



# AJM, Incorporated

1805 Kenyon Drive, Bozeman, MT 59715

(406) 600-2045

e-mail: [dennis@ajminc.net](mailto:dennis@ajminc.net)

[lars@ajminc.net](mailto:lars@ajminc.net)

[www.environmentalmontana.com](http://www.environmentalmontana.com)

A Full Service Environmental Company

April 30, 2025

Mr. William Bergum  
Montana Department of Environmental Quality  
PO Box 200901  
Helena, MT 59620-0901

**RE: Work Plan to Install SVE and Air Sparge System along with Monitoring Wells, and Conduct Groundwater Sampling at Robins Service, 1302 Towne, Glendive, MT Dawson County. MT Facility ID #11-02466, Release 3854, WP ID #35025**

Dear Mr. Bergum:

Pursuant to your letter of March 4, 2025, AJM Inc. has prepared the following work plan to install a remedial system to promote shallow groundwater and vadose zone cleanup. This will be accomplished by the installation of an air sparge (AS) system and a soil vapor extraction (SVE) system. A pilot test completed in the summer of 2024 showed very good results from both systems tested and strong hydrocarbon extraction when both systems were working. This work plan is for the installation of 6 additional AS points and 5 SVE wells along with associated equipment, and the installation of 2 additional downgradient wells to evaluate a nearby sewer line and one year of semi annual groundwater sampling.

## Site Location

The facility is located at 1302 West Towne Ave, Glendive, Montana 59330. The legal description is NE¼, NE¼ Section 34, Township 16 North, Range 55 East in Dawson County, Montana (see Figure 1)

## Site History

The facility has a long history as a service station, with above ground fuel storage tanks and associated underground piping on the northern portion of the site and dispensers on the southern side. During underground piping removal in 1999, soil closure samples collected beneath the former dispensers showed hydrocarbon impacts that exceeded DEQ's Risk Based Screening Levels (RBSLs). For this reason, approximately 350 cubic yards of soil were excavated from that area, taken to a land farm, and replaced with clean backfill, but the extent and magnitude of the release was not determined at that time. From June of 2000 to July of 2013, twelve monitoring wells were installed around the site, all by Haz-Tech Drilling Inc. In July of 2013, during the installation of RS-9 immediately east of where the above-

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ground storage tanks (AST) had been prior to removal, significant soil impacts were observed from two feet below ground surface (bgs) to near groundwater depth. Subsequent work in September of 2014 included excavation of approximately 500 yards of contaminated soils from that area, which resulted in the destruction of RS-9, so it was replaced by RS-13 a few feet away in October 2014.

Additional well installation on the south side of the building in 2024 show high concentrations of BTEX in the groundwater. A pilot test for AS and SVE was completed during that time frame and show very good results for groundwater remediation.

## **In-Situ Air Sparge and Soil Vapor Extraction**

### **Soil Vapor Extraction (SVE) Well Installation**

Based on finding during the pilot test, a 3 hp blower was connected to well MW-6 and a manometric gauge indicated the vacuum found at other nearby wells. With data showing a radial influence of approximately 25 feet., it is proposed to install 5 SVE points to provide adequate vapor catchment from the vapors that will be produced by the AS system (see figure 2). Each well will be drilled to 12 feet below ground surface (bgs) (just above the water table). This will allow for a good capture radius without causing groundwater intrusion into the wells.

#### **Well specs: 5 Wells**

- 2-inch slotted flush threaded PVC to be set from 5 to 12 feet bgs.
- Solid casing to grade
- 10-20 sand 12 to 4 feet bgs
- Bentonite 4 -2 feet bgs
- 12-inch well boxes will be used on the final product.

All SVE wells will be connected with 2-inch PVC casing via trenching back to a central shed to be placed on the west side of the building near a privacy fence and light pole. Each well head will be completed with fittings that will allow the vacuum to be measured for data collection. This data can then be used to adjust ball valves at the shed to allow for even vacuum at the various SVE point per blower.

Two 2 Hp single phase blowers will be used to provide the adequate volume of vapor capture. Each blower will have separate water knockout drums, carbon drums along with vents and mufflers. Appropriate motor starters and timers will be fitted with all systems.

Due to the high soil vapor PID testing which showed over 3500 ppm, AJM will install activated carbon capture drums at each blower to absorb the hydrocarbon vapors prior to venting for the

first 6 months of operation until PID levels come down to less than 500 ppm prior to carbon drum.

### **Install Air Sparge Point**

Based on the sparge point that was installed in 2024 as part of the pilot test, the 2 Hp rotary vain system was used to blow air down a 2-inch sparge point that has been completed to 25 feet bgs. To evaluate the test, once the system had been running for approximately 30 minutes, groundwater mounding was happening in wells that were approximately 30 feet from the sparge point. Based on this evidence and from past experience along studies (Kerfoot-KV Associated, Inc), sparge points placed at 10 feet below groundwater in a sand formation will typically produce a radial bubble influence of  $\frac{3}{4}$  of the distance seen in the furthest groundwater mounding collected at the tested wells. We anticipate a bubble radius between 15 and 20 feet. Allowing bubble influence overlapping, AJM will install 6 additional sparge points. To optimize pressure from the compressor to the sparge point, AJM will use 1-inch microporous sparge points.

The 5 points will be installed as follows:

- Using a small auger rig, boreholes will be drilled to 25 feet bgs (shale bedrock is found at this depth).
- NO soil sampling will be conducted as adequate data already exists in this portion of the site.
- Install 1-inch by 24-inch sparge point with solid sch 40 to surface
- Sand (native or added 10-20 Colorado silica) from total depth to 1-foot above sparge point.
- Coated bentonite pellets from 22 feet to 12 feet bgs.
- Complete with either normal bentonite or sand to 2 feet bgs.
- Run 1-inch PVC from each point back to remediation shed.
- Steel 1-inch pipe will be used for the last 10 feet of underground pipe to allow for heat dissipation.

Install Three 2 Hp single phase rotary compressors to generate the required volume of air for each of the sparge point. All appropriate fitting to allow for adjustments to the system including pressure gauges and ball valve to optimize flow of air into the groundwater. All fittings from the compressor to the underground lines will be steel. This provides for a more stable system as heat generated by the compressor generally will cause PVC to fail. Appropriate motor starters, and timers will be installed.

### **Trenching**

All trenching will be at about 24 inches below grade with a slight grade toward the well heads. This will allow for any condensation to flow back to the wells. Crushed gravel bedding will be used and then road base will be compacted above that to finish the trench work. Any concrete that was cut and removed will be replaced appropriately to handle large vehicle weight. An estimated 360 feet of trench will be done. It is estimated that 11 yards of concrete will need to be replaced.

### **Electric Connection**

It is anticipated that approximately 100 amp service will be need per discussions with TSD and Local electrician. Montana Dakota Utility will require an underground line be installed from there transformer pole in the alley to the remediation shed 80 feet away. The electrician will bring in a 200 amp service to adhere to local safety standards and the service does not cost any more than a 150 amp service. This single phase line will be connected to the systems via a breaker box with 10 breakers. All systems will be wired for 230 volt. This will help reduce the amps needed to run the systems and help reduce electrical costs.

### **System Start up**

At first, it is anticipated that the SVE system will be allowed to run for the first few weeks without the sparge system. This will allow for an appropriate volume of high impacted vapors to be removed from the vadose zone. With the placement of the SVE wells, AJM is also providing good vapor intrusion prevention under the building slab. After the first week(s), AJM will start the AS system so that good pulsing of the groundwater will be directed so that the most outer sparge points are activated to help mound the groundwater to help push impacts toward the center of the site for a duration of about 5 hours with the SVE system at full activation. Then the AS points near the center of the impacted area will be pulsed in shorter durations. All these measurements will be evaluated in the field where PID sampling will be conducted to determine vapor concentrations along with air flow (cfm) measurements will be taken in both sparge and SVE system laterals. **Monthly** system inspection will occur to ensure that the system is running properly and adjust system as needed for the first 12 months of operation.

### **Monitoring Well Installation**

Per recommendations in the last report, AJM will install two (2) additional downgradient wells near the local sewer line to determine if any impacts from the site are migrating along this corridor.

Each well will be drilled to approximately 20-25 feet depending on where the slate bedrock occurs. Using either a push type rig or small auger rig, the boreholes will be sampled every 5 feet to groundwater. If PID reading do not show any impacts, soil samples will not be collected. The wells will be constructed as follows:

- 2-inch PVC 0.02 slotted casing from total depth (TD) to five feet bgs.
- Solid flush threaded PVC casing to surface
- 10-20 Colorado silica sand from TD to one foot above the screened interval and then hydrated bentonite to 2 feet bgs.
- It is anticipated that the drilling will take place along the boulevard right of way in a grass area. City encroachment permits ,may be necessary.

The wells will be developed using a 2-stage downhole pump that will be surged. Wells will be purged until turbidity inits range in the 10ntu units. All imp[acted water produced will be

brought back to site and placed in the gravel parking area above the sparge points. It is anticipated that approximately 40-50 gallons will be generated.

### **Groundwater Sampling**

As per the DEQ correspondence, groundwater samples will be obtained from monitoring wells RS-1, 2, 5 along with wells MW-1 through MW-8 (11 wells) semiannually. Depth to water will be collected from all other wells.

Groundwater sampling will be conducted in accordance with the DEQ and AJM Inc. Quality Assurance Project Plan (QAPP). Depth to groundwater measurements will be collected, along with pH, turbidity, temperature, conductivity, and oxidation/reduction potential (ORP). A low flow sample technique will be employed using peristaltic pump to obtain the samples. All non-dedicated equipment used for purging, sampling, or depth measurements will be decontaminated with an Alconox wash solution, followed by a distilled water triple rinse prior to each use. All water from development, purging, sampling, and decontamination procedures will be disposed of in an environmentally responsible manner within the site boundaries.

Analyze samples for EPH and VPH, If the EPH screening result shows total extractable hydrocarbon concentrations exceeding 1,000 µg/L, a full EPH fractionation will be completed.

### **Report Preparation**

AJM will complete and submit the following reports;

- AR-03 Soil Boring and Groundwater Monitoring Well Installation Report.
  - Well Development Documents
  - Appended soil boring and monitoring well logs
- One (1) Intermediate Data Submittals (after first GW sampling event) to include updated GW tables and a brief discussion of sampling and facility map.
- AR-07 following standardized DEQ requirements to include the following sections:
  - System Installation and maintenance logs
  - Final GW sample
  - Groundwater data tables,
  - Laboratory analytical data,
- 3 completed Data Validation Summary Form (one soil, and 2 groundwater),
- Update Release Closure Plan.

A cost work sheet and groundwater sampling unit cost work sheet for this scope of work has been included in Appendix A. Work at this site can begin upon written approval by the DEQ. It is anticipated that this work can be completed with full reporting to the DEQ by November 2026. Please do not hesitate to call if there are any questions or if we can provide any additional information.

Sincerely,

*Dennis Franks*

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AJM Inc.

By: Dennis Franks, President

ecc: Robin Robins., 206 Rd. 261, Glendive, MT 59330  
PTRCB Staff, PO Box 200902, Helena, MT 59620-0902

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## APPENDIX A

Figure 1 -Site Location

Figure 2 – Site Map

Sparge, SVE, Monitoring Well Cost Work Sheet

Trenching Cost Estimate

Electrical Cost

TSD System Build Cost

OWNERS: Darwin L. Stedman  
Address: 1302 West Towne St. Glendive, MT. 59330  
Geo Code: 16-2612-34-1-01-02-0000

For: AJM Enviromental Inc.  
Dennis Franks, Owner / President

PURPOSE: Monitoring Well / Site Plan Survey

DATE: September 17, 2024

Project No: 24-060

# Monitoring Well / Site Plan Survey

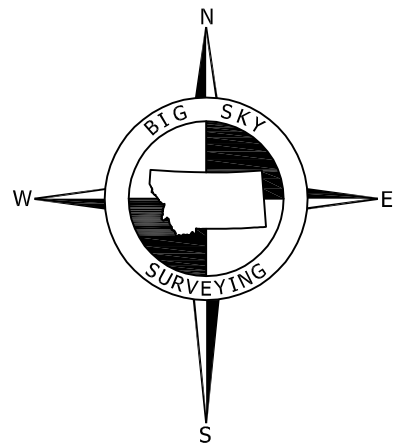
NE1/4 NE1/4, Section 34, T 16 N, R 55 E, P.M., M.  
Dawson County, Montana

**BIG SKY**  
**Surveying**  
P.O. BOX 170  
SIDNEY, MT. 59270  
406-230-9452

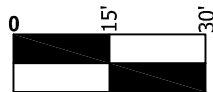
## LEGEND

- Sparge Point
- Monitoring Well & Elev. (Installed by others)
- ◻ Monitoring Well & Elev. (Installed by AJM Inc.)
- ⚡ Power Pole
- ☎ Phone Pedistall
- ⊙ Sewer Manhole
- ⚙ Fire Hydrant
- PWR — Power Lines (Overhead)
- GAS — Gas Lines (Marked)
- PH — Phone Lines - (Marked or as noted)
- W — Water Lines (Approximate)
- SS — Sewer Lines (Approximate)

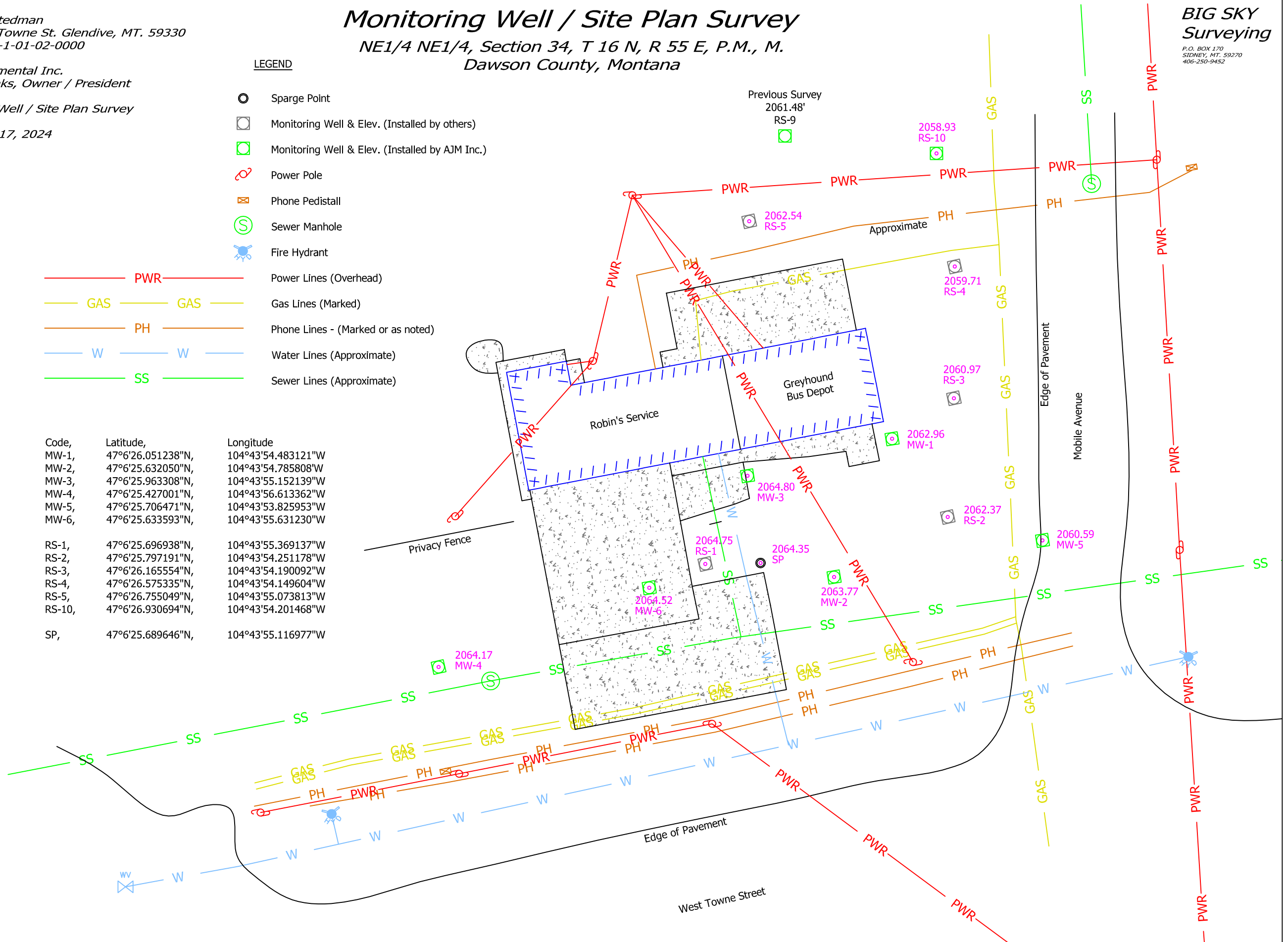
Code,	Latitude,	Longitude
MW-1,	47°6'26.051238"N,	104°43'54.483121"W
MW-2,	47°6'25.632050"N,	104°43'54.785808"W
MW-3,	47°6'25.963308"N,	104°43'55.152139"W
MW-4,	47°6'25.427001"N,	104°43'56.613362"W
MW-5,	47°6'25.706471"N,	104°43'53.825953"W
MW-6,	47°6'25.633593"N,	104°43'55.631230"W
RS-1,	47°6'25.696938"N,	104°43'55.369137"W
RS-2,	47°6'25.797191"N,	104°43'54.251178"W
RS-3,	47°6'26.165554"N,	104°43'54.190092"W
RS-4,	47°6'26.575335"N,	104°43'54.149604"W
RS-5,	47°6'26.755049"N,	104°43'55.073813"W
RS-10,	47°6'26.930694"N,	104°43'54.201468"W
SP,	47°6'25.689646"N,	104°43'55.116977"W



Basis of Bearings  
Montana State Plane Coordinates - NAD 83  
International Feet. Grid.  
Elevations - GRS80, Geoid 18



Scale 1" = 30'





SVE Wells 30' Diameter Radius

**OWNERS:** Darwin L. Stedman  
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 16-2612-34-1-01-02-0000

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 Dawson County, Montana

**BIG SKY**  
 Surveying  
 P.O. BOX 170  
 GLENDEVE, MT. 59330  
 406-230-9452

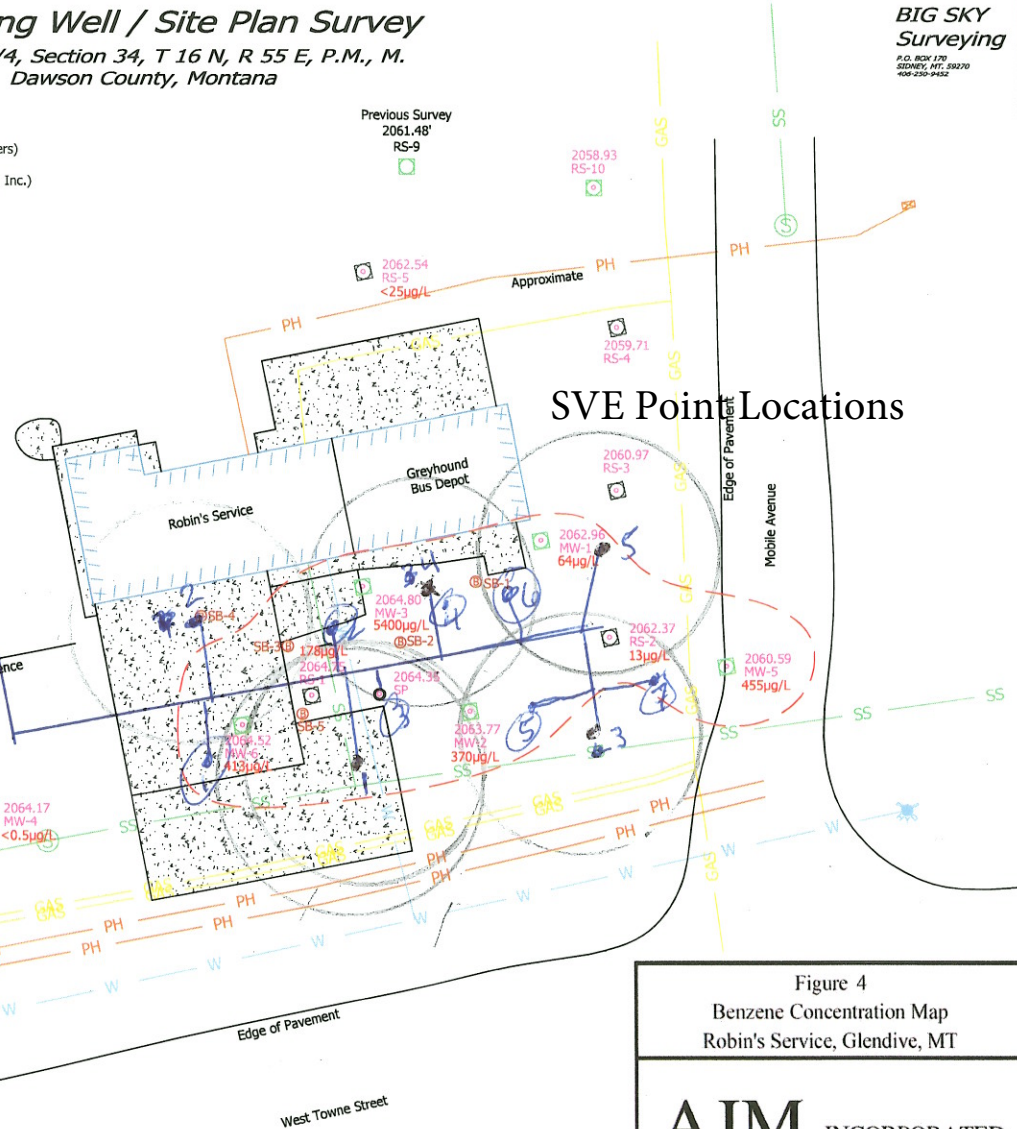
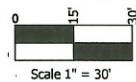
## LEGEND

- Sparge Point
- Monitoring Well & Elev. (Installed by others)
- Monitoring Well & Elev. (Installed by AJM Inc.)
- 178µg/L Benzene Concentration (µg/L)
- Estimated Hydrocarbon Plume Boundary
- ⊙ Sewer Manhole
- ⚡ Fire Hydrant
- ⊕ Soil Boring
- GAS — Gas Lines (Marked)
- PH — Phone Lines - (Marked or as noted)
- W — Water Lines (Approximate)
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SP,	47°6'25.689646"N	104°43'55.116977"W



Basis of Bearings  
 Montana State Plane Coordinates - NAD 83  
 International Feet. Grid.  
 Elevations - GRS80, Geoid 18



## SVE Point Locations

Figure 4  
 Benzene Concentration Map  
 Robin's Service, Glendive, MT

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① = Sparge Pt 7 Sparge Pts  
 1 = SV Pt. 5 SVE Pts

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— Estimated Hydrocarbon Plume Boundary

○ Sewer Manhole

⚡ Fire Hydrant

⊕ Soil Boring

Gas Lines (Marked)

Phone Lines - (Marked or as noted)

Water Lines (Approximate)

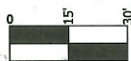
Sewer Lines (Approximate)

GAS GAS  
PH PH  
W W  
SS SS

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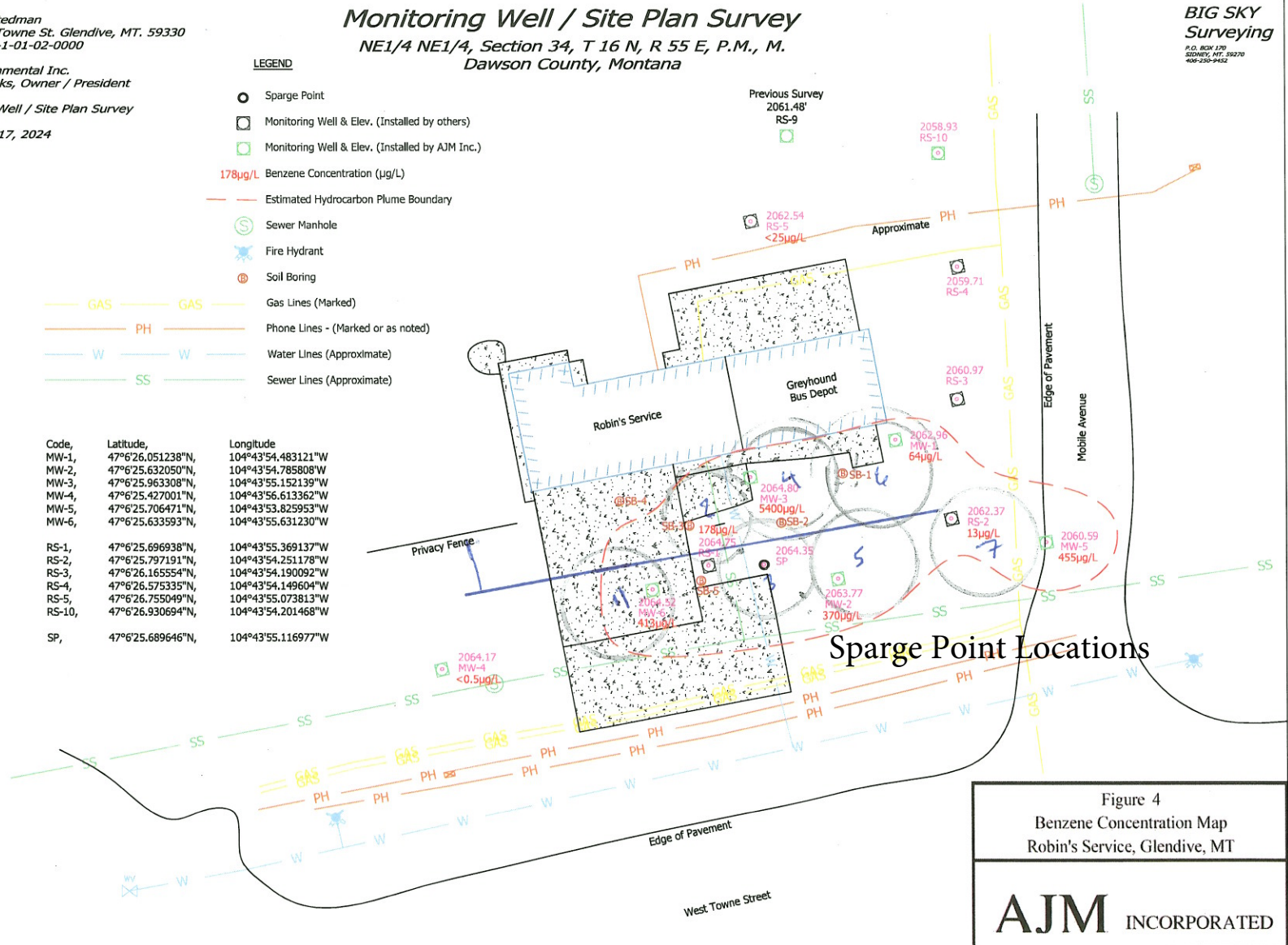


Figure 4  
Benzene Concentration Map  
Robin's Service, Glendive, MT

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