PROJECT DETAILS

The Bend site nonferrous metallic mineral exploration drilling project is located west of the Town of Westboro in Taylor County. The explorer, Green Light Wisconsin, has acquired all permits and approvals to pursue exploration drilling on a 40-acre parcel within the Chequamegon-Nicolet National Forest. The surface of the parcel where the exploration is proposed to occur is managed by the U.S. Forest Service, but the mineral rights are privately owned. The project consists of 8 boreholes, totaling a maximum of 7,190 linear feet, to collect rock cores to define and characterize the mineral deposit. Project details, including the exploration plan and DNR conditional approval, can be found on the DNR metallic mining website under the Bend tab: https://dnr.wisconsin.gov/topic/Mines/Projects.html.

EXPLORATION VS MINING

The Bend site project is a metallic mineral exploration drilling project conducted to inform the feasibility of siting a potential mining operation. In Wisconsin, exploration is defined as drilling while mining is the commercial extraction of nonferrous metallic minerals. If a metallic mine were proposed, an extensive multi-year study, regulatory review, public input, and environmental impact statement and permitting processes would follow.

LAND & WILDLIFE IMPACT

Exploration activities located at the Soo Line 40 parcel are proposed for less than 0.7 acres of land disturbance, consisting of 6 drill sites and the associated access routes. The nearest waterway, North Fork Yellow River, is approximately 600 feet from the closest proposed drill site.

The land disturbance is regulated under a construction site storm water runoff permit (WPDES General Permit: WI-S067831-06) for sedimentation and erosion control and will be stabilized post-project completion. As part of the best management practices, fencing to prevent amphibians from entering the working project area will be installed and maintained.

Site inspections to ensure compliance with the exploration and erosion control plans will be conducted regularly.

GROUNDWATER ELEVATION

The water table is considered to be the elevation at which all soil below is saturated. This elevation can vary at a microtopographic scale depending on the subsurface material. While there is soil saturation present near the surface in some locations of the project site, this saturation is due to the presence of lenses of low permeability materials in the soil profile and does not extend beneath the lens of fine-grained materials. Therefore, these areas are not representative of the groundwater table.

The U.S. Forest Service and Wisconsin Geologic and Natural History Survey have collected monitoring well data that estimates the groundwater in the project area to be greater than 15 feet below ground surface. This multi-year data provides a depiction of the normal local groundwater system in the area.

WATER USE

Up to a maximum of 12,000 gallons per day are proposed to be withdrawn from the North Fork of the Yellow River to utilize during drilling operations. The operator intends to re-circulate water from established sumps during drilling operations. Open sumps, such as at Site 5, may have the accumulated rainwater pumped out for use while drilling which will allow for lesser water withdrawal from the river.

TOOLING & CASING

The project will utilize a dual rotary drill rig that allows for the simultaneous advancement of the drill string with a coring bit and the casing with a casing shoe. This allows the drill string to drill a pilot hole and the casing shoe to follow behind, cutting the sediment around the pilot hole, and drilling the casing into place. This drilling method does not utilize a casing advancer.

The drill bit is the widest tool sent down hole and therefore represents the diameter of the drillhole. Each drill rod has a specific outer diameter and the bit is slightly larger. For casing, the size of the tools will be H-series with a hole diameter of ~3.75 inches. The drill string used to advance the core barrel will utilize tools in the N-series with a hole diameter of ~3 inches.

Casing must be drilled through the glacial overburden and set into competent bedrock before core drilling can commence. The casing will serve as a barrier so drilling material doesn't migrate out of the hole and prevent sediment from entering. The drilling fluid consists mainly of treated water and bentonite with minor additives from the list of DNR-approved drilling and sealing products, if any.

The casing is proposed to be removed during drill-hole abandonment.

DRILLING LUBRICANTS

The DNR maintains a list of approved drilling fluid additives approved for use which are most commonly utilized during well construction activities. The DNR has reviewed the ingredient lists and safety data sheets for the additives on the approved list and has found no evidence that the ingredients used contain PFAS.

Drilling fluid additives are often utilized to provide lubrication for the bit and drill string when encountering different types of geologic material as well as enhancing cuttings recovery from down hole. Fluid additive needs vary based on drilling purpose and the material encountered. Drillers in Wisconsin often do not use drilling fluid additives, as most wells are constructed using air or water to remove drill cuttings and maintain an open drillhole during casing. If the addition of a drilling mud (such as bentonite) is determined to be necessary, most often these methods do not require additional drilling fluid additives.

The first hole drilled at the Bend site utilized water and bentonite for drilling lubrication, and did not utilize additives from the approved list.

SUMPS

While drilling, residual drilling fluids will be held in lined sumps or tanks. Once the drilling at any site is complete, any tanks used will be emptied into the lined sumps, the solids will settle, the decanted water will be pumped out for reuse, and the remaining water (free of solids) will drain around the liner into the subsoil under the regulation of a dewatering operations permit (WPDES General Permit: WI-0049344-05-0). The solid material left in the liner will be mixed with cement, wrapped in the liner, covered with stockpiled soil material, and the surface will be restored according to the restoration plan.

The DNR has been onsite to inspect the sumps that have been installed. Based on those inspections, water in sump at Site 5 is a result of percolating rainwater accumulating within a confining soil layer and flowing laterally into the sump. The water observed in the sump is not representative of the normal local groundwater elevation which in this area has an average depth of at least 15 feet below the ground surface. Additionally, previous site inspections and documentation provided by GLW confirms that the sump as Site 5 and a second sump at Site 3 were dry at the time of excavation.

CEMENT FILLING & SEALING PROCEDURE

The project will utilize the steel drill rod as a conductor pipe. The drill rod is a slightly smaller diameter than the drill bit which will allow for the cement to be pumped down the center of the rod to the bottom of the hole and push any drilling fluid up around the outside of the rod to the surface, as is done with the cuttings while drilling. GLW has proposed using a narrower drill rod in the B-series as the conductor pipe, if available.

The weight of the cement will be measured for compliance with the conditionally approved exploration plan. The use of a tool called a 'mud balance' is not a requirement under Wis. Admin. Code ch. NR 130 as long as the cement weight is accurately measured and recorded by other means. The cement volume required for adequate hole filling will be determined by cylindrical volume calculations after each hole is completed. The hole diameter and depth per rod type is required before determining the exact cement volume. Site inspections to ensure compliance with the well abandonment plan will be conducted regularly.

Cement bags will be transported to the site when and where needed. There is no requirement in ch. NR 130 that the cement bags must be stored onsite for the duration of the project.

As an example, for a 1,000' hole with 130' of surface casing the volume of the hole would be calculated as follows: $Volume = \pi r^2 * \text{length}$, where r=0.157 ft for the surface casing and 0.125 ft for the cored section of the drillhole.

Surface portion – Volume = π*(0.157'*0.157')*130' = 10.1 ft^3

Cored portion - – Volume = π*(0.125'*0.125')*870' = 42.7 ft^3

Total volume = 10.1 ft^3 + 42.7 ft^3 = 52.8 ft^3

Required bags of cement = 52.8 ft^3 ÷ 1.28 ft^3/bag of cement = 41.25 bags of cement

WETLAND

A wetland determination that identified two wetlands was provided with GLW's project application materials. The project area is dominated by uplands with a normal depth to groundwater of 15 feet or more.

On July 8, 2025, the DNR conducted a site assessment that identified five separate ephemeral wetlands found in closed depressional areas that are within, or in proximity to, proposed access routes and drill pads where work has not yet begun. Two of the five wetland areas will be avoided by the current work plan, and the remaining three wetlands can be avoided through slight access route and drill site adjustments. A wetland permit is not required when wetland impacts can be avoided through the proposed scope of work. Additionally, erosion control measures are required to be installed along disturbance areas which are upslope of nearby wetlands to ensure wetlands are not adversely affected by nearby construction activities.

What led to the site assessment on July 8, 2025?

DNR staff visiting the site during staging operations (6/20/25) noted the presence of subtle depressional areas lacking persistent vegetation, which may indicate the presence of wetlands within the specific soil type encountered at the Bend site. Staff returned the following week (6/25/25) to sample and assess soils at nine locations and identified the potential presence of small areas of hydric soils and hydrology at two sites, indicating the potential presence of ephemeral wetlands and the need for a more detailed evaluation of the site.

What was the outcome and extent of the evaluation conducted on July 8, 2025?

On July 8, 2025, staff sampled 28 depressions within and adjacent to the proposed project area. Areas sampled were within and adjacent to the proposed and alternate access routes to drill sites 4 and 6, within drill sites 4 and 6, and within and adjacent to the proposed access routes between the main access and drill sites 1 and 2, and within proposed drill sites 1 and 2. Of the 28 locations sampled, wetlands were found at five of the locations. The two locations previously identified as potential wetlands were re-sampled as part of this effort. One of these locations was verified as meeting wetland criteria, while one location was determined to not meet wetland criteria based on more extensive review. The wetlands observed at the project site tend to occur in closed depressional basins which do not have the ability to easily drain downslope. Hydric soils were not identified in other depressional areas. These other areas were sloping, concentrated flow paths which allow for positive drainage. Many of these areas also had a plant community established which consists of upland vegetation.

Have wetlands been impacted by the work that has taken place at the Bend site?

The department does not have information to believe that wetlands have been impacted by the work that has occurred so far on the site, which has included the development of site access to drill sites 3 and 5, excavation of sumps at drill sites 3 and 5, and ongoing exploration at site 3. As exploration activities continue, DNR will continue to monitor the site locations for impacts to ephemeral wetlands.

What is an ephemeral wetland?

Ephemeral wetlands are small depressional areas of hydric soils that are temporarily or intermittently saturated with water following winter snowmelt or heavy rain events. They are generally small areas scattered throughout a landscape, often interspersed with uplands. They may be identified by the presence of hydric soils or hydrophytic vegetation (i.e. plants that grow in wet or waterlogged soils) or the presence of water at or near the ground surface.

Why weren't the ephemeral wetlands identified before the exploration drilling project began?

Ephemeral wetlands are by definition intermittent and sporadic and depend upon precipitation, geomorphology, and hydrology. It is likely that the wetlands were not evident during GLW's wetland determination (September 2022) and the department's review of the wetland determination (September 2022), as these determinations were focusing on review of the presence of wetland vegetation indicators that are not present in the type of wetlands reviewed the week of July 7.

The DNR Surface Water Data Viewer does not indicate the presence of wetlands where the drill sites are located. The site is mapped as Magnor silt loam soils, which may have hydric soil inclusions found within depressional areas. The site also contains an NRCS wet spot that was identified in the September 2022 wetland determination and avoided by the proposed exploration drilling operations. Other depressional areas where wetlands would have been anticipated were not evident based on the topography information available.

The potential for ephemeral wetlands in the area was discovered by DNR staff conducting an on-site inspection, and the DNR will continue these inspections for the duration of the drilling.