ATTACHMENT 2A

TECHNICAL SPECIFICATIONS
FOR THE
BULLDOG MINE DISCHARGE PIPELINE

LOCATED IN

MINERAL COUNTY, COLORADO

Prepared for

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Technical Specifications

Item 1 - Pipe and Pipeline Installation

SCOPE: This specification covers the installation of a water pipeline as part of this project. The purpose of this pipeline will be to carry treated water from the 9400 Portal at the Bulldog Mine to Windy Gulch where it will be discharged. There is an existing pipeline which will be tied into. At the tee, the existing line will be isolated from the system with a butterfly valve. The pipeline will terminate at the inlet to a buried 24 inch in diameter culvert.

The approximate length of 4 inch diameter pipe to be installed is 250 feet. Only a portion of the pipeline will be buried below grade. Other sections will be installed on the surface with grading to ensure the entirety of the pipe can drain when the pumps are shut off.

This pipeline is temporary in nature. This allows for atypical construction methods as approved by the OWNER. The primary variations from typical practices will be the bedding methods and thrust block requirements, as specified in this section.

MATERIALS: All pipe shall be installed in accordance with the pipe manufacturer's recommendations, unless otherwise specified herein. Except for materials provided by the OWNER, all pipes shall be new, clean, and free from scratches and abrasions. The CONTRACTOR is to discuss with the OWNER prior to ordering or purchasing any components to ensure available materials are utilized first.

Pipe to be installed shall conform to the following specifications:

a. High Density Polyethylene Pipe (HDPE): The OWNER has in their inventory a large quantity of HDPE pipe. The pipe used in this project is to have a minimum inner diameter (ID) of 3.95 inches. All pipe joints, couplings, and tees are to be made with either an HDPE weld or with appropriate O-rings. All accessories and fittings shall be of the same pressure rating as the available pipe, or greater.

TRENCH EXCAVATION: All excavation shall be by open cut, except where otherwise indicated on the drawings. Banks of trenches located on traveled ways or in proximity of existing structures shall be kept as nearly vertical as possible, and if required, shall be properly sheeted and braced. In open areas, sloping banks of trenches will be permitted if only the sides of the trench above the top of the pipe are sloped. The excavation of the trench shall not advance more than 400 feet ahead of the completed pipe laying unless permitted by the ENGINEER. The trench bottom along the entire length of pipe and at pipe joints shall be properly excavated to assure adequate bearing of the pipe barrel along its entire length. The CONTRACTOR shall not commence any excavating with power equipment until a diligent effort has been made to determine the location of all underground structures. The CONTRACTOR shall preserve intact any underground pipes or structures encountered during the construction, provided that their location is such that they do not interfere with the proposed pipelines. In any case where such utilities or structures are

accidentally broken or damaged they shall immediately be repaired or replaced to restore them to a condition at least equal to that in which they were found, all at the expense of the CONTRACTOR.

Where groundwater is encountered in excavations it shall be removed so that all pipe laying and other construction operations can be performed under dry conditions. The CONTRACTOR shall control the grading in the vicinity of trenches as much as possible so that the ground surface is properly sloped to prevent water from running into excavated areas.

The sides of trenches shall be firmly held in place with suitable bracing, sheeting and shoring whenever necessary to prevent injury to workers and damage to adjacent structures, utilities and road surfacing.

No blasting or other use of explosives will be permitted on this project, without the OWNER'S and ENGINEER'S written approval.

PIPE INSTALLATION: For the sections of pipe to be placed above ground, installation requirements are to be discussed with the OWNER under advisement from the ENGINEER. For a distance of one foot to either side of an above ground pipe, all angular material greater than 3 inches in diameter is to be removed. To maintain grade, imported bedding material or suitable local soil is to be used as fill. All bedding material shall be in conformity with Item 3 - Bedding materials". In all sections of the pipeline, a minimum slope of 2% towards Windy Gulch must be maintained.

In the case of buried sections, if the foundation is good firm earth, the trench bottom shall be shaped to give full support to the lower third of the pipe. If necessary, a layer of fine gravel or other suitable material shall be placed in the trench bottom to assure a proper bearing for the pipe. The ENGINEER shall determine when bedding is required. Bell holes shall be hand excavated to a depth two inches below the bell of the pipe.

The width of the trench shall be ample to permit the pipe to be laid and joined properly and the bedding material placed and tamped, or a minimum of 6 inches, whichever is greater. Unless authorized by the ENGINEER, the width of the trench, at the top of the pipe, shall not exceed the diameter of the pipe plus 24 inches.

Any pipe that is disturbed after laying shall be taken up and re-laid. The interior of all pipe shall be thoroughly cleaned of all foreign matter before being lowered into the trench and shall be kept clean during laying operations by means of plugs or other approved methods.

Under no circumstances shall pipe be laid so that groundwater can enter the pipe and no pipe shall be laid when trench or weather conditions are unsuitable for such work. At all times when work is not in progress, all open ends of pipes and fittings shall be securely closed so that no trench water, earth, or foreign materials will enter the pipe or the fitting. The subgrade upon which the pipe is placed shall consist of materials suitable for supporting the pipe without excessive settlement or stress development. In the event rock

or excessively spongy or unstable materials are encountered, they shall be removed to a depth of not less than 6 inches below the bottom of the pipe, on grade; replaced with an approved material and mechanically compacted to grade.

At the discretion of the OWNER, thrust blocks or other methods of pipe joint restraints as approved by the ENGINEER shall be provided at all tees, plugs, caps, valves, hydrants, and horizontal or vertical bends of 22½° or more. Such anchorage shall be constructed of concrete or other joint restraint methods and approved by the ENGINEER.

All portions of the water pipeline shall be installed with a minimum of two (2) feet of cover from the top of the pipe to the natural ground surface unless otherwise shown on the drawings.

Pipe shall be protected during handling against impact, shocks and free fall. All pipe shall be cut with a type of cutter employing a method of cutting normally accepted by the trade. No method of cutting shall be employed which depends on impact or shock. This precludes the use of hammer and chisel or similar tools for cutting and trimming pipe.

TRENCH BACKFILL: The trenches shall not be backfilled until inspection has been completed and the ENGINEER or his designated inspector has accepted the pipe installation. Following placement of the pipe to proper line and grade, bedding material shall be placed, by hand, evenly along both sides of the pipe to a depth of approximately 4 inches. The bedding material shall then be hand tamped under the pipe haunches with an appropriate tamping bar. Additional 4 inch layers shall be placed and tamped until the tamped backfill is to a point not less than halfway up the pipe wall. Additional backfill material, consisting of finely divided and screened job excavated material free from debris, large clods of earth, frozen material, stones larger than 1½ inch in size or other material deemed unsuitable by the ENGINEER, shall be placed, by hand, evenly along both sides of the pipe in 4 inch lifts and compacted. Additional 4 inch layers shall be placed and compacted until the compacted backfill is to a point not less than 12 inches over the top of the pipe.

The remaining backfill material, above a point 12 inches above the pipe, shall consist of material excavated from the trench. Care shall be taken to avoid incorporating large stones which could damage the pipe by impact or by being forced down against the pipe under the weight of final backfill. Final backfill shall be placed in a manner which will prevent disturbing or damaging the pipe. Compaction of backfill material will be required to the extent that trench settlement will be minimized. Trench backfill material placed in county roads shall be compacted to not less than 95% of Standard Proctor Density (AASHTO T-99). Compaction shall be obtained by any methods, acceptable to the Engineer, that will not result in damage to the pipe, fittings, valves, appurtenances, adjacent structures or road surfaces.

After backfilling of trenches located in or crossing gravel roadways is completed, the trench backfill material shall be removed or leveled to a depth at least equal to that of the surrounding gravel surfacing. This space shall be filled with graded road gravel and

compacted to conform to the shape of the existing surfacing. Any grading necessary to provide a smooth roadway shall be performed. Existing surfacing may be salvaged for re-use if the method of handling is approved by the ENGINEER. As soon as the trench has been backfilled, all stones, planks, and other refuse or materials of any description deposited by the CONTRACTOR in the line of work shall be removed and the surface of the ground shall be restored to the same condition as it was before the work was commenced. Any culverts, fences, mail boxes, etc., disturbed during construction shall be replaced, and the ditches and borrow pits, etc., restored to original elevations. Trench cleanup shall be done within one week from the time the trench was backfilled. The U.S. Forest Service, County Commissioners, Ditch Companies, etc., shall be satisfied that the cleanup conditions have been met. If requested, the CONTRACTOR shall furnish letters attesting to such satisfaction by these various agencies prior to final payment.

At the OWNER's discretion, compaction tests of bedding and backfill materials shall be conducted at locations as determined by the ENGINEER. The OWNER shall pay all charges in connection with such testing except that the CONTRACTOR shall pay for any test which does not meet the project requirements. Backfill and bedding materials shall be compacted not less than 90% of the Standard Proctor Density (AASHTO T-99) outside of traveled ways and 95% of AASHTO T-99 in traveled ways throughout the width of the trench.

Item 2 – Valves, Fittings & Other Components

SCOPE: This specification covers supply and installation of the valves and fittings by the CONTRACTOR. Note that the OWNER has an inventory of pipeline components and may elect to provide some or all of these items directly to the CONTRACTOR. The CONTRACTOR is to discuss with the OWNER prior to ordering or purchasing any components to ensure available materials are utilized first.

GENERAL REQUIREMENTS: All pipe shall be installed in accordance with the pipe manufacturer's recommendations, unless otherwise specified herein. Unless a material is provided and approved by the OWNER, all components shall be new, clean, and free from scratches and abrasions.

As per Item 1, All pipe joints, couplings, and tees are to be made with either an HDPE weld or with appropriate O-rings. All accessories and fittings shall be of the same pressure rating as the available pipe, or greater.

All applicable trench bedding, backfilling, and compaction specifications from Item 1 and item 3 will be required when installing Item 2 components.

COMPONENTS AND INSTALLATION:

a. ½" Spigot: The spigot shall be an American Valve M76QT ½ Inch Quarter Turn Hose Bibb, or similar.

b. Butterfly Valve: The Butterfly valve shall be a 4 inch diameter Fresno Series 8500 Grayline Butterfly valve with a lockable lever handle, or similar.

c. Air Vent and Vacuum Breaker: The continuous air vent shall be a 2 inch diameter inlet Fresno Series 3500 Continuous Acting Air & Vacuum Relief or similar.

d. Concrete Bollards: Two concrete bollards will be required to protect the pipeline from damage. The 90 degree elbow which routes the pipe into the ground shall have two bollards placed next to it. These bollards will be constructed on site using 4 inch in diameter schedule 40 galvanized steel pipe and concrete. The bollards are to be painted bright yellow to enhance visibility. The CONTRACTOR is to reference the two details providing bollard placement and construction methods included in the drawings.

e. Pipe Mount: When the pipe is mounted to the trash rack it shall be secured such that it cannot slide or otherwise pull out of the culvert. The mount and hardware are to be made of either stainless steel or galvanized metal.

f. Pipe Fittings:

1. Tees: There will be two tees installed as part of this project.

    a. The first tee will be adjacent to the 9400' Portal. It will go directly downstream of an existing tee which serves the current discharge line and an air vent. The existing discharge line will have a butterfly valve installed to isolate it. This tee will be 4" X 4" X 4".

    b. The second tee will be for the air vent / vacuum breaker. This tee will be a 4" X 4" X 2". At the OWNER's discretion the CONTRACTOR may use an alternative such as a mechanical branch saddle.

    Either an HDPE or ductile iron riser pipe will be installed vertically upwards from the 2 inch fitting. This pipe must extend a minimum of 1 foot above the final ground surface as well as be rated for the same or greater pressure as the rest of the 4 inch HDPE.

    c. All tees shall either be constructed of HDPE and then welded to form a joint or may be made of ductile iron and use an O-ring to create a watertight connection. Regardless of material, all tees are to be rated to equal or greater pressure than the 4 inch HDPE pipeline.

2. Elbows: Below are the quantities of each elbow that will be required for this project. Note that 1 of the 90 degree elbows is optional, depending on how flexible the HDPE is. Furthermore, if fittings can be substituted for bends this is acceptable on the condition that the manufacturer's safe bending radius is not exceeded, and with the OWNER's consent.

        i. 90 Degree: Minimum of (4), (1) optional.
        ii. 22.5 Degree: (3)

    All elbows shall either be constructed of HDPE and then welded to form a joint or may be made of alternative materials and use an O-ring create a watertight connection. Regardless of material, all elbows are to be rated to equal or greater pressure than the 4 inch HDPE pipeline.

Item 3 – Bedding Materials

SCOPE: This specification covers the supply and installation of bedding materials as required for discharge pipeline installation. The Engineer will determine when bedding material will be required. The bedding material will need to be imported or screened on site from native material.

MATERIALS: Bedding material shall be 1/2 inch minus gravel or other suitable material as determined by the Engineer.

INSTALLATION: Following placement of the pipe to the proper line and grade, bedding material shall be placed by hand evenly along both sides of the pipe to a depth of approximately four inches. The bedding material shall then be hand tamped under the pipe haunches with an appropriate tamping bar. Additional four-inch layers shall be placed and tamped until the tamped backfill is to a point not less than halfway up the pipe wall or, if necessary to comply with specifications, to a point not less than 6 inches over the top of the pipe. Completion of the trench backfill will be in conformity with the specification entitled "Pipe and Pipeline Installation".

Item 101 - Environmental Pollution and Erosion Controls

SCOPE: This specification covers the Best Management Practices (BMPS) to minimize impacts to water quality and site vegetation.

BEST MANAGEMENT PRACTICES: The following Best Management Practices (BMPs) will be utilized to minimize impacts to water quality and site vegetation:

➢Use of mufflers or spark arresters on all vehicles and equipment will be required for fire prevention.

➢Temporary access roads and staging areas will be located sufficiently far from streams or other water bodies, and wetlands to preclude discharges of non-project related fill material into these areas.

➢CONTRACTOR, foremen, supervisors, and superintendents will be cognizant of erosion control measures outlined in the erosion control plan and will be held responsible for the correct implementation of erosion control measure. Erosion control specifications will be included on all project plan sets.

➢Best management practices will be implemented to control sedimentation, erosion, and aeolian (i.e., wind) deposition. These measures include: controlling surface water runoff in relation to slopes and other graded areas; placing hay bale barriers, silt fencing, sandbags and/or straw wattles along the toes of graded slopes, constructing water diversion bars on larger slopes to reduce flow velocity of storm runoff and bank material; restoring vegetation to impacted areas as soon as possible after completion of grading; seeding areas with appropriate species where needed; placing biodegradable erosion control blanketing over seeded areas where needed; placing silt curtains around construction areas to reduce erosion of disturbed soils and siltation of natural drainage channels; and applying water to graded areas and temporary (haul) roads during construction to control fugitive dust.

➢The timing of land disturbing activities and installation of erosion and sedimentation control measures will be coordinated to minimize water quality and erosion impacts.

➢Fueling and routine maintenance of construction equipment will occur at least 100 feet from wetland and aquatic habitats and away for storm water drains or gutters, to preclude adverse water quality impacts to existing drainages and wetland habitats. It is the Contractor's responsibility to prevent adverse impacts to water quality. Major repairs to equipment will be made in designated staging areas only.

➢Equipment used on site will be monitored for signs of fluid leakage or other possible contaminant emissions, and will be removed from the site for repair if found to be "unclean". Maintenance operations will be scheduled during dry weather inasmuch as possible. No fuel or other equipment fluids shall be stored on site. A properly equipped maintenance vehicle supplied and operated by the CONTRACTOR will provide maintenance services. Equipment for the immediate and complete removal of any soils contaminated during the maintenance

operation, as well as sealed tanks or drums for the daily removal from the site of used fluids will also be supplied and properly handled. During fluid changes the use of adequate drip pans and other practices, such as direct pumping of the used fluid from the equipment being serviced to its sealed container in the maintenance vehicle for removal, are encouraged. During refueling operations no fueling hose shall be left unattended by the maintenance personnel or the equipment operator.

➢In the event of an above minor spillage of contaminant, especially if it occurs during wet weather, the CONTRACTOR or Contractor's designated representative, if not present, shall notify the ENGINEER immediately. These instructions also apply if the on-site person in charge deems it necessary to immediately notify any other agency.

> The normal procedure for cleanup of a minor spill or observed fluid leakage will be to immediately remove the contaminated soil to a covered container for removal from the site. The urgency of completing the cleanup will be dictated by existing or predicted weather. In no case will polluted soils be left overnight without being placed into an approved lidded container. A lidded dumpster should be placed at the designated refueling and maintenance area, along with shovels and other appropriate tools sufficient to handle a small amount of contaminated soil. For a larger spill, a backhoe or excavator, if needed, will be expeditiously brought to the spill site for the necessary removal of contaminated soil.

➢Water inflow into the trench will be minimized to the extent possible. Where groundwater inflow is unavoidable, excess groundwater that contains excessive sediment and suspended solids material will be pumped from the trench and discharged into adjacent upland areas.

➢Trash dumpsters must be conveniently located and a trash cleanup program supervised by the Contractor's superintendent.

➢The CONTRACTOR will provide portable sanitary facilities and insure completion of their scheduled periodic maintenance.