MALSTROM AFB, MT
UTILITY SYSTEM DESCRIPTIONS

SYSTEM DESCRIPTIONS: The following information provided is only an estimate and is subject to change.

Electric: Power is supplied from Montana Power Company (MPC) through one utility-owned 100 kV overhead transmission line to the Base-owned substation. The substation contains the incoming transmission structures, transformers, switches, switchgear, and connecting bus and cables. The substation reduces the voltage to 12.47 kV for distribution throughout the Base. There is an alternate source of power into the Base. A separate 12.47 kV feeder from MPC is available in the event of a 100 kV system failure. This feeder is of limited capacity and load consequently must be reduced to use the circuit. A manual switch is used to connect into the Base distribution system. The primary distribution system consists of three-phase, four-wire line rated at 15 kV from the substation metalclad switchgear. The overhead portion totals approximately 83,400 circuit feet (cf), and the underground portion (in conduit) totals approximately 84,600 cf. The secondary system consists of approximately 70,600 cf of overhead line and 70,000 of underground (in conduit). The system also includes 92 three-phase transformers, 490 single-phase transformers, 21 switches (2-, 3-, and 4-way), 7 reclosers, 50 sectionalizers, and 820 streetlight fixtures. The 1998 annual consumption was approximately 48 million kWh with a peak demand of approximately 8.3 MW.

Natural Gas: Natural gas is supplied by Energy West Inc. through a single utility-owned metering station at a pressure of approximately 50 psig. Gas is distributed to the industrial areas on the Base at this pressure. A utility-owned regulating station reduces the pressure to approximately 15 psig for distribution to other areas. The distribution system is generally looped so that buildings can be fed from at least two different paths. There are approximately 158,900 linear feet (lf) of distribution piping, including mains and service connections. Approximately 90 percent is polyethylene and the remaining is coated steel. Steel gas piping is protected by an impressed current system. Pipe sizes range from ¾-inch to 8-inch. There are approximately seven district regulators in the housing areas. Each building has at least one regulator to lower the gas pressure for equipment and appliance use. There are approximately five revenue meters that are read on a regular basis. Additional meters have been installed on recently constructed facilities for energy management purposes. Peak gas demand is approximately 51,300 thousand cubic feet (MCF) per month.

Potable Water: The City of Great Falls, Montana supplies potable water through a 12-inch line to two concrete storage tanks located at grade with a total capacity of 1.7 million gallons (MG). A pump station delivers water from these storage tanks to the distribution system. The pump station includes two 60 horsepower (hp) pumps, one 100 hp pump, and a 175 kW standby generator. A chlorination system utilizing 150-pound cylinders is used to assure adequate residual chlorine levels. The distribution system piping totals approximately 241,500 lf, including mains and service connections. Pipe sizes range from ¾-inch to 20-inch. Pipe materials include cast iron, steel, copper, asbestos cement, and PVC. There are

two elevated steel storage tanks of 500,000 and 250,000 gallons. Current peak water demand is approximately 50 MG per month.

Sanitary Wastewater: Wastewater treatment is provided by the City of Great Falls, Montana. Wastewater collection piping totals approximately 137,500 lf of PVC, vitrified clay, and concrete pipe, including mains and service connections. Some of the pipe has been slip-lined. Pipe sizes range from 4-inch to 24-inch. Wastewater collection piping includes both gravity and pressure piping. Wastewater collected on Base flows to the main lift station where it is pumped to the City of Great Falls collection system. The main lift station consists of two inlet channels with comminutors, bypass channel with manual bar screen, wet well, two 50 hp pumps located in a dry pit adjacent to the wet well, and a 100 kW standby generator. There are three other smaller lift stations located on Base. Two of these lift stations are simplex units and the third is a duplex unit. Wastewater flows average approximately 0.62 million gallons per day (mgd).

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