

Analysis of Brownfield Cleanup Alternatives

**Former Water Treatment Plant
Fort Belknap Agency, Montana**

Prepared For:

Fort Belknap Indian Community
656 Agency Main Street
Harlem, MT 59526

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Table of Contents

1.0	Introduction	2
2.0	Site Background	2
3.0	Cleanup Standards.....	2
3.1	Applicable Laws	3
3.1.1	Asbestos.....	3
3.1.2	Pigeon Guano.....	3
4.0	Cleanup Alternatives	3
5.0	Evaluation of Alternatives	5
6.0	Preferred Alternative.....	5
7.0	Climate Change and Severe Weather Events.....	6
8.0	References.....	6

List of Figures (all from NewFields, 2020)

Figure 1 – Site Location

Figure 2 – Site Plan

List of Appendices

Appendix A – Site Photos

Appendix B – Cost Estimates

1.0 Introduction

Granite Peak Environmental, LLC (Granite Peak) prepared this Analysis of Brownfields Cleanup Alternatives (ABCA) at the request of the Fort Belknap Indian Community Office of Environmental Protection (FBIC). The FBIC wants to remediate the Fort Belknap Agency Former Water Treatment Plant and has acquired an EPA Brownfields Cleanup Grant to complete the work. Currently, the water treatment plant is vacant. Former mixing tanks, holding tanks, and filter beds remain in the building. In addition, pigeons have lived and defecated in the building for several years and most surfaces are covered with several inches of pigeon guano.

The FBIC intends to reuse the building after cleanup is complete. To remediate the building, joint compound containing asbestos must be abated, the pigeon guano must be remediated, and the tanks and equipment remaining in the building must be removed. This ABCA identifies remedial options for the FBIC to clean up the Former Water Treatment Plant.

2.0 Site Background

The site is located on the Fort Belknap Reservation in Montana (**Figure 1**, NewFields, 2021). As shown in **Figure 2**, and in photos included in **Appendix A**, the Former Water Treatment Plant is a 75x50 foot (3,750 ft²), single story building that has a metal roof and metal siding. The inside is open to the ceiling except for a small office and bathroom, which have drop ceilings. The floor is concrete. There are several (3) above ground tanks, pumps, pipes, valves, (2) large sand filters, and other components of the plant inside the building. There is a large, treated water tank located below the southern quarter of the building slab that once contained treated water prior to distribution. Exact measurements on the size of this tank could not be taken since it is below ground, but it is estimated to be >50,000 gallons. Pigeon guano at depths ranging from a few inches to a few feet covers the concrete floor and all equipment inside the building.

As reported in NewFields (2021), inspection of the building determined that the joint compound applied to the sheetrock of the office and bathroom contains asbestos above 1% by weight. Therefore, asbestos abatement is required prior to renovation of the building. To remove the tanks and equipment in the plant, the pigeon guano, and general trash and debris throughout the building will need to be removed.

3.0 Cleanup Standards

The cleanup requirements for asbestos on a structure located within a federally recognized reservation are found in 40 Code of Federal Regulations (CFR) 61.140-157, also known as the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP). In general, a building material containing >1% asbestos on a commercial building must be abated, if the material is in a friable state or if it is to be disturbed making it friable.

There are no specific regulatory standards for pigeon guano; however, there are several diseases associated with pigeon droppings, including cryptococcosis and histoplasmosis (fungi) and psittacosis (bacteria). A person can become infected with these diseases by breathing in pigeon guano dust. Exposure to these diseases occurs when the spores are inhaled. Therefore, individuals who work in or cleanup areas heavily contaminated with pigeon droppings, like that seen at the Plant, may become exposed when the material is disturbed, or dust is created. In addition to disease and infection, pigeon droppings can also contain parasites, ticks, and mites.

This usually happens when pigeons have created a large mess of droppings, like that seen in the Plant.

3.1 Applicable Laws

This section summarizes the laws and regulations that are applicable to the proposed cleanup.

3.1.1 Asbestos

Applicable codes, regulations, and laws that govern asbestos remediation/cleanup work and transport/disposal of lead-contaminated wastes include the following:

- CFR Publications:
 - OSHA 29 CFR 1926.1101 Construction Industry Standard (1994)
 - OSHA 29 CFR 1926.500 Guardrails, Handrails, and Covers
 - OSHA 29 CFR 1910.134 Respiratory Protection
 - OSHA 29 CFR 1910.145 Specifications for Accident Prevention Signs and Tags
 - EPA 40 CFR 61 Subpart A, General Provisions
 - EPA 40 CFR 61 Subpart M, National Emission Standard for Hazardous Air Pollutants
 - EPA 40 CFR 763.120, 121 Asbestos Abatement Projects
 - EPA 40 CFR 763 Subpart E, Asbestos Hazard Emergency Response Act Asbestos-Containing Materials in Schools
- ANSI Publications:
 - Z9.2-1979 Fundamentals Governing the Design and Operations of Local Exhaust Systems
 - Z88.2-1980 Practices for Respiratory Protection NIOSH Revised Recommended Asbestos Standard
- EPA:
 - 560/5-85-024 Guidance for Controlling Friable Asbestos-Containing Materials in Buildings
- State Requirements:
 - Chapter 74 Administrative Rules of Montana
 - Applicable sections of the Asbestos Work Practices and Procedures Manual, (2005)

3.1.2 Pigeon Guano

There are no specific regulations concerning pigeon guano. The EPA Brownfields program has accepted this material as a hazardous substance and funds can be used to remediate it at the Plant. More information on diseases associated with pigeon guano is provided in Section 3.0 above.

4.0 Cleanup Alternatives

Granite Peak has identified three cleanup alternatives for the site, as follows:

Alternative 1 – No action.

Alternative 2 – Under this alternative the following would be generally completed.

- Asbestos Abatement
- Pigeon Guano Removal and Disposal at the Hill County.
- Removal and disposal of drums and their contents.
- Removal of all piping, valves, poly and steel tanks and filters, and ancillary equipment associated with the former water treatment plant.
- Cleaning the floor at the end to remove any adhered pigeon guano.

Alternative 3 – Alternative 3 involves the same general steps described in Alternative 2, except pigeon guano would be placed into the tank below the southern quarter of the concrete building slab.

Under Alternative 1 no actions are taken to remediate the asbestos and pigeon guano at the site.

Under Alternative 2, Alternative 2 involves the following specific actions that should be completed chronologically:

- 1) Cleaning the debris and trash throughout the building to allow for asbestos abatement and pigeon guano cleanup.
- 2) Abating the asbestos associated with the joint compound by removal and disposal of the sheetrock associated with the office and bathroom.
- 3) Removal of the pigeon guano, disposing of it at the Hill County landfill.
- 4) Removal of the two large ALUM poly tanks and disposing of them at the Hill County landfill. These tanks can be dragged across the floor and taken out the large roll-up door on the eastern side of the building.
- 5) Removal of 6 drums and a carboy container from the building. Two of the tanks have a polymer in them that was previously used in the water treatment process.
- 6) Removal of steel pipes, pumps, and electrical control panel associated with the Plant. The steel can be recycled, and the pumps possibly sold. It is likely the control panel is outdated and will need to be disposed of as general debris.
- 7) Removal of large steel mixing tank. The best option to remove this tank is likely to cut it up and remove it from the building in pieces. Steel can be recycled.
- 8) Removal of the two steel sand filters. These too should be cut up as they are large and cannot be physically removed without demolition of the building. The filters and sand in them should be disposed of at the landfill and the steel recycled.
- 9) Power washing the concrete floor to remove adhered pigeon guano. The water generated can be discharged into the tank below the southern quarter of concrete building slab.

Under Alternative 3, all the same steps described in Alternative 2, except the pigeon guano will be disposed of in the tank below the southern quarter of concrete building slab. There is a 3x3 foot door to this tank that allows for placement of the guano in it. When power washing the concrete slab at the end, sand and water should be placed into the tank to essentially entomb the guano below ground in the tank. Once filled, the lid to the hatch can be welded shut.

5.0 Evaluation of Alternatives

Each of the alternatives identified for the site are evaluated in this section using three criteria: long-term human health risk reduction, implementability, and costs relative to human health.

Table 5-1, above, summarizes the evaluation and cost estimates for the action alternatives, which are also included in **Appendix C**.

Alternative 1 – Under this alternative no actions are taken to address asbestos and pigeon guano on the site. This alternative provides no long-term human health risk reduction, is implementable, and is cost effective.

Alternative 2 – Under this alternative, by removing the asbestos and pigeon guano, long-term human health risks are eliminated. The remedy is implementable, and costs are slightly higher than Alternative 3, primarily because the pigeon guano is hauled offsite for disposal.

Alternative 3 - Under this alternative, like Alternative 2, by removing the asbestos and pigeon guano, long-term human health risks are eliminated. The remedy is implementable, and costs are slightly lower than Alternative 2, because the as pigeon guano is disposed of in the below slab tank.

**Please note that the costs shown are preliminary, and actual costs will be dependent on bids received from qualified contractors.

Alternative	Criteria		
	Risk Reduction	Implementability	Cost
Alternative 1 – No Action	None	Implementable	\$0
Alternative 2 – Remove and dispose of asbestos and pigeon guano (disposed of at landfill), drum removal, removal of all water treatment plant components in the building.	Future human health risks eliminated, moderate risks during demolition work	Implementable	\$138,966
Alternative 3 – Remove and dispose of asbestos and pigeon guano (disposed of in the tank below concrete slab), drum removal, removal of all water treatment plant components in the building. .	Future human health risks eliminated, moderate human health risks during demolition work	Implementable	\$129,533

6.0 Preferred Alternative

The preferred action is Alternative 3. While Alternative 2 would eliminate human health risks to the same degree as Alternative 3, Alternative 3 costs less and meets the tribe's goals for the project.

7.0 Climate Change and Severe Weather Events

The EPA requires a discussion of whether climate change could be impacted by the preferred alternative. According to the Montana Climate Assessment, climate changes predicted include:

- Increased mean annual air temperatures with winter and springs temperatures increasing the most.
- Increased precipitation in winter, spring, and fall, with decreasing precipitation in summer
- Decreased snowpack with peak runoff occurring earlier.
- Increased frequency of flooding
- Increased time of drought
- Increased frequency and longer season for wildfires

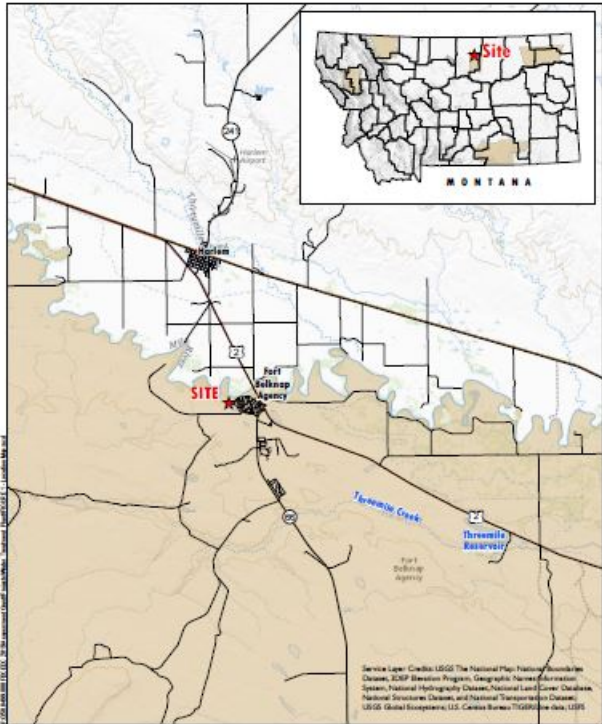
The proposed cleanup would not significantly impact the climatic changes described above, except for potentially increasing mean annual temperature through the burning of fossil fuels. The preferred alternative would not increase the potential for onsite flooding. It is recommended that heavy equipment used for the project be turned off when not in use.

8.0 References

NewFields 2021. Phase II Environmental Site Assessment Report, Building Materials Inspection, Old Agency Water Treatment Plant, 103 Agency Main Street, Harlem, MT 59526. November.



FIGURES



- ★ Property Location
- Roads
- Fort Belknap Reservation

Location Map
 Water Treatment Plant
 103 Agency Main Street
 Harlem, MT
 FIGURE 1



 Water Treatment Plant

Site Map
Water Treatment Plant
103 Agency Main Street
Harlem, Montana
FIGURE 2



Appendix A - Photograph Log

ABCA Appendix A - Photos of Existing Site Conditions, Water Treatment Plant Project



















ABCA Appendix A - Photos of Existing Site Conditions, Water Treatment Plant Project







Appendix B - Cost Estimates

Cleanup Cost Summary

Project: Water Treatment Plant

Client: Fort Belknap Indian Community

Date: December 8, 2023



Alternative		Estimate Costs
Alternative 1 - No Action Alternative		\$0
Alternative 1 Total		\$0
Alternative 2 - Pigeon Guano Hauled Offsite		
Contractor Mobilization (asbestos abatement and demo contractor)		\$31,500
Asbestos Abatement		\$7,548
Pigeon Guano Abatement		\$15,165
Poly Tank Removal and Disposal		\$5,120
Steel Tank, Filter Bed, Electrical Equipment Removal		\$65,650
Universal Waste Disposal		\$850
Drum Disposal		\$500
Contingency (10%)		<u>\$12,633</u>
Alternative 2 Total		\$138,966
Alternative 3 - Onsite Pigeon Guano Disposal		
Contractor Mobilization		\$26,500
Asbestos Abatement		\$7,320
Pigeon Guano Abatement		\$17,440
Poly Tank Removal and Disposal		\$5,120
Steel Tank, Filter Bed, Electrical Equipment Removal		\$60,150
Universal Waste Disposal		\$850
Drum Disposal		\$500
Contingency (10%)		<u>\$11,653</u>
Alternative 3 Total		\$129,533

Cost Estimate - Remedial Alternative 2 Water Treatment Plant Cleanup Abatement Asbestos and Hauling Off Pigeon Guano

Project: Water Treatment Plant
Client: Fort Belknap Indian Community
Date: December 8, 2023



Item No.	Description	Quantity	Units	Hourly Rate	Total
1	Contractor Mobilization and Site Preparation ¹				
	Asbestos Abatement Contractor	1	I.s.	\$6,500	\$6,500
	Demolition Contractor	1	I.s.	\$25,000	<u>\$25,000</u>
				Item 1 Subtotal	\$31,500
2	Asbestos Abatement (Drywall and Joint Compound)				
	Asbestos Abatement Specialists	24	hours	\$85.00	\$2,040
	Dumpster Rental	2	ea.	\$500.00	\$1,000
	Dumpster Hauling	2	ea.	\$750.00	\$1,500
	Landfill Disposal Fee ²	12	tons	\$84.00	\$1,008
	Skidsteer	8	hours	\$125.00	\$1,000
	Miscellaneous Equipment	1	I.s.	\$1,000	<u>\$1,000</u>
				Item 2 Subtotal	\$7,548
3	Abatement Pigeon Guano				
	Site Foreman	24	hours	\$100	\$2,400
	Laborers (3, each 24 hours)	72	hours	\$70	\$5,040
	Loader	24	hours	\$150	\$3,600
	Hauling to Landfill	20	hours	\$120	\$2,400
	Landfill Disposal Fee ³	35	tons	\$35	\$1,225
Miscellaneous Equipment	1	I.s.	\$500	<u>\$500</u>	
				Item 3 Subtotal	\$15,165
4	Poly Tank Removal and Disposal				
	Site Foreman	8	hours	\$100	\$800
	Laborers (2)	16	hours	\$60	\$960
	Skidsteer	8	hours	\$125	\$1,000
	Hauling to Landfill	8	hours	\$120	\$960
	Landfill Disposal Fee	2	each	\$450	\$900
Miscellaneous Equipment	1	I.s.	\$500	<u>\$500</u>	
				Item 4 Subtotal	\$5,120
5	Filter Beds, Piping, Steel Tanks, Miscellaneous Removal				
	Site Foreman	60	hours	\$100	\$6,000
	Welders (2)	120	hours	\$100	\$12,000
	Laborers (2)	120	hours	\$70	\$8,400
	Excavator w/thumb	16	hours	\$250	\$4,000
	Skidsteer	60	hours	\$125	\$7,500
	Dumpster Rental	5	ea.	\$500.00	\$2,500
	Dumpster Hauling	15	ea.	\$750.00	\$11,250
	Landfill Disposal Fee ³	100	tons	\$35	\$3,500
	Miscellaneous Equipment	1	I.s.	\$2,500	\$2,500
Power Washing Inside of Building	1	I.s.	\$8,000	<u>\$8,000</u>	
				Item 5 Subtotal	\$65,650
6	Universal Waste Disposal (PCB Ballast and Fluorescent Light Tubes)	1	I.s.	\$850	\$850
				Item 6 Subtotal	\$850
7	Drum Disposal (Polymers)	1	I.s.	\$500	\$500
				Item 7 Subtotal	\$500
8	Project Contingency (10%)	1	I.s.	\$12,633	\$12,633
				Item 8 Subtotal	\$12,633
Total Estimated Costs					\$138,966

Assumptions and Notes

¹ Includes labor and equipment mobilization, permitting, planning, per diem

² Assumes asbestos would be disposed of at the Valley County Landfill.

³ Assumes pigeon guano and general debris would be disposed of at the Hill County Landfill.

The estimate should be considered preliminary. Actual costs will be dependent on bids received from qualified contractors.

Cost Estimate - Remedial Alternative 3 Water Treatment Plant Cleanup Abatement Asbestos and Onsite Pigeon Guano Disposal

Project: Water Treatment Plant
Client: Fort Belknap Indian Community
Date: December 8, 2023



Item No.	Description	Quantity	Units	Hourly Rate	Total
1	Contractor Mobilization and Site Preparation ¹				
	Asbestos Abatement Contractor	1	l.s.	\$6,500	\$6,500
	Demolition Contractor	1	l.s.	\$20,000	<u>\$20,000</u>
	Item 1 Subtotal				\$26,500
2	Asbestos Abatement (Drywall and Joint Compound)				
	Asbestos Abatement Speciliasts	24	hours	\$85.00	\$2,040
	Dumpster Rental	2	ea.	\$500.00	\$1,000
	Dumpster Hauling	2	ea.	\$750.00	\$1,500
	Landfill Disposal Fee ²	12	tons	\$65.00	\$780
	Skidsteer	8	hours	\$125.00	\$1,000
	Miscellaneous Equipment	1	l.s.	\$1,000	<u>\$1,000</u>
Item 2 Subtotal				\$7,320	
3	Abatement Pigeon Guano				
	Site Foreman	24	hours	\$100	\$2,400
	Laborers (3, each 24 hours)	72	hours	\$70	\$5,040
	Slurry Fill Below Ground Tank	1	l.s.	\$10,000	<u>\$10,000</u>
Item 3 Subtotal				\$17,440	
4	Poly Tank Removal and Disposal				
	Site Foreman	8	hours	\$100	\$800
	Laborers (2)	16	hours	\$60	\$960
	Skidsteer	8	hours	\$125	\$1,000
	Hauling to Landfill	8	hours	\$120	\$960
	Landfill Disposal Fee ³	2	each	\$450	\$900
	Miscellaneous Equipment	1	l.s.	\$500	<u>\$500</u>
Item 4 Subtotal				\$5,120	
5	Filter Beds, Piping, Steel Tanks, Miscellanous Removal				
	Site Foreman	60	hours	\$100	\$6,000
	Welders (2)	120	hours	\$100	\$12,000
	Laborers (2)	120	hours	\$70	\$8,400
	Excavator w/thumb	16	hours	\$250	\$4,000
	Skidsteer	60	hours	\$125	\$7,500
	Dumpster Rental	5	ea.	\$500.00	\$2,500
	Dumpster Hauling	15	ea.	\$750.00	\$11,250
	Landfill Disposal Fee ²	100	tons	\$35	\$3,500
	Power Washing Inside of Building	1	l.s.	\$2,500	\$2,500
Miscellaneous Equipment	1	l.s.	\$2,500	<u>\$2,500</u>	
Item 5 Subtotal				\$60,150	
6	Universal Waste Disposal (PCB Ballast and Flourescent Light Tubes)	1	l.s.	\$850	\$850
	Item 6 Subtotal				\$850
7	Drum Disposal (Polymers)	1	l.s.	\$500	\$500
	Item 7 Subtotal				\$500
8	Project Contingency	1	l.s.	\$11,653	\$11,653
	Item 8 Subtotal				\$11,653
Total Estimated Costs					\$129,533

Assumptions and Notes

¹ Includes labor and equipment mobilization, permitting, planning, per diem

² Assumes asbestos would be disposed of at the Valley County Landfill.

³ Assumes pigeon guano and general debris would be disposed of at the Hill County Landfill.

The estimate should be considered preliminary. Actual costs will be dependent on bids received from qualified contractors.