



November 20, 2012

VIA HAND DELIVERY

Mr. Matt Oberhelman
Lands and Minerals Division
Department of Natural Resources
1525 3rd Ave. East
Hibbing, MN 55746

Re: Planned Hydrogeology Field Activities: Leases MM-9132-N, MM-9722-N, MM-9455-N, MM-9813-N, MM-9815-N, MM-10206-N, MM-10011-N, MM-10146, MM-10147, MM-9764-N, MM-9828, MM-9756-P, and MM-9755-P (collectively, the “Leases”).

Mr. Oberhelman:

This letter is to advise you that Twin Metals Minnesota LLC (“Twin Metals Minnesota”), pursuant to the above-referenced Leases issued by the State of Minnesota, plans to conduct hydrogeologic field activities at the following locations: Sections 2 and 3 of T60N-R12W; and Sections 1, 12, 35, and 36 of T61N-R12W, all in St. Louis County; and Section 7 of T60N-R10W; Section 7 of T60N-R11W; Sections 2, 3, 4, 5, 6, 7, 16, 17, 18, and 28 of T61N-R11W; and Sections 25, 28, 29, 34, 35 and 36 of T62N-R11W, all in Lake County. These activities, which are further described in this notification, hereinafter will be referred to as the “State Hydrogeologic Field Activities.” Twin Metals Minnesota will begin this work after the 20-day notice period in the Leases has expired and the Department of Natural Resources (“DNR”) has provided any required approvals.

BACKGROUND INFORMATION

Twin Metals Minnesota is currently conducting a prefeasibility study in connection with the potential development of copper, nickel, and platinum group mineral deposits located in St. Louis and Lake Counties in northern Minnesota. Related to the pre-feasibility study, Twin Metals Minnesota will require access to state properties to conduct the State Hydrogeologic Field Activities for purposes of collecting

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environmental data to assist the company in determining how the potential mining project could be constructed to ensure that the environment is appropriately protected. Twin Metals Minnesota will also utilize the State Hydrogeologic Field Activities for the purposes of gathering baseline environmental and water quality data that will be used to support an Environmental Impact Statement (“EIS”) for any mining project that Twin Metals Minnesota may propose.

The State Hydrogeologic Field Activities will help close gaps in the public information with respect to hydrogeologic conditions in the vicinity of the potential mining project. The characteristics of the groundwater system in the project area are not well known. Therefore, an array of possible well sites is planned. The wells may be installed in a phased program, allowing time to analyze data and identify wells that may not be needed as the program progresses. The collection and evaluation of data will be an iterative process, and the scope of the State Hydrogeologic Activities may be adjusted as needed to ensure the collection of adequate data to evaluate the hydrogeology in the study area.

The State Hydrogeologic Field Activities will support obtaining hydrogeologic data to prepare models to characterize the existing hydrogeologic conditions, including the interaction of groundwater with surface water within and beyond the potential mine project area. New baseline data will be collected to characterize the groundwater flow system and groundwater quality under current conditions. The data collected also will be used for predicting the interaction among groundwater, surface water, and wetlands in the vicinity of any mining project that the company may propose.

As described in the section of this notification entitled the “Planned Field Activities” the State Hydrogeologic Field Activities will consist of constructing well pads, installing hydrogeologic wells in the overburden and bedrock and hand-driven piezometers at shallow levels to conduct environmental sampling and testing, and constructing or improving access roads to certain well pads. To the extent possible, access to the well pads will use existing public roads (including forest roads and state roads) and drill roads from previous minerals exploration activities. Where existing roads are not available, new roads will be constructed for access to the well pads. Some existing roads may require maintenance activities to support drilling equipment for installation of the hydrogeologic wells, including brushing or grading along certain roads and placing rock or gravel along some portions of roads as needed.

The State Hydrogeologic Field Activities include a total of up to 31 well sites and associated access roads to be located on lands in which the State of Minnesota holds an ownership or other interest. With regard to these 31 well sites, 19 of them are on lands subject to the Leases. Up to 12 additional wells sites may be located on non-federal lands that are not subject to the Leases but in which the State of Minnesota nonetheless holds some form of interest as described further in the section below entitled “Locations of the Planned Field Activities.”¹

¹ Twin Metals Minnesota also intends to undertake hydrogeological field activities on federal surface lands, including installing and sampling hydrogeologic wells, conducting other water testing, and constructing certain access routes in connection with these activities on federal lands. Twin Metals Minnesota has submitted various materials to the United States Forest Service (“USFS”) and United States Department of Interior, Bureau of Land Management (“BLM”) in connection with the federal field activities, and anticipates receiving a special use permit from USFS and any other necessary federal-agency approvals after USFS and BLM have reviewed Twin Metals Minnesota’s permit application for this work on federal lands.

With respect to the State Hydrogeologic Field Activities that are subject to the Leases, Twin Metals Minnesota will conduct the activities both on behalf of itself and as agent for Franconia Minerals (US) LLC (“Franconia”), which is Twin Metals’ wholly-owned subsidiary. Twin Metals Minnesota holds the applicable mineral rights under State Leases MM-10146, MM-10147, MM-9764-N, MM-9828, MM-9756-P, and MM-9755-P. Franconia holds the applicable mineral rights under State Leases MM-9132-N, MM-9815-N, MM-9722-N, MM-9455-N, MM-9813-N, MM-9815-N, MM-10206-N, and MM-10011-N. Twin Metals Minnesota provides this notice pursuant to Section 26 of these Twin Metals Minnesota and Franconia Leases.

LOCATIONS OF THE PLANNED FIELD ACTIVITIES

The map included herewith as Figure 1 shows the locations at which the State Hydrogeologic Field Activities are planned, including locations at which the hydrogeologic wells (both mechanically drilled and hand driven) will be installed, the corresponding well-site identification numbers, and the locations of new and existing access roads to these well sites.² The State Hydrogeologic Field Activities also will include the construction of certain new road segments (identified in footnote 6) on non-federal lands to provide access to two well sites to be constructed on federal surface lands as part of the federal hydrogeologic field activities that will be subject to a USFS permit.

As detailed below in the section below entitled “Hydrogeologic Well Installation,” the hydrogeologic wells for which drilling is required will be installed from new well pad sites of primarily two different sizes. The hydrogeologic wells (piezometers) for which no drilling is required will not require construction or use of a well pad. Multiple hydrogeologic wells generally will be installed at most of the well pads. The State Hydrogeologic Field Activities presently include up to 30 well pads for which drilling is required, as shown map enclosed as Figure 1. New access routes will be constructed to provide ingress and egress to 14 of these well pads. In addition, one hydrogeologic well site is planned for which no drilling will be required.

The State Hydrogeologic Field Activities will be limited to environmental and hydrogeologic field work and investigations on non-federal lands in support of Twin Metals Minnesota’s potential mining project. The collection of data from both the area of the potential mine operations and surrounding locations is required for comprehensive baseline characterization and reliable modeling of the interconnection among surface water, groundwater and wetlands.

Because of these data and modeling needs, the State Hydrologic Field Activities include the location of hydrogeologic wells on both Lease lands and off-Lease lands. The well installations and other hydrogeologic field activities will not involve any mineral exploration on any lands not subject to the Leases held by Twin Metals Minnesota or Franconia. In addition to securing approval from the State of Minnesota for the State Hydrogeologic Field Activities through this notification, Twin Metals Minnesota will also obtain the necessary approvals required from any private parties before entering their lands for these activities.

² Twin Metals Minnesota is considering adding up to 22 additional well sites on non-federal lands. Because a final decision has not been made on these possible additions, these potential sites have not been included in this notification.

As shown in the map enclosed as Figure 1, up to 19 of the well sites and most of the access routes in the State Hydrogeologic Field Activities will be located on lands on which either Twin Metals Minnesota or Franconia hold interests under the Leases issued by DNR. The State Hydrogeologic Field Activities also include construction of 12 hydrogeologic well sites on state or private lands not subject to the Leases and of two new road segments on state or private lands not subject to the Leases to provide access to hydrogeologic wells on federal surface, all of which work is described in more detail immediately below:

- There are two well sites for which Twin Metals Minnesota or Franconia own the surface lands and private third parties own the mineral rights, which mineral rights are leased to Twin Metals Minnesota or Franconia.³
- There are six well sites located on land not subject to the Leases in which the State of Minnesota holds either surface and/or mineral rights.⁴
- There are four well sites located on non-federal lands for which Twin Metals Minnesota or Franconia own the surface but neither company holds mineral rights.⁵
- There are two road segments located on state or private surface that will be constructed to provide access to well sites to be constructed on federal surface as part of the federal hydrogeologic field activities.⁶

The Leases held by Twin Metals Minnesota and Franconia authorize the foregoing tasks which are included in the State Hydrogeologic Field Activities, subject to DNR's approval of this notification. In addition, Twin Metals Minnesota is considering adding certain additional well sites on non-federal lands owned by private third parties to the State Hydrogeologic Field Activities. If these additional well sites, or any access roads associated therewith, are subsequently added to the State Hydrogeologic Field Activities, Twin Metals will advise DNR of the same before proceeding with that work.

³ Wells sites MN 522 and DP 500, as shown in Figure 1. As indicated in Table 1, Twin Metals Minnesota owns the surface at site MN 522 and leases the mineral rights from the private third party mineral owner, while Franconia owns the surface at site DP 500 and leases the mineral rights from the private third party mineral owner.

⁴ Wells sites EISV 506, EISV 513, EISV 523, EISV 526, and EISV 527, as referenced in Figure 1. Note that there are two alternative locations for well site EISV 526, as shown on Figure 1. To the extent that private third parties hold leases to the mineral rights at any of these sites, Twin Metals Minnesota will coordinate with them to ensure that its hydrogeologic field activities do not interfere with such parties' mineral exploration under any mineral leases they hold from DNR.

⁵ Well sites EISV 503, EISV 519, EISV 521, and EISV 547, as referenced in Figure 1. One site, EISV 547, has a known private mineral lease held by a private third party, and Twin Metals Minnesota will coordinate with that party to ensure that its hydrogeologic field activities do not interfere with such party's mineral exploration under that mineral lease. The other three sites have no known mineral leases.

⁶ These two road segments on state or private surface are shown in Figure 2, which is a map identifying the locations of the hydrogeologic activities planned for federal lands. The federal hydrogeologic field activities are further described in footnotes 1 and 7. Access to federal well site BL 505 includes road segments on state surface (Road Segment Numbers 76-78) and access to federal well site EISV 514 includes a road segment on private surface (Road Segment Number 93).

Finally, as discussed in footnote 1 in this notice, Twin Metals Minnesota intends to conduct certain hydrogeologic field activities on federal surface lands managed by the USFS and on private lands subject to a federal minerals lease issued by BLM. Because the USFS has indicated that Twin Metals Minnesota must obtain a federal special use permit for the federal hydrogeologic field activities on federal surface lands in the Superior National Forest⁷ and BLM is managing the minerals governed by this federal lease,⁸ Twin Metals Minnesota has not included the field work on lands subject to these federal interests within the scope of the State Hydrogeologic Field Activities.

By this notification, Twin Metals Minnesota is requesting authorization from DNR to carry out the State Hydrogeologic Field Activities as described above, including installation and sampling of hydrogeologic wells and construction and/or use of access routes whether located on or off of the properties subject to the Leases. To the extent that any approvals of this request are required of other agencies of the State of Minnesota or that any agreements must be executed, Twin Metals Minnesota is requesting that DNR advise the company of such requirements.

THE PLANNED FIELD ACTIVITIES

The following describes the work planned in connection with the State Hydrogeologic Field Activities.

Hydrogeologic Well Installation

The State Hydrogeologic Field Activities will include construction of up to 31 well sites on state or private lands in northeastern Minnesota in which the United States does not have any ownership interest (see Table 1 attached). At 30 of the well sites, work will include clearing vegetation for a pad, installing from two to four hydrogeologic wells on the pad, and installing one or two hand-driven wells (piezometers) adjacent to the pad. There also will be one site where only a piezometer will be installed and no pad will be constructed. All or part of each pad area may be cleared of vegetation, but as discussed below, no vegetation will be cleared for the hand-driven wells adjacent to the pad. Any salvageable timber will be stacked at the side of each pad. All wells will be installed in compliance with applicable law and regulations, including the requirements of the Minnesota Department of Health (“MDH”).

⁷ The federal hydrogeologic field activities will include construction of up to 85 well sites and other environmental activities on federal surface lands. USFS has indicated that it will require a special use permit (“SUP”) for these activities on federal surface, and Twin Metals Minnesota has submitted the necessary permit application to USFS. For six of those federal well site locations (BL 500, BL 504, BLN 507, BLN 509, EISV 533, and EISV 534), Twin Metals Minnesota and Franconia hold interests in the underlying minerals pursuant to state leases MM-9815-N, MM-9132-N, MM-10146 and MM-10206-N. Twin Metals Minnesota has identified these six federal well sites subject to DNR leases on Figure 1, but has not included them in the scope of the State Hydrogeologic Field Activities because USFS has indicated it will exercise SUP jurisdiction over those six wells. If DNR disagrees with this approach, Twin Metals Minnesota will be prepared to consult with the federal and state agencies as to the appropriate regulatory approach.

⁸ Twin Metals Minnesota intends to install wells on five sites subject to federal mineral lease MNES 01352 which is administered by BLM. The surface lands subject to this federal lease are held by private parties and USFS accordingly does not intend to require a SUP for these activities.

Of the 30 well pads included in the State Hydrogeologic Field Activities, 19 will be approximately 150 feet by 150 feet, 10 will be approximately 50 feet by 50 feet, and one pad will be a custom shape. These planned sizes may be altered due to physical constraints encountered in the field. Table 1 presents a summary of the proposed sites for the hydrogeologic wells, and the map attached as Figure 1 presents the planned well site locations and the new access roads that will be constructed for ingress and egress to these well pads. The final locations of the well sites and new access roads may be adjusted to account for field conditions encountered during construction of the well pads and any necessary access routes.

Well Installation Procedures

Three types of mechanical drilling operations (summarized below) are planned for installation of the hydrogeologic wells: vertical and angled dual-tube reverse-circulation, vertical and angled diamond coring, and vibratory drilling.

Vertical and Angled Dual-Tube Reverse-Circulation:

Vertical and angled dual-tube reverse-circulation, air-rotary method (“RC”) drilling, in accordance with ASTM D5781-95, will be used for bedrock drilling at the larger well pads to locate water bearing horizons in a low permeability setting. RC holes generally will be drilled without adding drilling fluids (air-only). If drilling fluids are required, only water meeting applicable MDH requirements and taken from an approved source will be used. Angled boreholes will be a maximum of 45 degrees from vertical.

Vertical and Angled Diamond Coring:

Vertical and angled diamond coring using PQ-size (4.8-inch diameter) drill tools in accordance with ASTM 2113-08 will be used for bedrock drilling on the smaller well pads. The objective of PQ drilling is to collect core samples for visual logging and identifying faults and fractures. Water meeting applicable MDH requirements and taken from an approved source will be used in drilling these wells. Angled boreholes will be a maximum of 45 degrees from vertical.

Vibratory Drilling:

Vibratory drilling methods (*e.g.*, roto-sonic or “sonic”) will be used to complete wells in the glacial till overburden and upper portion of the weathered bedrock. The objective is to collect geotechnical and analytical samples of the shallow materials and install a network of monitor wells to characterize the groundwater flow system in the overburden/upper bedrock. Fluid use during drilling will be minimized and only water meeting applicable MDH requirements and taken from an approved source will be used. Sonic drilling is the preferred method due to the expected presence of boulders and weathered bedrock in the overburden materials.

Piezometers:

In addition to the mechanically-installed hydrogeologic wells, shallow, hand-driven hydrogeologic wells (piezometers) will be installed near the well pads to collect water samples

and water levels from any near-surface groundwater. There will be one piezometer installed at a site without construction of a well pad or installation of any mechanically-drilled wells. Installing these piezometers will entail minimum surface disturbance, and no vegetation clearing will be required.

Drilling Equipment

Installation of the mechanically drilled hydrogeologic wells will be completed using a variety of conventional drilling equipment. In general, truck-mounted rigs and support vehicles will be used on the large well pads and track-mounted rigs will be used on the small well pads. Materials will be delivered on trailers to each well pad. Vehicles and drill rigs will be equipped with the required fire-fighting equipment. Excess materials and equipment will be stored on an off-site lay down yard on property owned by Twin Metals Minnesota. The well pad sizes were selected to balance the needs for larger diameter boreholes with the expected access conditions. Following are the typical types of equipment to be used at each type of well pad:

150' by 150' (Large) Well Pads:

- Truck- mounted (three-four axles), air-rotary drilling rig (approximately 55,000 lbs.)
- Water truck
- Equipment trailer (30,000 lbs. loaded)
- HD Pickup truck (single or twin axle) towing vehicles
- Pickup truck support vehicles

50' by 50' (Small) Well Pads:

- Track- or truck-mounted core drilling rig (minimum 16,000 lbs. to maximum 40,000 lbs., 2-3 axle or track)
- Water truck (20,000 lbs. loaded)
- Equipment trailer (30,000 lbs. loaded)
- HD Pickup truck (single or twin axle) towing vehicles
- Pickup truck support vehicles

Regardless of pad size, the drilling required for well installation will occur on each well pad for a period of several months, depending on the number of boreholes drilled at each well pad. The deep boreholes (PQ or RC) will require approximately 2-4 weeks of continuous drilling to complete. The shallower sonic-drilled wells will require up to 1 week for completion. During drilling at each well pad, various support vehicles will need to access the pad. When feasible, drilling will occur on a 24-hour schedule. The installation of hydrogeologic wells is projected to have a duration of approximately 6 to 18 months, depending on the number of drill rigs working at any one time and environmental and seasonality restrictions.

Piezometers:

Each piezometer will be installed adjacent to a well pad (except in one instance where the piezometer will be installed as a stand-alone well) by a two-person team using only hand tools, including a shovel, hand auger, and/or slide hammer. Other than pickup truck access to the

nearby well pad, installation of these shallow wells will not require the use of motorized support vehicles. Hand-driven wells will be completed in less than a day.

Miscellaneous:

All hydrogeologic wells (other than the piezometers) will be finished with a locking surface casing, in accordance with applicable laws and regulations, including MDH requirements. Surface protection will typically be at least a 6-foot, 8-inch-diameter steel casing (at least 2 feet above ground and 4 feet below ground), with a poured concrete pad and a locking, vented, protective steel cover. A hinged steel cover box, bollards, or other protective measures will be installed to further discourage vandalism or accidental damage. The protective boxes will be painted green to minimize visual disturbance. The hand-driven hydrogeologic wells will be completed with a 3-foot, 1.5-inch steel pipe with a hinged and locked lid.

Access roads and well pads will be kept clear of vegetation to the extent necessary to allow access by service vehicles. Use of access roads by third parties will be controlled where necessary through the use of gates or other appropriate measures.

Hydrogeological Testing and Sampling Activities

Various hydrogeological testing and sampling procedures will be conducted at each hydrogeologic well. One-time testing will be conducted during and immediately after installation of the mechanically-drilled wells. These tests may include:

- Packer-testing, requiring a boom truck and water truck
- Well development and initial sampling, requiring a boom truck
- Installation of vibrating wire transducers
- Short-term aquifer tests (pumping tests)
- Geophysical logging, requiring a boom truck

Following the initial installation and sampling, the mechanically-drilled wells will be subject to monitoring on a regular basis. The monitoring frequency will likely include an initial period of monthly monitoring for a select group of wells and quarterly monitoring for the majority of the well network. This continuing monitoring work will require access to the applicable pad site by a field crew of two people using a light-duty support vehicle. Periodic well maintenance may require the use of larger service vehicles. These monitoring activities may include:

- Measuring water levels in the wells
- Downloading electronic data from vibrating wire transducers
- Collecting groundwater samples
- Conducting any maintenance on the well head

The hand-driven wells will also be subject to regular testing similar to the mechanically-drilled wells. These hand-driven wells will be accessed on foot from the nearest well pad. Sampling and testing equipment for these is portable and does not require the use of motorized support vehicles or a maintained access route.

Protection of Resources

In connection with the design of its State Hydrogeologic Field Activities, Twin Metals Minnesota commissioned independent consulting professionals to complete preparatory field work in the vicinity of the well pads and new access roads to be constructed as part of the State Hydrogeologic Field Activities. This field work has provided data to allow Twin Metals Minnesota to locate the State Hydrogeologic Field Activities to avoid environmental impacts to the extent possible and to minimize and mitigate any impacts that cannot be avoided. Field surveys have been completed for the following resources in the areas where the State Hydrogeologic Field Activities are planned: archaeological resources, wetlands, and sensitive plant species.

The findings from these surveys are set forth in the following resource reports that are submitted along with this notification:

- Phase I Archaeological Survey For Twin Metals Minnesota Hydrogeologic Field Activities on Non-Federal Lands, St. Louis and Lake Counties, Minnesota (106 Group—November 20, 2012)
- Wetland Delineation Report for Hydrogeologic Field Activities on Non-Federal Lands (Barr Engineering—November 20, 2012)
- Sensitive Plant Species Survey Report for Hydrogeologic Field Activities on Non-Federal Lands (Barr Engineering—November 20, 2012)

Based on the resource data gathered from these field surveys, Twin Metals Minnesota does not anticipate that the State Hydrogeologic Field Activities will create any significant environmental impacts. If any well sites or access roads are added to the State Hydrogeologic Field Activities, Twin Metals Minnesota will complete additional resource surveys in these locations before proceeding with any construction in these additional locations.

As the enclosed wetlands report establishes, the boundaries of any wetlands present at the locations of the well pads and new access roads to be constructed for the State Hydrogeologic Field Activities were delineated based on in-field surveys performed in 2012 and prior years. In those instances where there are wetlands in the immediate vicinity of the well pad and access roads planned for the State Hydrogeologic Field Activities, the pad and road locations will be adjusted before construction commences to avoid wetland impacts, to the extent possible.

For some well pad locations, the most suitable time to conduct the work associated with the State Hydrogeologic Field Activities may be when the ground is frozen to avoid impacts to wetlands. In the event of such frozen-condition work, well pads may be cleared of trees and brush to the ground surface, where appropriate, to allow equipment access and improve frost penetration. Identifying sites where winter drilling is appropriate will be done in consultation with the appropriate agencies with jurisdiction over wetlands and review of pertinent wetlands data and environmental land types mapping.

To the extent that any of the activities in the State Hydrogeologic Field Activities may involve placement of fill in any wetlands, Twin Metals Minnesota will obtain any necessary wetland permits from the appropriate state agency or local governmental unit under Minnesota law and/or the U.S. Army Corps of Engineers under federal law. Twin Metals Minnesota will conduct its activities in conformance with any restrictions or stipulations imposed by any such wetlands permits.

As the enclosed sensitive species report indicates, one state-listed endangered plant species is present at two of the well pad/access road locations planned for inclusion in the State Hydrogeologic Field Activities. The design and use of these well pads and access roads will be adjusted to avoid impacts to this state-listed species, or if avoidance is not practical, the impacts will be minimized and any necessary permits will be obtained prior to commencement of the pertinent field work.

The Phase I archaeological resources survey of areas to be used for the State Hydrogeologic Field Activities did not identify any archaeological sites or other cultural or heritage resources of concern in the vicinity of the planned well pad and access road locations. The enclosed archaeological report provides a more detailed description of the field work conducted and the outcome of the survey.

If during the course of the State Hydrogeologic Field Activities any wetlands; artifacts, cultural features or other archaeological items; or any endangered or threatened wildlife or vegetation species are detected in the vicinity of the well pads or access roads, Twin Metals Minnesota will immediately cease the work in the areas where the resources are observed and will determine appropriate avoidance or mitigation measures to comply with the requirements of applicable state and federal laws and regulations. Additionally, Twin Metals Minnesota will notify the appropriate state and/or federal agencies to the extent required by applicable law of such sensitive environmental or cultural resources, if any, that it encounters during implementation of the State Hydrogeologic Field Activities.

During performance of State Hydrogeologic Field Activities, trash will be stored in a suitable container and removed from each well site for disposal. No explosives or firearms will be permitted on the locations where the State Hydrogeologic Field Activities are conducted. Fires will be permitted only in specific heating devices (*e.g.*, salamanders, cook stoves, etc.) and state and federal fire laws and regulations will be observed to prevent and suppress fires in the areas of operation.

Drill Site Access

To the extent possible, access to the well pads for the State Hydrogeologic Field Activities will utilize existing public roads (including federal forest roads and state roads) and private roads previously constructed for mineral drilling activities. To the extent that such existing roads are not available to access the planned well pads for the State Hydrogeologic Field Activities, new roads will be constructed as discussed in this section. In some circumstances, existing roads may need to be repaired or improved to some extent. Figure 1 shows the location of the access roads anticipated for the State Hydrogeologic Field Activities, and also identifies whether the access roads are new or existing. Figure 2 includes the two new road segments that will be constructed on state or private lands as part of the State Hydrogeologic Field Activities to

provide access to two well sites on federal surface as part of the federal hydrogeologic field activities (see footnote 6).

New access roads will need to be constructed to access 14 of the well pads included in the State Hydrogeologic Field Activities. Based on data collected to date, less than 1.0 mile of new access roads will be required for ingress and egress to these 14 well pads on non-federal lands and the two federal well pads served by roads on state lands. All other well pads included in the State Hydrogeologic Field Activities will be accessed using existing roads. As discussed in the “Protection of Resources” section above, some planned access road locations may need to be adjusted to avoid wetland areas or sensitive plant species or if other field data or conditions warrant adjustment of the those locations

New access roads will typically consist of a 12-15 foot cleared lane with brush and trees cut to ground level. Turning radii will need to accommodate drill rigs and trailers up to 30 feet in length. In frozen conditions, only clearing will be necessary. In non-frozen conditions “swamp mats,” timbers or other appropriate measures will be employed in soft areas as needed.

It is possible that some existing roads may need to be repaired or upgraded to accommodate equipment used in the State Hydrogeologic Field Activities. The location and length of any existing roads requiring such repairs or upgrades will be determined before the State Hydrogeologic Field Activities commence.

Some existing roads will require maintenance activities to support drilling equipment for installation of the hydrogeologic wells. The maintenance activities may involve brushing along the road and placing rock/gravel along some portions of the roads as needed. Making the roads wider and/or disturbing ground beyond the road bed may be necessary in some circumstances. When required, water bars or culverts will be used to control runoff and erosion. If trees adjacent to or within the road bed must be cut down to allow a drill rig to pass, the trees will be cut at the base as close to the ground as possible. The root ball will not be removed and/or the ground will not be disturbed.

The well pads used in the State Hydrogeologic Field Activities will be open to surface owners and mineral lessors and lessees of the sites, state and federal officials, and Twin Metals Minnesota and its employees, agents and consultants. Following drilling and installation of the hydrogeologic wells and construction of new access roads, gates or other appropriate access-control measures will be installed at the new access roads at locations determined in consultation with the appropriate governmental agencies.

Post-Investigation Closure

The hydrogeologic wells that are part of the State Hydrogeologic Field Activities will be sealed and abandoned in accordance with applicable laws and regulations after Twin Metals Minnesota has completed its hydrogeologic investigation, except for any wells that may be required to be maintained for long-term monitoring in connection with any potential mining project that Twin Metals Minnesota determines to pursue. Well pads will be graded and reclaimed as necessary when the State Hydrogeologic Activities have been completed, except for any pads required to be maintained for long-term monitoring. Twin Metals Minnesota will

notify DNR of any such wells that need to be maintained for such long-term monitoring. With respect to any such long-term wells, they also will be sealed and abandoned in accordance with applicable law will at the end of their monitoring life and the well pads will be graded and reclaimed once the long-term wells (assuming they are not replaced at the end of their useful life) have been finally sealed and abandoned. All such closure activities will be in compliance with applicable Minnesota statutes and regulations.

Roads used or constructed for access to hydrogeologic wells under the State Hydrogeologic Field Activities will be maintained, restored, or closed as appropriate under applicable legal requirements, including Minnesota statutes and rules. Twin Metals Minnesota will consult with the applicable surface owner before making final decisions with respect to restoration or closure of access roads.

CONCLUSION

We would welcome any questions, comments or responses you may have with respect to the planned State Hydrogeologic Field Activities. Twin Metals Minnesota intends to commence activities hereunder after all applicable authorizations are received from DNR.

If you have any questions, comments, or suggestions, please contact me at (651) 842-6828. Thank you for your assistance.

Sincerely,



Anne Williamson
Vice President—Environment & Sustainability
Twin Metals Minnesota LLC

ENCLOSURES: Figures 1 and 2 (Maps)
 Table 1

Table 1: Hydrogeologic Well Locations

WELL ID	MONITOR WELL TYPE (Pad Size)	MINERAL INTEREST HOLDER	SURFACE INTEREST HOLDER	MINERAL LEASE	ACCESS Existing/New Road	COORDINATES*	
						Northing	Easting
EISV-538	Multi-Level Piezometer (150'x150')	Twin Metals	State of MN	MM-10147	New Road	768777.2757	2947789.8105
EISV-539	Multi-Level Piezometer (150'x150')	Twin Metals	State of MN	MM-10147	New Road	770552.8135	2947914.3420
MN-510	Multi-Level Piezometer (150'x150')	Twin Metals	State of MN	MM-9764-N	Existing Road	806540.1844	2957555.6991
MN-511	Multi-Level Piezometer (50'x50')	Twin Metals	State of MN	MM-9828	New Road	802854.9086	2954580.3962
MN-512	Multi-Level Piezometer (150'x150')	Twin Metals	State of MN	MM-9764-N	New Road (Winter Alternative)	805869.3892	2961370.1336
MN-520	Multi-Level Piezometer (150'x150')	Twin Metals	State of MN	MM-9756-P	Existing Road	808438.3356	2967599.7069
MN-538	Multi-Level Piezometer (150'x150')	Twin Metals	State of MN	MM-9764-N	New Road	806996.8333	2956882.7378
MN-545	Multi-Level Piezometer (50'x50')	Twin Metals	State of MN	MM-9764-N	Existing Road	805856.1782	2959300.8083
MN-551	N/A	Twin Metals	State of MN	MM-9755-P	N/A	804530.9918	2965926.7253
BL-508	Multi-Level Piezometer (150'x150')	Franconia	Twin Metals	MM-9722-N	New Road	778117.3964	2941038.7967
BL-509	Multi-Level Piezometer (150'x150')	Franconia	Twin Metals	MM-9722-N	New Road	777854.7817	2941732.6803
BL-512	Multi-Level Piezometer (150'x150')	Franconia	State of MN	MM-9455-N	New Road	778545.0021	2944532.8471
BL-513	Multi-Level Piezometer (50'x50')	Franconia	Twin Metals	MM-9722-N	New Road	776676.9262	2940683.9428
BL-514	Multi-Level Piezometer (50'x50')	Franconia	State of MN	MM-9455-N	Existing Road	777148.5322	2943323.3964
BL-517	Multi-Level Piezometer (150'x150')	Franconia	Twin Metals	MM-9722-N	New Road	777988.4605	2939615.0342

BL-518	Multi-Level Piezometer (150'x150')	Franconia	Private	MM-9722-N	New Road	779452.7274	2940516.0398
BLN-501	Multi-Level Piezometer (50'x50')	Franconia	County (Lake)	MM-9813-N	New Road	794558.1146	2950419.1671
DP-501	Multi-Level Piezometer (150'x150')	Franconia	Franconia***	MM-10011-N / Private (Rendrag)	New Road	772948.6884	2939370.7856
EISV-540	Multi-Level Piezometer (150'x150')	Franconia	State of MN	MM-9722-N	Existing Road	774681.2217	2944812.8098
EISV-506	Multi-Level Piezometer (150'x150')	None	State of MN	None	Existing Road	812033.3526	2974070.6207
EISV-513	Multi-Level Piezometer (150'x150')	None	State of MN	None	Existing Road	784812.6925	2962301.5170
EISV-519	Multi-Level Piezometer (150'x150')	None	Twin Metals	None (State Minerals)	Existing Road	766968.3960	2981106.4631
EISV-523	Multi-Level Piezometer (50'x50')	None	State of MN	None	Existing Road	802245.5831	2968093.4585
EISV-526	Multi-Level Piezometer (150'x150')	None	State of MN	None	Existing Road	801362.9224	2940704.8801
EISV-526	Multi-Level Piezometer (50'x50')**	None	State of MN	None	Existing Road	799103.6328	2939515.8476
EISV-527	Multi-Level Piezometer (50'x50')	None	State of MN	None	Existing Road	794068.9106	2959889.1116
EISV-503	Multi-Level Piezometer (150'x150')	None	Twin Metals	None	Existing Road	814566.1116	2960302.5933
EISV-521	Multi-Level Piezometer (150'x150')	None	Twin Metals	None	Existing Road	814530.8586	2956675.2798
EISV-547	Multi-Level Piezometer (Large - irregular)	None	Franconia	None	New Road	765904.8264	2947552.7413
DP-500	Multi-Level Piezometer (50'x50')	Franconia	Franconia	None	Existing Road	774176.4555	2939460.1265
MN-522	Multi-Level Piezometer (50'x50')	Twin Metals	Twin Metals	None	Existing Road	810455.3861	2970181.8031

* Coordinates are expressed in State Plane Minnesota North, North American Datum of 1983 (NAD83).

** Alternative winter drilling location.

*** The maps in Figures 1 and 2, due to space limitations and for simplicity, label all private surface areas with “TMM” regardless of whether the surface interest is owned by Twin Metals Minnesota or Franconia. Table 1 provides the appropriate distinction between Twin Metals Minnesota and Franconia surface ownership.