EXHIBIT J – VEGETATION INFORMATION

Meeker Sand & Gravel: M-1976-038

Existing vegetation on the proposed site falls within several range sites and appears to be presently in a relatively native condition. Vegetation is sparse in many areas where topsoil cover is minimal. The dominant species found on the site was western wheatgrass. Other principal species found on the site were Sandberg bluegrass, Nevada Bluegrass, Letterman needle grass, big sagebrush and snakeweed. Other species found on the site include fringe sage, phlox and numerous forbs. Vegetation cover is approximately 25 percent, with an annual production of about 1200 pounds/acre air dry. Approximate height of vegetation varies from extremely low (1-4”), to mid-height grasses (12-30”) to sagebrush (24-48”). Vegetation map is included as Exhibit J-1. NRCS letter is also included in Exhibit J-1 (I-4) and addresses vegetation as it exists on the site, relative to the soils present. Exhibit J-2 shows photos of the vegetation in its current state.

EXHIBIT J-1 – VEGETATION MAP

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EXHIBIT J-1

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Requested By: Meeker Sand and Gravel | Date: May 11, 2023

Document Created By: Stormy Concoby | Location: Rio Blanco, County

Purpose: The purpose of this document is to provide a summary of the soil types present and vegetation species that historically were present within the project area. This document also provides a seeding recommendation for the reclamation of an existing and proposed gravel pit expansion.

1) Soils – three soil units (11, 105, & 106) are within the project area. The mean annual precipitation is 15 to 18 inches.
    a. Soil Map Unit 11: The Borollic Calciorthids-Guben complex, 6% to 50% slopes, consists of two soil types and minor components (60% Borollic Calciorthids, 30% Guben, and 10% minor components) that are intermixed. The Soil Map Unit 11 is very calcareous and formed from a mixed source of alluvium and glacial outwash. The Borollic Calciorthids-Guben complex soils are normally located in uplands and terraces.
        i. The Borollic Calicorthid soils are well drained with a high runoff potential. The Borollic Calicorthid soils first soil horizon is 0 to 4 inches deep consisting of a channery loam. The second soil horizon is 4 to 11 inches of clay loam. The third horizon is 11 to 60 inches of silt loam. There is a presence of calcic horizon in Borollic Calicorthid soils; calcic horizons are an illuvial horizon where secondary carbonates and other carbonates have accumulated. Calcic horizons are 15 centimeters or more and consist of 15% or more of calcium carbonates. The Borollic Calicorthid soils can have up to 60% calcium carbonates. The maximum salinity is slight saline to moderate saline (4.0 to 8.0 mmhos/cm).
        ii. Guben soils are very deep, well drained with a medium runoff potential. The first soil horizon is 0 inches to 11 inches of loam. The second soil horizon is from 11 inches to 15 inches of very gravelly sandy clay loam. The third soil horizon is from 15 inches to 23 inches of very gravelly sandy loam. The fourth horizon is 23 inches to 60 inches of very cobbly sandy loam. The Guben soil series has a calcic horizon with up to 30% calcium carbonate. The Guben soils are nonsaline to very slightly saline (0.60 to 2.00 in/hr).
    b. Soil Map Unit 105: The Zoltay clay loams, 1% to 3% slopes, are well drained and have a medium runoff potential. The Zoltay clay loams are located in fans and terrace. The Zoltay clay loams form from alluvium materials derived from sedimentary rock. Horizon one is zero to thirteen inches of clay loam. The second horizon is 13 to 31 inches of cobbly clay. The third horizon is 31 to 60 inches of cobbly clay loam. The maximum concentration of calcium carbonate

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EXHIBIT J-1

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1) Reclamation Recommendations –
    a. Each soil map unit has an ecological site associated that describes the historic vegetative species present.
        i. Soil Map Unit 11: The ecological site present is the Stony Foothills (R048AY287CO). If the site was undisturbed, the following percentage of composition by plant weight would be expected: western wheatgrass (15%), bluebunch wheatgrass (10%), Galleta (10%), Indian ricegrass (5%), Needle-and-thread (5%), junegrass (5%), squirreltail (5%), forbs (5%), black and big sagebrush (15%), fringed sagebrush (5 %), serviceberry (5%), rabbitbrush (5%), and pinyon and Juniper (up to 10%). The ecological optimum ground cover is approximately 25%.
        ii. Soil Map Unit 105 and 106: The ecological site present is Deep Clay Loam (R048AY292CO). If the site was undisturbed, the following percentage of composition by plant weight would be expected: western wheatgrass (40%), lettermans needlegrass (20%), muttongrass (15%), slender wheatgrass (15%), nodding brome (10%), silver lupine (5%), mules-ears (5%), Indian paintbrush (5%), sulfer buckwheat (5%), big sagebrush (5%), serviceberry (5%), snowberry (2%), and others (10%). The approximate ground cover for the Deep Clay Loam ecological sites is 35%.
    b. The following grass species are recommended to be used to reseed the site. This recommendation is in pounds of pure live seed.

Species	Variety	Pounds (PLS/Acre)
Western Wheatgrass	Arriba	3.2
Thickspike Wheatgrass	Critana	2.2
Streambank Wheatgrass	Siberian	2.2
Russian Wildrye	Vinal	2
Smooth Bromegrass	Regar	1.3
	Total Pounds PLS/Acre 10.9	

*Smooth Bromegrass can become competitive and overtake native species.

        i. The addition of topsoil on the project site will improve the establishment of the seeding. Topsoil should be evenly dispersed across the project site. If the project is seeded by drilling, the project site may require earthwork to improve conditions for drilling. Some areas within the project may require broadcasting instead of drilling where steeper slopes are present.
        ii. Mulching is recommended at approximately 3,000 pounds of clean (weed free) straw per acre with a crimper.
        iii. Scouting and monitoring for invasive vegetative species will be necessary for the establishment of the seeding mix. If chemicals are used to treat the vegetative weed pressures, the chemical label needs to be checked to ensure that the chemical will not have a negative effect on the planted species. The label will direct the application, storage, disposal, and safety measures for the chemical.
        iv. It is recommended that the site does not allow livestock grazing and excessive soil disturbance for one to two years to promote the establishment of the seeding.

References:

Soil Survey Staff. 2022. Keys to Soil Taxonomy, 13th edition. USDA Natural Resources Conservation Service.

Natural Resources and Conservation Service . (n.d.). Web soil survey. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

EXHIBIT J-2 – VEGETATION

Photos showing current vegetation in proposed mining area.

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Photos showing current vegetation in proposed mining area.

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Photos showing current vegetation in proposed mining area.