

## Mining Road Maintenance Using a Magnetic Sweeper Case Study



After being contacted by a salt mine experiencing metal debris issues that are regularly causing expensive tire punctures, Bluestreak Equipment sent a towable magnetic sweeper to test the viability of using magnets as a part of regular mining road maintenance.

### Hazards on the Mining Roads

Underground mines face continuous metal debris problems due to the constant heavy machinery use / maintenance, mining operations, and rock bolts falling from the ceiling and walls. Therefore, any vehicles operating underground get tire punctures regularly which can get very expensive when considering the cost of downtime and tire replacement for heavy equipment like loaders and dump trucks.



Keeping metal debris out of the tunnel roads and away from expensive tires is paramount for efficient and headache-free operation underground. A salt mine reached out to us after spending a six-figure sum on tire replacements in the span of a week, they wanted to see if a magnetic sweeper would work to clear up their metal debris problem.

The mine had tried an electro-magnet in the past but found it didn't have enough power to pull metal debris from heights where the debris wouldn't get knocked off by bumps in the road as they drove.





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### Clearing a Lane

Bluestreak Equipment sent one of our Caiman sweepers to an underground salt mine to prove the viability of using permanently charged magnetic sweepers as a regular part of tunnel road maintenance. The maintenance crew ran the Caiman for about an hour at speeds varying from 10km/h - 30km/h with a 3.5" sweeping height (well over our recommended sweeping speed) and collected the debris pictured here. You'll see in the collection: a mining head tooth (a), mining head tooth receiver (b), approximately 2 feet of 12mm rock bolt shaft (c), and many rock bolt support plates (d).



### The Two-Week Difference

This mine's problem originates from grading the tunnel roads which pushes the fallen rock bolts and debris from the side of the roads into the center which causes punctures. They found by having idle maintenance helpers run the Caiman down the roads with their Kubota UTVs, they can easily improve road safety. The photo shows their collected debris pile after two weeks of sweeping when time permitted.

To combat this problem Bluestreak Equipment is working with a few mines to develop a comprehensive magnetic cleaning system that attaches to a grader which eliminates the labour required when sending a tow vehicle out specifically to sweep the roads.





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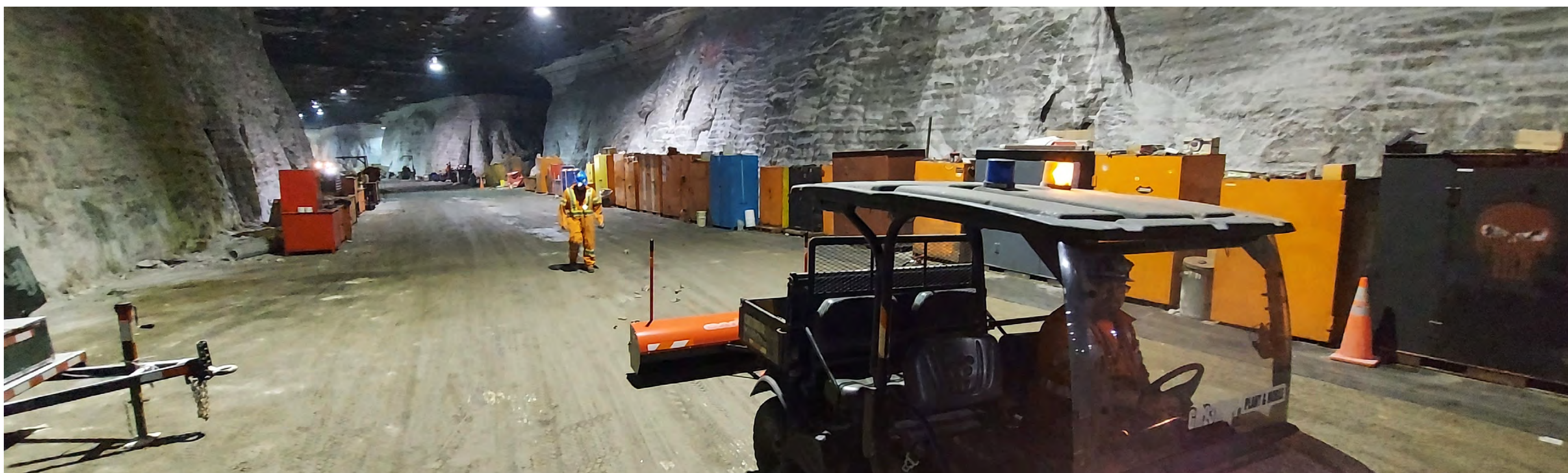


## Benefits of Maintaining Mining Roads Using a Magnetic Sweeper

### Safety

Metal debris inevitably ends up on road surfaces from wall anchor degradation, vehicle damages, and parts falling off maintenance trucks and trailers. This can create a safety issue because debris can get caught between tire treads at low speeds and then will be ejected as the vehicle's speed increases. Creating a projectile that can damage equipment or injure personnel following behind. Tire punctures also alter the handling of a vehicle and could cause an operator to lose control.

Controlling the amount of metal debris on roads is critical to consistent and safe operation; a designated magnetic sweeper to keep the level of debris at a safe level is an essential addition to regular road maintenance. Using a magnetic sweeper should be easy and convenient to ensure that workers are willing to do the job regularly, this is why Bluestreak builds features into our sweepers that match the application its being used in.



### Savings

Machines used in mines have massive tires which can cost a small fortune to replace, the cost comes from both replacing the tire (parts & labour) and the cost of downtime associated with that machine, operator, and workers processing at either end of the down machine.

The return on investment for a magnetic sweeper built for mining road maintenance is very high, even one puncture on a heavy loader can cost the mine more than the price of a purpose-built magnetic sweeper. Being proactive in reducing the risk of a puncture is as easy as having a scheduled debris cleaning time with a magnet like the Caiman or attaching a magnet to something that is constantly running the roads like a grader.

Pictured Below is another mining tooth collected by our Caiman magnet.





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### Next Steps

Because a grader is constantly travelling all over the mine it is a great candidate to mount a magnet on that will clean as the roads are graded. The magnet needs to be strong enough to collect heavy debris like the mining tooth shown above and has to be fully operated from the cab of the machine while not impeding normal operation.



Our grader magnet built for the rigors of working in a mine is currently in development and will be a great solution to eliminate costly and dangerous metal debris.