

Title: North Refinery Water Conservation Plan

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The water supply for the Kennametal Fallon Refinery is a dedicated well that supplies approximately 43,000 gallons per day of fresh water to the single facility for industrial and domestic purposes. Conservation of this water resource is in Kennametal's best interest, because any water used for industrial purposes must be disposed of by evaporation. This document describes the water conservation practices that are currently being utilized by the Kennametal - Fallon facility. Those conservation practices may be summarized as monitoring water use with corrective action and recycling water.

#### **Domestic Water**

The domestic water use at the Kennametal refinery equates to approximately 15% of the total water volume consumed by the facility (6,500 GpD). This water is fresh well water that has been purified by reverse osmosis and disinfected with chlorine. The primary use of domestic water is for sanitary purposes and conservation efforts include restricted flow shower nozzles and low flush toilets. Used domestic water is disposed of in a septic system.

#### **Industrial Water**

Industrial water use at the Kennametal refinery is carefully monitored on a weekly basis using a water balance that tracks water usage at various use points. An example of this water balance is attached and incorporated as Exhibit A. The value of the water balance is that non-beneficial water uses are rapidly identified and corrected. Examples of non-beneficial water uses include leaking pipelines and leaking or broken valves.

In addition to monitoring the industrial water use, the Kennametal refinery treats and recycles used industrial water. Treated industrial water is referred to as process water and is recycled through the various plant operations that do not require high purity water. The typical recirculated volume of process water at the Kennametal refinery is about 60,000 gallons per day.

#### **Water Disposal**

All of the water used at the Kennametal refinery for industrial purposes must eventually be disposed of by evaporation. The various unit operations within the refinery such as product drying, steam generation and exhaust scrubbers account for about 12,000 gallons per day of the incoming fresh water. Treated process water is also used for dust suppression around the facility which has the added benefit of being an evaporative water disposal method. Approximately 16,000 gallons per day of water are used for dust suppression. This leaves a balance of 8,500 gallons per day of water that must be disposed of by other evaporative methods. This excess water is transferred to a pair of evaporation ponds that have floating spray barrages to enhance evaporation rates. The capacity of those ponds, along with the seasonal conditions that limit evaporation rates are the overall limiting factors on how much fresh water may be used at the Kennametal refinery. An unchecked water balance and/or long term non-beneficial uses of fresh water would result in exceeding the capacities of the evaporation ponds; and that type of condition, would require significant capital expenditures for resolution.

This chart is a record of all revisions of the procedure. The nature of the revision is briefly noted under remarks.

Revision	Date	By	EHS	Plant Manager
0	10 MAR 2014	G. McMillen	L. Bartoli	M. Botsford

## Appendix A

### North Refinery Fresh Water Usage

01/15/14

Use Area	Daily Use		Month to Date Use	
	Gallons	rate (GpM)	Gallons	rate (GpM)
Vanners	1,464	1.0	22,051	1.0
New RO	24,055	16.7	355,594	16.5
DR Tank	549	0.4	15,827	0.7
Spec Prod	0	0.0	0	0.0
Boiler Feed	8,329	5.8	124,939	5.8
SP Quench	0	0.0	7,080	0.3
Scrubber Flocc	0	0.0	0	0.0
Scrubber Make up	128	0.1	3,420	0.2
Truck Fill	8,838	6.1	114,895	5.3
Cooling Water Make Up	768	0.5	11,262	0.5
All other (balance)	7,597	5.3	103,166	4.8
<b>Well Water total</b>	<b>34,560</b>	<b>24.0</b>	<b>518,400</b>	<b>24.0</b>
Water to West Pond	0	0.0	8	0.0
Water to Mid Pond	13,484	9.4	202,257	9.4

### North Refinery Pond Status

01/15/14

Pond	Level (inches)	Contained Volume (Gallons)	% of Capacity	Daily Accumulation rate (GpM)	MTD Accumulation rate (GpM)
East	20.3	704,038	18.1%	6.4	5.5
Middle	73.5	1,628,168	72.4%	4.4	4.8
North	0.6	4,107	0.4%	0.2	0.2
South	35.1	274,258	28.9%	1.5	1.3
<b>Total Ponds</b>		<b>2,610,570</b>	<b>32.5%</b>	<b>12.5</b>	<b>11.8</b>