

MEMORANDUM



TO: Wyoming Water Development Commission
FROM: Edward Harvey and Doug Jeavons
RE: Current Industrial Water Use
DATE: October 6, 2000

Introduction

This memorandum describes current water use in the Bear River Basin for industrial purposes. Industrial enterprises located within the City of Evanston are supplied by the Evanston municipal water system, and these uses have been previously accounted for in the technical memorandum on municipal water use (Task 4, Memo 3). This memorandum thus focuses on industrial users that rely upon their own water supplies from either surface diversions or groundwater wells.

Overview

In contrast to some other Wyoming river Basins such as the neighboring Green River Basin that feature extensive water use for industrial purposes, industrial water use in the Basin represents only a very small proportion of overall water demands. Further, direct diversions to industrial users are limited to a small number at present. Currently, the only substantial self-supplied industrial water use in the Basin is for purposes of natural gas processing. (Shoemaker, 1999). In particular, two energy firms, Chevron and BP Amoco, account for essentially all self-supplied industrial water use within the Basin.

Natural Gas Processing Water Use

Basin natural gas production is divided into two units — the Painter Resource Unit and the Whitney Canyon/Carter Creek area. The Painter Resource Unit is further divided into two fields — Painter Field and East Painter Field. Painter Field is the closest to hydrocarbon depletion and is likely to be abandoned within five to eight years (DeBerry). East Painter Field would appear to have at least 15 years of production left under current economic and technological conditions. Both Chevron and BP Amoco have gas-processing facilities in the Painter Unit (DeBerry).

The Whitney Canyon/Carter Creek Field is a "world class", large and deep field (DeBerry). There are two major processing plants in this field, one owned by Chevron and one owned by BP/Amoco. At a minimum, this field is likely to still be producing in 20 years and with changes in either economic conditions or technological advancements, the potential exists for increased activity in this field over that period. For example, well drilling costs are now one-third of what they were twenty years ago. Nonetheless, Chevron expects one of the two processing facilities to be closed within the next decade (DeBerry).

In general, Basin oil and gas activities do not require very large water volumes. The exception is the Chevron gas plant in the Whitney Canyon/Carter Creek Field — which uses a water intensive process. This plant uses 8.5 million gallons of water per month (310 acre feet per year) at current operational levels and could use as much as 12 million gallons per month (440 acre-feet per year) at full capacity. These water needs are met with surface supplies from Bear River, via a pipeline from the Woodruff Narrows Reservoir. Chevron has excellent, senior water rights that allow for more diversions than appear likely to be required in the future. (DeBerry).

BP Amoco water demands for natural gas processing are entirely supplied from groundwater wells, and are considerably smaller. The average annual water use for gas processing from the beginning of March 1995 through the end of August 2000 by BP Amoco was approximately 90 acre-feet per year. Maximum water use, at full capacity, could be as much as 155 acre feet per year, based on a maximum daily reading of 136,800 gallons per day over this period. (Robinson, 2000).

Summary

Industrial water use in the Basin includes both firms that are supplied by the Evanston municipal water system and self-supplied water use by Chevron and BP Amoco for natural gas processing. Industrial uses in the Basin represent a very small proportion of overall water demands. While some industrial use is represented within the municipal water demands described in other technical memorandums, self supplied industrial use currently requires about 400 acre feet under average year conditions, with a current potential maximum annual demand of about 595 acre feet under full capacity gas production conditions. All but one of the five natural gas-processing plants in the Basin rely upon groundwater wells for their supplies. However, the largest self-supplied industrial water user is the Chevron plant at Whitney Canyon/Carter Creek, which uses surface supplies to meet its annual demands of 310 acre feet under average conditions or 440 acre feet at full capacity, accounting for over 75 percent of the total water used by self-supplied, industrial water users in the Basin.

References

Interview with Michael DeBerry, Chevron Asset Manager, May 2000.

Interview with Don Shoemaker, Water Superintendent, November 1999.

Data provided by John Robinson, Maintenance Production Foreman, BP Amoco, September 2000.