



August 15, 2024

Mr. Roger Burggraf  
830 Sheep Creek Road  
Fairbanks, Alaska 99709

RE: MONITORING WELL DECOMMISSIONING REPORT, GRANT MINE SITE, ESTER DOME, ALASKA

Dear Mr. Burggraf:

Shannon & Wilson prepared this report to summarize methods used to decommission five groundwater monitoring wells (M-1, M-2, M-3, ADNR-1, and the Trailer Court Well) at the Grant Mine site on Ester Dome (Figure 1). In a letter dated November 29, 2021, the Alaska Department of Environmental Conservation (DEC) requested that monitoring wells at the site be decommissioned prior to site closure with the DEC Contaminated Sites Program.

Monitoring wells were decommissioned in general accordance with the June 2016 *Alaska Best Management Practices - Maintaining or Decommissioning Water Wells and Boreholes* prepared by the Groundwater Protection Stakeholder Workgroup and our May 16, 2024 *Monitoring Well Decommissioning Work Plan*.

## WELL DECOMMISSIONING SUMMARY

We decommissioned the monitoring wells at the site on July 25, 2024 with the assistance of your heavy equipment operator and laborers. In preparation for backfilling, soil was excavated around the wells and the casings were cut approximately 2 feet below ground surface. The submersible pumps and drop pipes installed in wells M-1, M-2, and the Trailer Court Well were also removed.

The producing zones of the wells were backfilled with clean, pit-run gravel which was disinfected with a 50 part-per-million chlorine-water solution poured on the backfill material as it was slowly placed in the well. Bentonite chips were then poured down the well casing to form plugs approximately 8 to 10 feet in thickness above the producing zones. Additional backfill of disinfected gravel and bentonite plugs were then placed so that the thicknesses of gravel between the plugs did not exceed 100 feet. Approximately the top 15 feet of each well casing were backfilled with bentonite chips and capped with either a bag of cement (wells M-3, ADNR-1, and Trailer Court Well) or a glued PVC cap (wells M-1 and M-2). A 50-pound bag of bentonite chips was then poured on top of the capped wells and the

excavations around the wells were backfilled with native soil. Alaska Department of Natural Resources *Well Record of Decommissioning Forms* and photographs documenting the well decommissioning are enclosed to this report.

## SITE CLOSURE DISCUSSION

We understand that decommissioning monitoring wells at Grant Mine was prerequisite for DEC making a site closure determination for the contaminated site. Since the monitoring wells are now decommissioned, we recommend that DEC takes appropriate steps to close the site with institutional controls to ensure the protection of human health and the environment.

We appreciate the opportunity to assist you with this project. Please contact me at 907-458-3149 if you have any questions.

Sincerely,

SHANNON & WILSON

Andrew Frick  
Environmental Scientist

Enc. Figure 1 – Decommissioned Well Locations  
Well Record of Decommissioning Forms  
Project Photographs  
*Important Information About Your Geotechnical / Environmental Report*



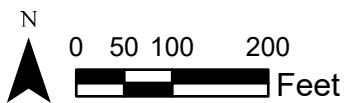
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Path: P:\GIS\FBX\31-1\FBX20000a\20094 Grant Mine\GIS\Grant\Pro\Grant\_Mine\_2023\Grant\_Mine\_2023.aprx User:ALF Date: 8/6/2024  
Citations: Pictometry International 2023 aerial imagery courtesy of FNSB GIS.

**LEGEND**

 Wells



**DECOMMISSIONED WELL LOCATIONS**  
Figure 1





Department of Natural Resources

Division of Mining, Land & Water

550 w 7th Ave., Suite 1020

Anchorage, AK 99501-3562

dnr.water.reports@alaska.gov



Department of Environmental Conservation

Division of Environmental Health, Drinking Water Program

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Anchorage, AK 99501

dec.eh.drinkingwater.reports@alaska.gov

State of Alaska



Well Record of Decommissioning (version 2021)

This form is intended to convey information regarding the decommissioning of a water well as required by both DEC and DNR. Add additional datasheets (e.g., site schematic and photos) as necessary.

Well Decommissioner or Contractor: Andrew Frick, Shannon & Wilson, Inc. 2355 Hill Road, Fairbanks, Alaska 99709. Well and Owner Details: Roger Burggraf, 499 St. Patrick Road, Fairbanks, Alaska. FNSB Subdivision 1N, 2W, Block 28, Lot 2808.

Please check all boxes that apply and provide all requested information. Do not check boxes that do not apply.

Details of Former Well: Public water system? No. Well Type: Drilled. Former Well Description: Well depth 365 ft, SWL 170 ft, Bedrock 45 ft, Casing type Steel, Diameter 6 inches, Well liner present.

\*\* Public Water System decommissioning may require additional documentation, please contact DEC in this regard.

Decommissioning notes: Monitoring well decommissioned as part of contaminated site closure process. Reason for well decommissioning: Excavation and Fill Details. Decommissioning process: Casing cut below grade, Casing fully removed, Casing filled with bentonite, Casing welded closed, Borehole refilled, Screen filled with gravel, Perforations filled with gravel, Excavated pit refilled, Pit area mounded.

\*\*\* Signatures required

Owner: Roger C Burggraf, Date: 8/1/15/2024. Decommissioner / Contractor: Andrew Frick, Date: 8/1/15/2024.

- 1) Submit this form to DNR and DEC (see contact info at top of form) within 45 days of decommissioning, as per 11 AAC 93.140 and 18 AAC 80.015. 2) Attach an original water well log. 3) Attach maintenance or water usage records and provide an adequate locational description. 4) This form is under development and is subject to change.

Please attach schematics and photos to further document the information provided on this form. This is particularly important for public water system wells and also any other wells that might impact the public water system.





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Please check all boxes that apply and provide all requested information. Do not check boxes that do not apply.

Details of Former Well: Public water system? No. Former Well Description: Original Driller's Name: Unknown, Well depth: 200, Date of completion: 1989

\*\* Public Water System decommissioning may require additional documentation, please contact DEC in this regard.

Decommissioning notes: Reason for well decommissioning: Monitoring well decommissioned as part of contaminated site closure process. Decommissioning process: Casing cut below grade, Well disinfected prior to decommissioning

\*\*\* Signatures required

Owner: Roger C Burggraf, Date: 8/1/2024. Decommissioner / Contractor: Andrew Frick, Date: 8/1/2024

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This form is intended to convey information regarding the decommissioning of a water well as required by both DEC and DNR. Add additional datasheets (e.g., site schematic and photos) as necessary.

Well Decommissioner or Contractor / Well and Owner Details form with fields for Name, Company, Address, Phone, Email, Owner's name, Well location, Meridian, Township, Range, Section, Quarters, GPS coordinates, and Well Name.

Please check all boxes that apply and provide all requested information. Do not check boxes that do not apply.

Details of Former Well / Former Well Description (Not required if original well log attached) form with tables for Well Type, Finish, Well depth, Date of completion, and various well characteristics.

\*\* Public Water System decommissioning may require additional documentation, please contact DEC in this regard.

Decommissioning notes / Reason for well decommissioning / Decommissioning process form with tables for monitoring well closure, excavation details, and decommissioning steps.

Signatures required

Signature lines for Owner (Roger C Burggraf) and Decommissioner/Contractor (Andrew Frick) with dates (8/15/2024).

- 1) Submit this form to DNR and DEC... 2) Attach an original water well log... 3) Attach maintenance or water usage records... 4) This form is under development...

Please attach schematics and photos to further document the information provided on this form. This is particularly important for public water system wells and also any other wells that might impact the public water system.





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Well Decommissioner or Contractor: Andrew Frick, Shannon & Wilson, Inc., 2355 Hill Road, Fairbanks, Alaska 99709. Well and Owner Details: Roger Burggraf, 499 St. Patrick Road, Fairbanks, Alaska. FNSB Subdivision 1N, 2W, Block 28, Lot 2808. Meridian: F, Township: 1N, Range: 2W, Section: 28, Quarters: SW1/4, SE1/4. GPS to 5 places: Latitude: 64.88100, Longitude: 147.96188, Datum: WGS 84. Well Name or AK WELTS Number: M-3, MW-A, or Old Mill Well; WELTS Log# 12934

Please check all boxes that apply and provide all requested information. Do not check boxes that do not apply.

Details of Former Well: Public water system? No: X. Former Well Description: Original Driller's Name: Thibedeau Drilling Contractors, Fairbanks, AK. Well depth (ft bls): 365. Date of completion: 11/3/1980. Well Type: Drilled Yes: X. Finish: Cased Yes: X. SWL (ft bls): 190. Flowing artesian: No: X. Driven Yes: X. Capped Yes: X. Bedrock (ft bls): 45. Flood prone site: No: X. Jetted Yes: X. Screened Yes: X. Casing type: Steel. Well condition: Good: X. Dug Yes: X. Perforated Yes: X. Diameter (inches): 8. Grouted: No: X. Unknown Yes: X. Well liner present Yes: X. Stickup (ft): 1.5. Well house: No: X.

\*\* Public Water System decommissioning may requires additional documentation, please contact DEC in this regard.

Decommissioning notes: Include notes regarding any deviations from state approved methods of decommissioning as described in 18 AAC 80.015e. Reason for well decommissioning: Monitoring well decommissioned as part of contaminated site closure process. Decommissioning process: Casing cut below grade Yes: X. Well disinfected prior to decommissioning Yes: X. Casing fully removed Yes: X. Plumbing removed from casing Yes: X. Casing filled with bentonite Yes: X. Liner (if any) removed Yes: X. Casing welded closed Yes: X. Electric wiring removed from site Yes: X. Borehole refilled Yes: X. Attached an original well log Yes: X. Screen filled with gravel Yes: X. Well log listed at DNR Yes: X. Perforations filled with gravel Yes: X. Local authorities notified Yes: X. Excavated pit refilled Yes: X. DEC notified of decommissioning Yes: X. Pit area mounded Yes: X. DNR notified of decommissioning Yes: X. Excavation and Fill Details: Placement method: Directly; see report. Excavation Depth (ft): 2. Type of fill used: Gravel/bentonite. Volume of fill (cu ft): 115 (gravel). # Bags of bentonite in casing: 18.

\*\*\* Signatures required

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- 1) Submit this form to DNR and DEC (see contact info at top of form) within 45 days of decommissioning, as per 11 AAC 93.140 and 18 AAC 80.015. 2) Attach an original water well log, if not available, a blank water well log form is available at http://dnr.alaska.gov/mlw/forms/#waterother if well details are known. 3) Attach maintenance or water usage records and provide an adequate locational description, including maps or sketches. Use additional pages as needed. 4) This form is under development and is subject to change. Please submit suggestions for changes or improvements to the addresses listed above.

Please attach schematics and photos to further document the information provided on this form. This is particularly important for public water system wells and also any other wells that might impact the public water system.





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Well Decommissioner or Contractor / Well and Owner Details form with fields for Name, Company, Address, Well location, Meridian, Township, Range, Section, Quarters, GPS to 5 places, and Well Name.

Please check all boxes that apply and provide all requested information. Do not check boxes that do not apply.

Details of Former Well / Former Well Description (Not required if original well log attached) form with tables for Well Type, Finish, Casing type, Diameter, and Well house.

\*\* Public Water System decommissioning may requires additional documentation, please contact DEC in this regard.

Decommissioning notes / Reason for well decommissioning / Decommissioning process form with tables for Monitoring well decommissioned as part of contaminated site closure process, Excavation and Fill Details, and Decommissioning process.

\*\*\* Signatures required

Signature lines for Owner and Decommissioner / Contractor with handwritten signatures and dates.

- 1) Submit this form to DNR and DEC (see contact info at top of form) within 45 days of decommissioning, as per 11 AAC 93.140 and 18 AAC 80.015.
2) Attach an original water well log. If not available, a blank water well log form is available at http://dnr.alaska.gov/mlw/forms/#waterother if well details are known.
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Photo 1: Backfill in progress at well M-3.



Photo 2: Backfill in progress at well M-3.





Photo 3: Bentonite chips placed within the top fifteen feet of well casing at well M-3.



Photo 4: Cement cap placed to complete the backfilling of well M-3.





Photo 5: Bentonite chips placed on top of the cement cap at well M-3.



Photo 6: Location of well M-3 after the excavation around the well was backfilled.





Photo 7: Excavation around the Pod Well in preparation for backfill.



Photo 8: Backfill in progress at the Pod Well.





Photo 9: Bentonite chips placed within the top fifteen feet of well casing at the Pod Well.



Photo 10: Cement cap placed to complete the backfilling of the Pod Well.





Photo 11: Bentonite chips placed on top of the cement cap at the Pod Well.



Photo 12: Location of the Pod Well after the excavation around the well was backfilled.





Photo 13: Backfill in progress at the Trailer Court Well.



Photo 14: Backfill in progress at the Trailer Court Well.





Photo 15: Bentonite chips placed within the top fifteen feet of well casing at the Trailer Court Well.



Photo 16: Cement cap placed to complete the backfilling of the Trailer Court Well.





Photo 17: Bentonite chips placed on top of the cement cap at the Trailer Court Well.



Photo 18: Location of the Trailer Court Well after the excavation around the well was backfilled.





Photo 19: Bentonite chips placed within the top fifteen feet of well casing at well M-2.



Photo 20: PVC cap glued on top of the well casing at well M-2.





Photo 21: Bentonite chips placed on top of the PVC cap at well M-2.



Photo 22: Location of well M-2 after the excavation around the well was backfilled.





Photo 23: Backfill in progress at well M-1.



Photo 24: Bentonite chips placed within the top fifteen feet of well casing at well M-1.





Photo 25: PVC cap glued on top of the well casing at well M-1.



Photo 26: Bentonite chips placed on top of the PVC cap at well M-1.





Photo 27: Location of well M-1 after the excavation around the well was backfilled.

## Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.



#### A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

#### THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

#### BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

#### READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

**The preceding paragraphs are based on information provided by the GBA, Silver Spring, Maryland**