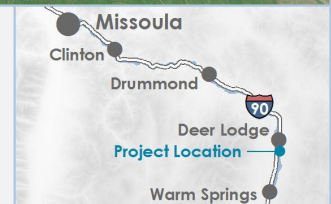


## East Side Road Pastures 1 & 2

Construction Begin – End Date		Acres Cleaned	 <p>during</p> <p>A cultipacker was used for seedbed preparation.</p>
2012 – 2016		152	
 <p>during</p>		Historically, contaminated Clark Fork River water was used for irrigation of upland pastures. Lime was applied in pastures to treat soils impacted by arsenic and heavy metals.	
Total Construction Cost*		Total Project Phase Cost*	
\$2.2 million		\$2.4 million	
<p>Furrows left after seedbed preparation by the cultipacker.</p>		 <p>during</p>	
<p>A mechanical straw crimper places crimped straw over the prepared ground.</p>			
 <p>after</p>		<h3>For More Information</h3> <p>To learn more about the Clark Fork River cleanup, please visit the following resources:</p> <ul style="list-style-type: none"> <li>▪ <a href="http://deq.mt.gov/Land/fedsuperfund/cfr">deq.mt.gov/Land/fedsuperfund/cfr</a></li> <li>• Karen Ogden, MDEQ Public Information Specialist/Community Involvement Coordinator <a href="mailto:Karen.Ogden@mt.gov">Karen.Ogden@mt.gov</a> Office: (406) 444-6360</li> <li>• Tom Mostad, NRDP Restoration Manager <a href="mailto:TMostad2@mt.gov">TMostad2@mt.gov</a> Office: (406) 444-0227</li> </ul>	



# Clark Fork River Cleanup Eastside Road Pastures 1 & 2





# Clark Fork River Cleanup Fast Facts



## Trestle Area

Construction Begin – End Date	Miles of River Cleaned	Acres Cleaned	Cubic Yards of Contamination Removed
2011 – 2012	0.19	2.2	8,090



Trestle area  
before  
construction



during

Construction of the crib wall to prevent erosion of the railroad grade into the river.

Herbaceous & Woody Plants	Total Construction Cost*	Total Project Phase Cost*
7,051	\$1.3 million	\$1.3 million

Completed streambank and crib wall  
upstream of the railroad trestle.



after

Trestle area vegetation during one season of growth.



after

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# Clark Fork River Cleanup Trestle Area

