



**December 2024
Groundwater Sampling Summary
Sand Management Site**

Boone, Iowa

December 2024

Prepared by



1631 NW 30th Court
Ankeny, Iowa 50023

SEE-001-024-391

1.0 INTRODUCTION

Besser Quinn owns a facility known as the Besser Quinn Sand Management Site. This site has received used foundry sand since 2000. The site is under closure procedures and is operating under DNR ID #08-BUD-08-99 as prepared by the Iowa Department of Natural Resource. The BUD requires groundwater monitoring for four quarters of a year and thence semi-annually. This report presents the findings of a sampling event during June 2023 to perform chemical analysis consistent with the BUD. The former chemical analyses were associated with the chemical analyses required for sand being deposited at the site. The semi-annual sampling program will continue with the next sampling event anticipated in November or December 2024.

1.1 OWNER INFORMATION

Besser Quinn Machine and Foundry
Division of the Besser International Pipe Machinery Corporation
1518 12th Street
Boone, Iowa 50036

Besser-Quinn Vice President - Pipe and Precast
Brian Christle - 515-432-3553

1.2 SITE LOCATION INFORMATION

The Quinn Quarry Reclamation site is located along Boone County Road E-41, which was formerly USA Highway 30. The street address of the site is 1159 216th Drive. Figure 1 notes the location of the Besser Quinn Sand Management Site.

1.3 EVENT DISCUSSION

This report is directed at presenting chemical analysis of the December 2024 sampling event. A detailed discussion will be presented in the 2025 Annual report that will be prepared following the first sampling in 2025. That event is expected to take place in May or June 2025.

2.0 SUBSURFACE CONDITIONS AND MONITORING WELLS

Table 1
Groundwater Depth
December 2024

Monitoring well	Depth to water	Height of Riser	Well Screen	Surface Elevation	Groundwater Elevation August 2024	Previous Elevation December 2023
QN	16.18	2.60	26'-36'	909.82	890.67	893.64
QNE	30.57	3.33	18'-50'	919.14	886.61	888.57
QNW	46.57	3.04	18'-50'	922.01	875.02	875.44
QS	41.54	3.13	18'-50'	916.18	874.42	874.64
QE	40.21	2.72	24'-34'	915.76	874.08	875.55
QW	dry	3.05	34'-44'	912.19		

3.0 REVIEW OF GROUNDWATER ANALYSIS

Groundwater samples are typically obtained on two semi-annual occasions with the most recent event taking place on December 1, 2023. The samples were subjected to the analysis outlined in the BUD. Table 2 presents some of the concentration of detected materials in the groundwater samples. The full analysis is in the appendix. The BUD lists certain VOC compounds for analysis, further the BUD states that the groundwater analysis need not be performed on the VOC compounds if there are not found to be present in the sand being placed at the site. Per the most recent sand analysis, no VOCs were noted as present.

Table 2
Historic Groundwater Analysis, ppm
March, June, September & December 2020, June 2021 & December 2021, June 2022
March 2023, June 2023, December 2023, August 2024, December 2024

Monitoring well	Manganese Total Metal	Molybdenum Total Metal	Barium Total Metal	Boron Total Metal	Cobalt Total Metal	Nickel Total Metal
QN – Mar. 2020	1.15	0.358	0.205	0.544	0.0039	0.019
QN – Jun 2020	0.945	0.265	0.089	0.479	0.0035	0.020

QN-Sept. 2020	0.857	0.246	0.079	0.481	0.0029	0.017
QN – Dec. 2020	1.10	0.250	0.104	0.520	0.0039	0.016
QN – June 2021	0.955	0.223	0.122	0.661	0.0034	0.013
QN – Dec. 2021	0.614	0.184	0.126	0.634	0.0025	0.017
QN – June 2022	0.333	0.024	0.056	0.124	0.0008	0020
QN – Dec. 2022	0.922	0.134	0.043	0.523	0.0059	0.025
QN – March 2023	0.782	0.124	0.0445	0.654	0.0027	0.016
QN – June 2023	0.689	0.115	0.0881	0.603	0.0061	0.0121
QN – Dec. 2023	0.691	0.090	0.0594	0.488	0.0025	0.169
QN – Aug. 2024	5.81	0.0147	0.0486	0.0374	0.0041	0.0094
QN – Dec. 2024	5.16	0.0143	0.0444	0.294	0.0100	0.0089
QNE – Mar. 2020	1.46	0.115	0.149	1.15	0.0038	0.016
QNE – Jun 2020	0.616	0.021	0.104	0.476	0.0019	0.018
QNE-Sept. 2020	0.698	0.023	0.094	0.0752	0.0011	0.015
QNE – Dec. 2020	0.604	0.023	0.097	0.739	0.0013	0.012
QNE – June 2021	0.397	0.020	0.096	0.749	0.0006	ND
QNE – Dec. 2021	0.431	0.020	0.097	0.730	0.0007	ND
QNE – June 2022	0.313	0.018	0.100	0.608	0.0005	ND
QNE – Dec. 2022	0.399	0.014	0.096	0.632	0.0043	ND
QNE – Mar2023	0.639	0.0129	0.0907	0.671	0.0011	0.0053
QNE – June 2023	0.347	0.0117	0.100	0.620	0.0062	0.0044
QNE – Dec. 2023	0.555	0.0127	0.0992	0.625	0.0027	0.0066
QNE –Aug. 2024	0.042	0.0121	0.109	0.660	0.0009	0.0052
QNE – Dec. 2024	0.421	0.0117	0.100	0.622	0.0013	0.0044
QNW -Mar. 2020	1.04	ND	0.226	0.174	0.0033	ND
QNW – Jun. 2020	0.302	ND	0.170	ND	0.0074	0.010
QNW-Sept. 2020	0.056	ND	0.245	0.198	0.0004	ND
QNW- Dec. 2020	0.045	ND	0.287	0.247	0.0004	ND
QNW – June 2021	0.701	ND	0.260	0.163	0.0033	ND
QNW- Dec. 2021	0.714	ND	0.309	0.0277	0.0067	ND
QNW – June 2022	5.24	0.018	1.82	0.122	0.0804	0.100
QNW – Dec. 2022	9.88	0.020	1.40	0.296	0.0581	0.091
QNW -Mar 2023	0.105	ND	0.195	0.147	0.0007	0.0040
QNW– June 2023	0.512	ND	0.249	0.138	0.0030	0.0056
QNW – Dec. 2023	49.9	0.155	9.41	1.29	0.727	1.37
QNW – Aug. 2024	4.42	0.0077	0.314	0.211	0.0087	0.0181
QNW – Dec. 2024	1.49	0.0042	0.248	0.220	0.0027	0.0051
QS – Mar. 2020	16.6	0.02	2.99	0.162	0.227	0.338
QS – Jun. 2020	0.658	ND	0.256	ND	0.0103	0.021
QS-Sept. 2020	0.419	ND	0.250	ND	0.0064	0.015
QS – Dec. 2020	1.08	ND	0.384	ND	0.0135	0.025

QS – June 2021	0.429	ND	0.261	0.114	0.007	0.012
QS – Dec. 2021	0.078	ND	0.202	ND	0.0038	ND
QS – June 2022	20.0	0.022	3.89	0.139	0.226	0.336
QS – Dec. 2022	12.0	0.014	2.68	0.135	0.192	0.229
QS – Mar 2023	ND	ND	0.188	ND	ND	ND
QS – June 2023	2.42	ND	0.719	0.106	0.0357	0.0456
QS – Dec. 2023	22.5	0.0670	22.5	ND	1.62	1.89
QS – Aug. 2024	No Sample	No Sample	No Sample	No Sample	No Sample	No Sample
QS – Dec. 2024	0.715	ND	0.366	ND	0.0108	0.0139
QE – Mar. 2020	1.29	ND	0.120	0.293	0.0048	0.011
QE – Jun. 2020	1.02	ND	0.114	0.185	0.002	ND
QE-Sept. 2020	0.808	ND	0.063	0.524	0.0004	ND
QE – Dec. 2020	0.776	0.010	0.052	0.523	0.0042	0.015
QE – June 2021	2.07	ND	0.0065	0.504	0.0017	ND
QE – Dec. 2021	3.01	ND	0.077	0.489	0.0024	0.015
QE – June 2022	0.719	ND	0.069	ND	0.0023	ND
QE – Dec 2022	1.5	0.019	0.152	0.645	0.0293	0.043
QE – Mar 2023	1.39	0.0041	0.637	0.167	0.0066	0.0157
QE – June 2023	3.03	0.0040	0.0778	0.385	0.0076	0.0116
QE – Dec 2023	1.48	0.0076	0.0716	0.629	0.0085	0.0248
QE – Aug 2024	2.86	0.0071	0.0659	0.0577	0.0058	0.0130
QE – Dec 2024	1.89	0.0129	0.0784	0.629	0.0163	0.0447
QW – Mar. 2020	0.082	ND	0.176	ND	0.0012	ND
QW – Jun. 2020	0.024	ND	0.151	ND	0.0004	ND
QW-Sept. 2020	0.023	ND	0.156	ND	0.0004	ND
QW – Dec. 2020	0.049	ND	0.170	ND	0.0009	ND
QW – June 2021	0.504	ND	0.284	ND	0.0082	0.016
QW – Dec. 2021	0.059	ND	0.189	ND	0.0013	ND
QW – June 2022	2.02	ND	0.628	ND	0.0308	0.053
QW – Dec. 2022	Dry	Dry	Dry	Dry	Dry	Dry
QW – Mar 2023	Dry	Dry	Dry	Dry	Dry	Dry
QW – June 2023	Dry	Dry	Dry	Dry	Dry	Dry
QW – Dec. 2023	Dry	Dry	Dry	Dry	Dry	Dry
QW – Aug. 2024	Dry	Dry	Dry	Dry	Dry	Dry
QW – Dec. 2024	Dry	Dry	Dry	Dry	Dry	Dry

Table 3
Groundwater Analysis to Non-Protected Groundwater Std., ppm
December 2023

Monitoring well	Manganese Total Metal	Molybdenum Total Metal	Barium Total Metal	Boron Total Metal	Cobalt Total Metal	Nickel Total Metal
Non-Protected GW standard	4.9	0.2	10	30	0.01	0.7
QN –Dec. 2024	5.16	0.0143	0.0444	0.294	0.0100	0.0089
QNE – Dec. 2024	0.421	0.0117	0.100	0.622	0.0013	0.0044
QNW – Dec. 2024	1.49	0.0042	0.248	0.220	0.0027	0.0051
QS – Dec. 2024	0.715	ND	0.366	ND	0.0108	0.0139
QE –Dec. 2024	1.89	0.0129	0.0784	0.629	0.0163	0.0447
QW – Dec. 2024	Dry	Dry	Dry	Dry	Dry	Dry

Table 4
Groundwater Analysis to Protected Groundwater Std., ppm
December 2023

Monitoring well	Manganese Total Metal	Molybdenum Total Metal	Barium Total Metal	Boron Total Metal	Cobalt Total Metal	Nickel Total Metal
Protected GW standard	0.3	0.04	2.0	6.0	0.0021	0.1
QN – June 2023	5.16	0.0143	0.0444	0.294	0.0100	0.0089
QNE – June 2023	0.421	0.0117	0.100	0.622	0.0013	0.0044
QNW – June 2023	1.49	0.0042	0.248	0.220	0.0027	0.0051
QS – June 2023	0.715	ND	0.366	ND	0.0108	0.0139
QE – June 2023	1.89	0.0129	0.0784	0.629	0.0163	0.0447
QW – June 2023	Dry	Dry	Dry	Dry	Dry	Dry