

BOZEMAN SPIRITS DISTILLERY

Intern: Cindy Ufelle

Business Owners: Jim & MaryPat Harris

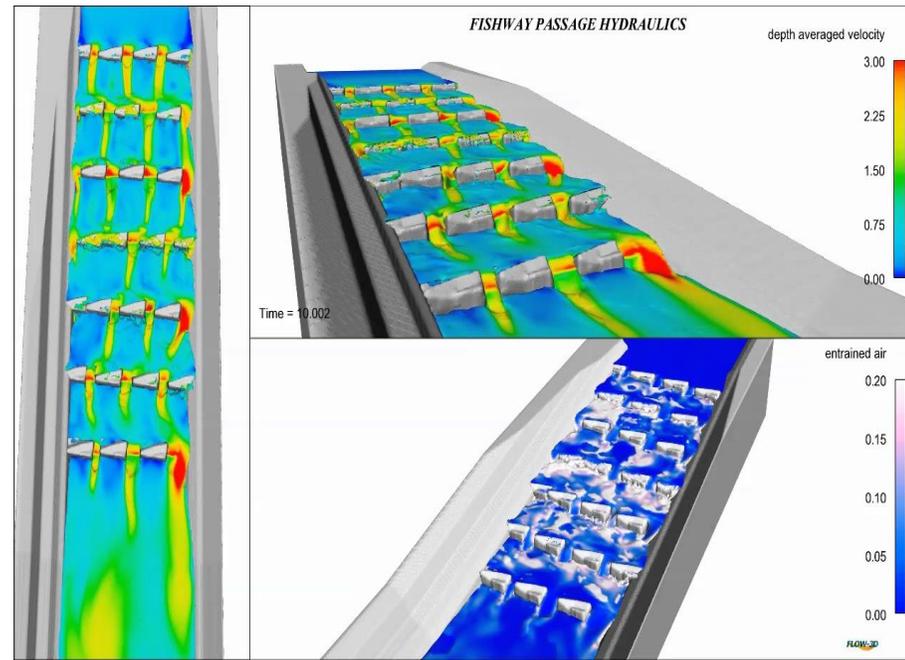
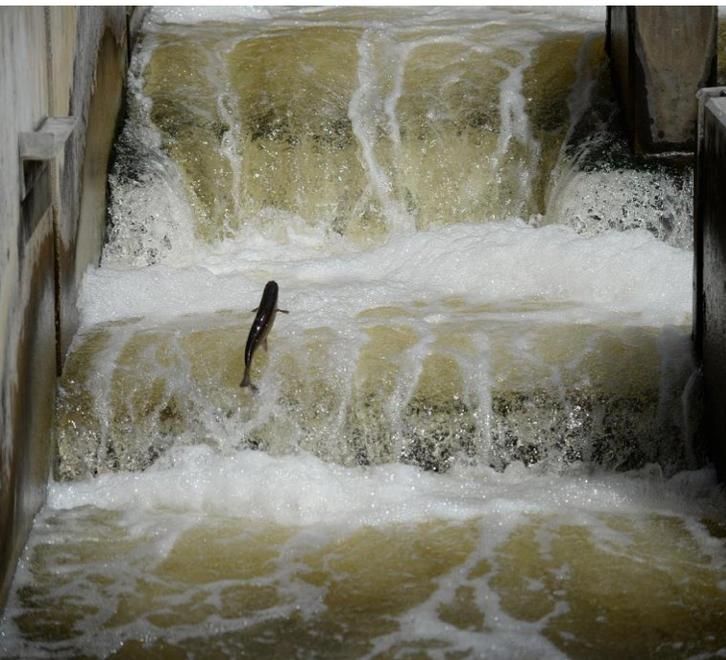
MMEC Advisor: Alistair Stewart

MSU Advisor: Jennifer Grossenbacher



August 09, 2023

SELF INTRODUCTION



WHY JOIN THE P2 PROGRAM

- Skill Development
- Real-life Experience
- Networking
- Income

INDUSTRY SIGNIFICANCE

❖ **INDUSTRY:** Alcoholic Beverage Industry

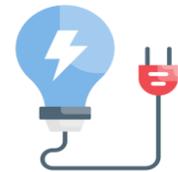
❖ **ENVIRONMENTAL IMPACTS:**

- Wastewater Generation
- Energy Consumption (~370 GWh)
- Excessive Water Usage
- By-products Utilization for Agricultural Purposes



❖ **IMPACTS ON ECONOMIC DEVELOPMENT:**

- Provides Support to Local Farmers and Agricultural Sectors
- Tourism
- Supporting Ancillary Industries (Bottles, Equipment, etc.)
- Community Development through Local Development Projects



COMPANY INTRODUCTION

- **Owners:** Jim and Mary Pat Harris
- **Year Founded:** 2014
- **Location:** 121 West Main Street, Bozeman



- **Montana 1889 Whiskey**
- **Bobcat Gold Bourbon**
- **Jim Bridger Bourbon Whiskey**
- **Ruby River Gin**
- **Montana Cold Spring Lemon Vodka**
- **Montana Cold Spring Huckleberry Vodka**
- **Montana Cold Spring Vodka**
- **Arrestado Agave Spirit**
- **Prairie Schooner Spiced Rum**
- **Montana Mary Mix**



Market

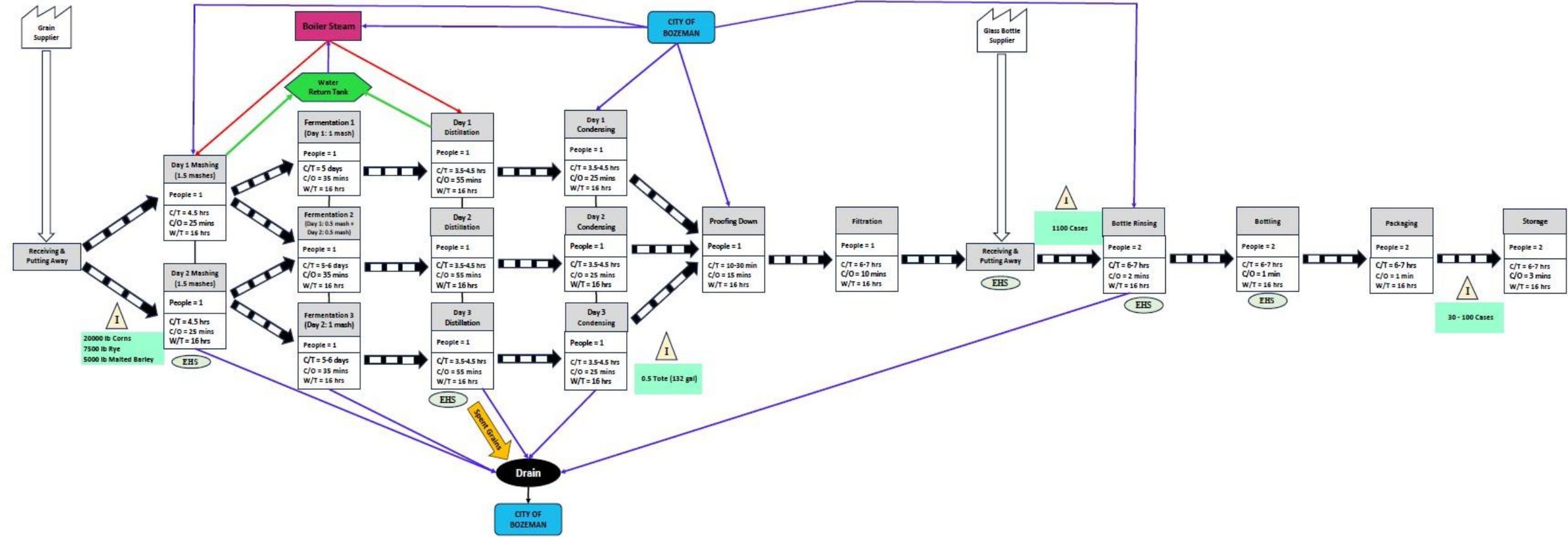
- **Wholesale = Montana State Liquor Warehouse**
- **Retail = Bozeman Spirits bar and Online order**

Expressed P2 Interest

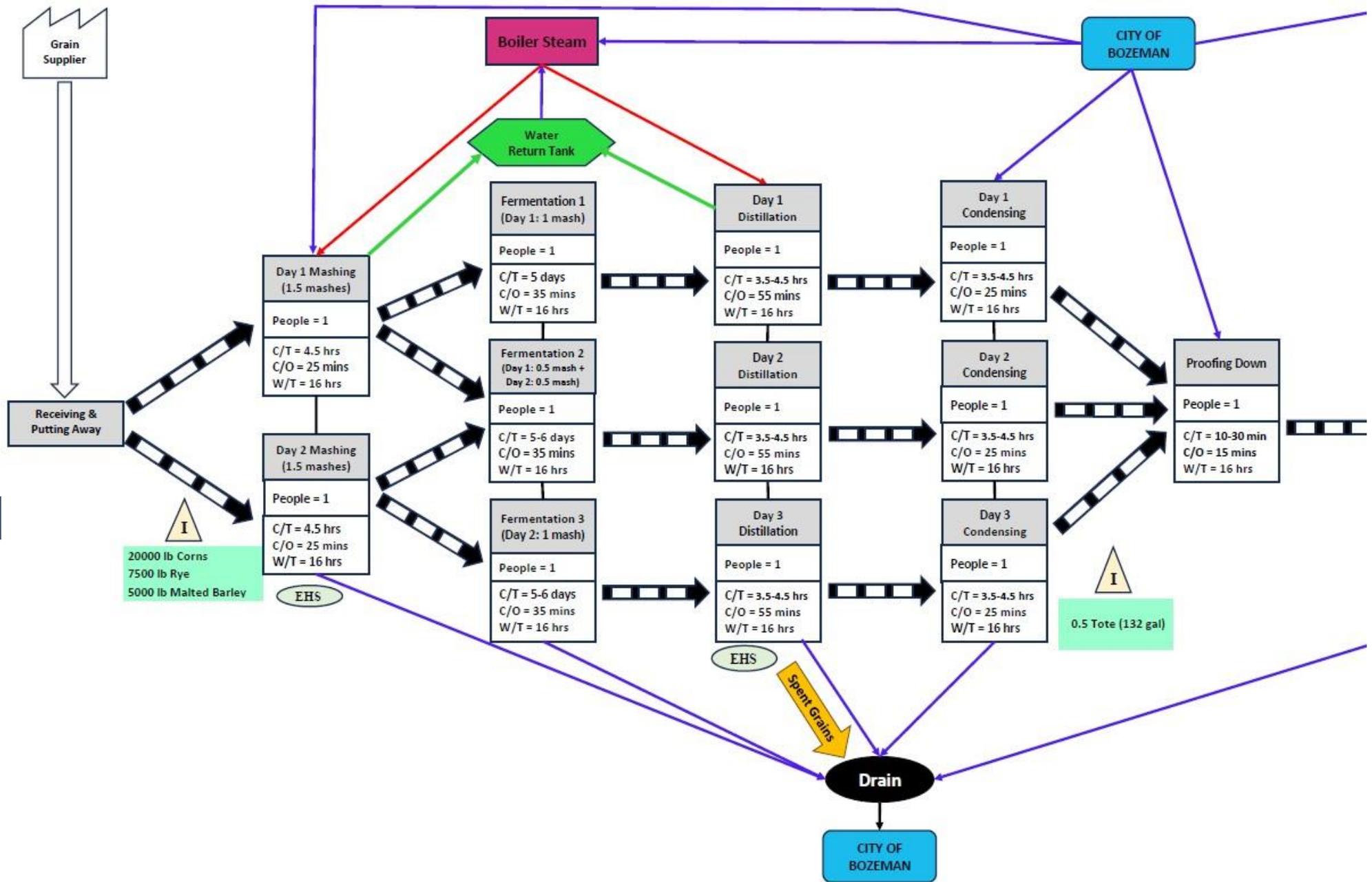
- **Reduce water use in the distillery**
- **Minimize energy use**
- **Reduce other waste**



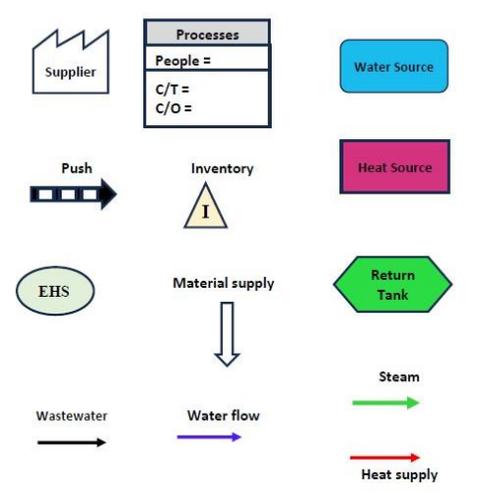
VALUE STREAM MAP (CURRENT STATE)



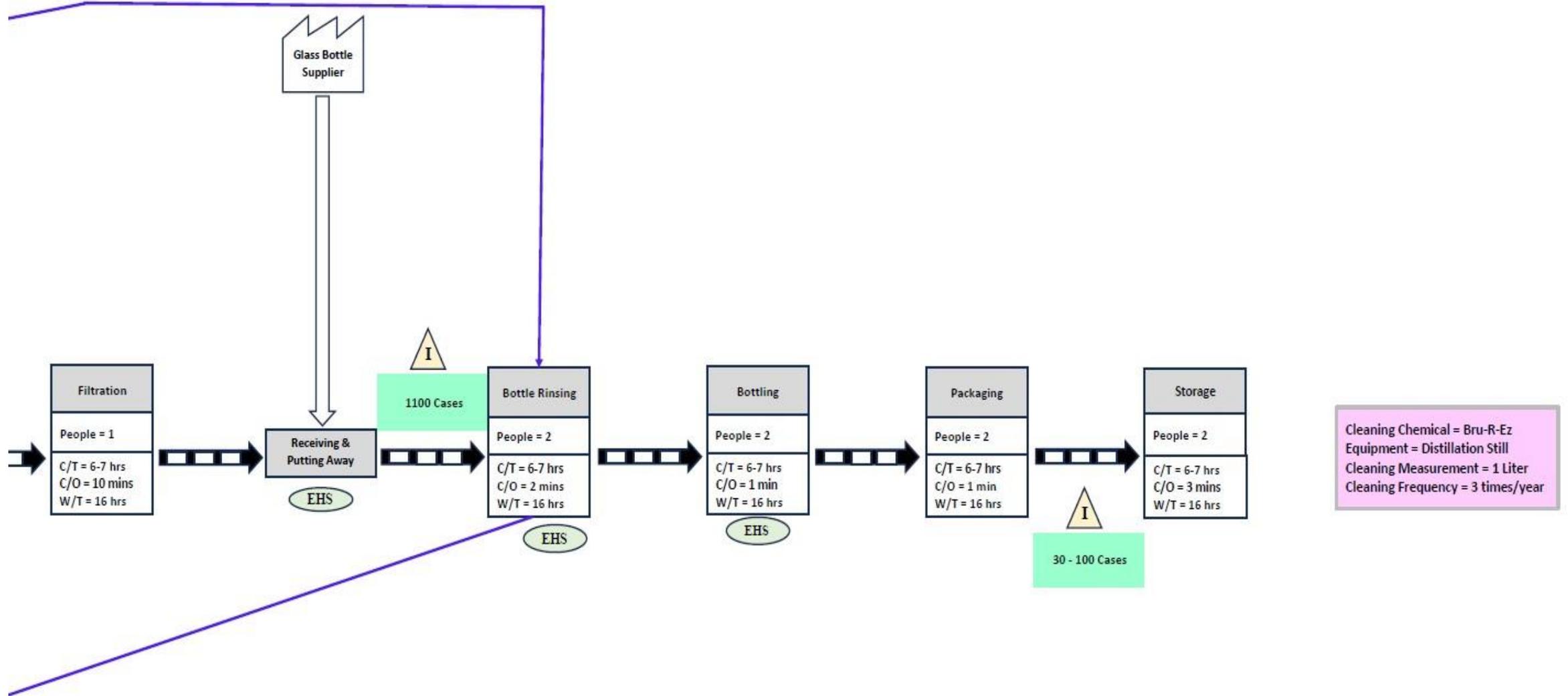
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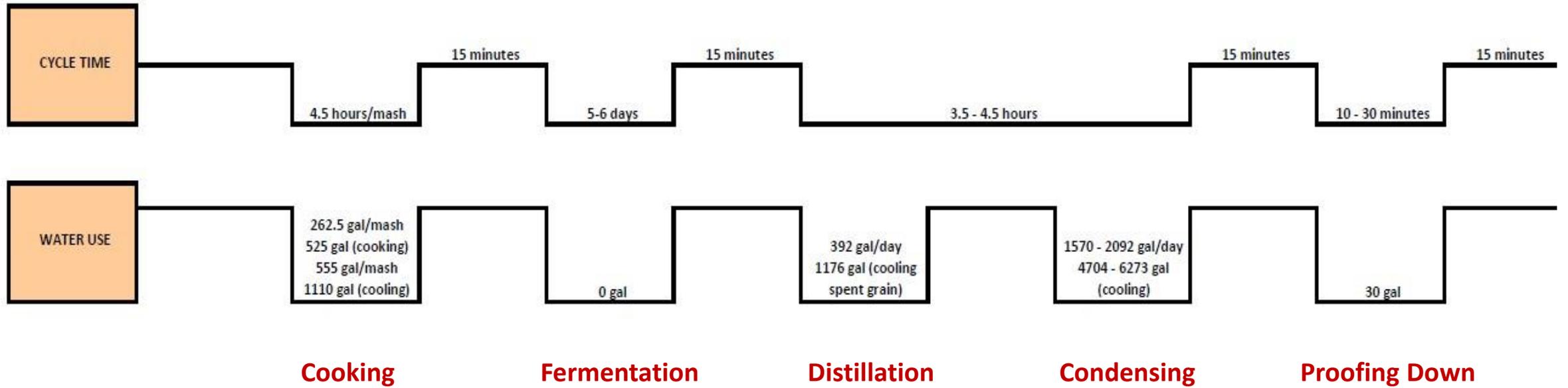
VSM Tools and Icons



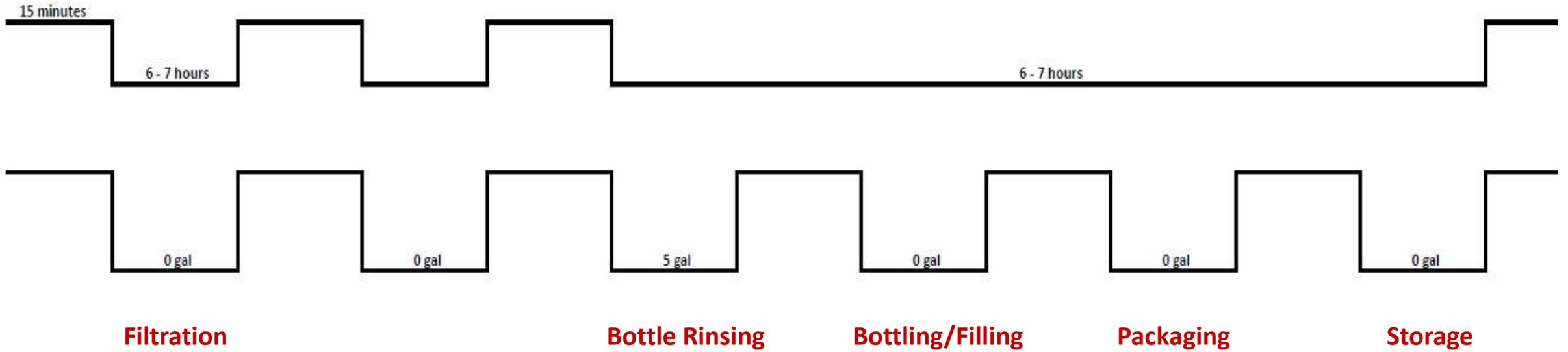
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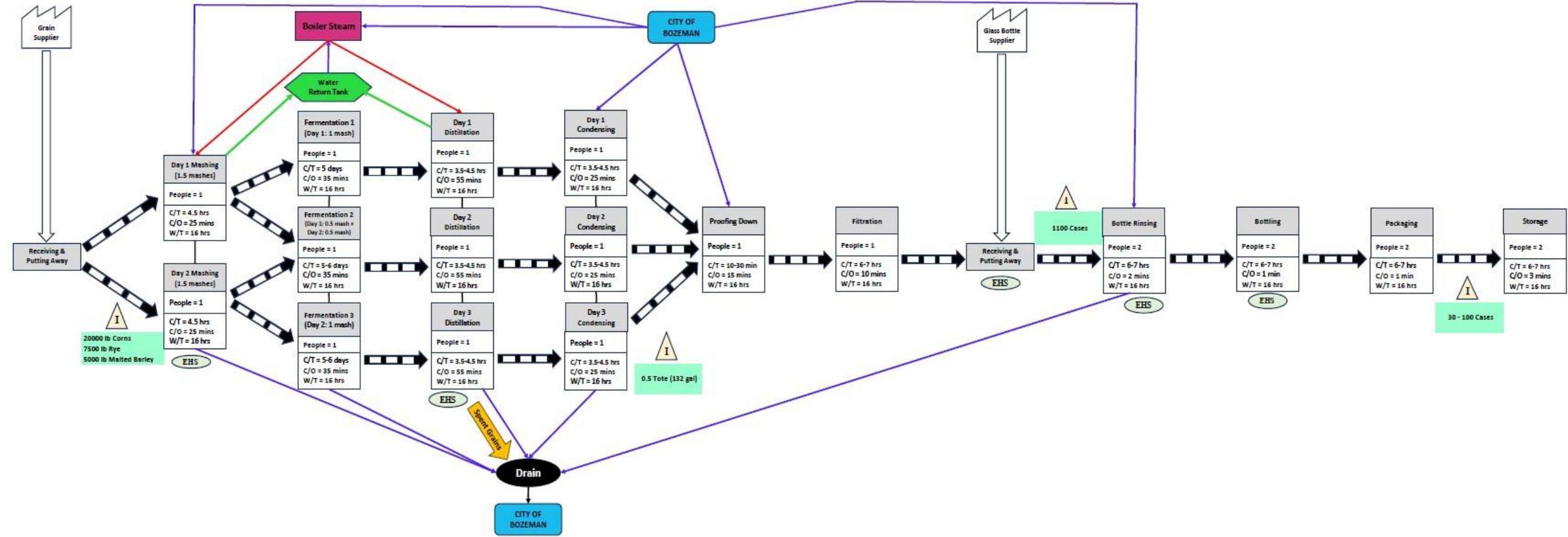
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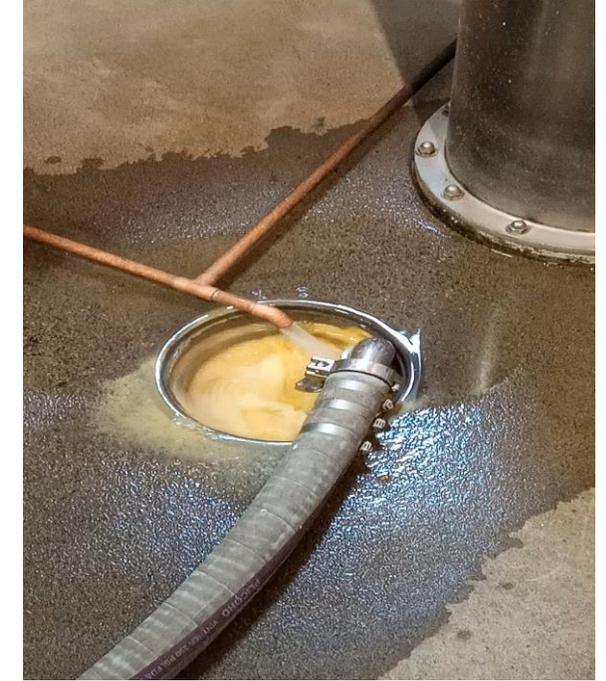
IDENTIFIED AREA OF P2 FOCUS

➤ Water Conservation

- Recycling or reusing water

➤ Waste Management

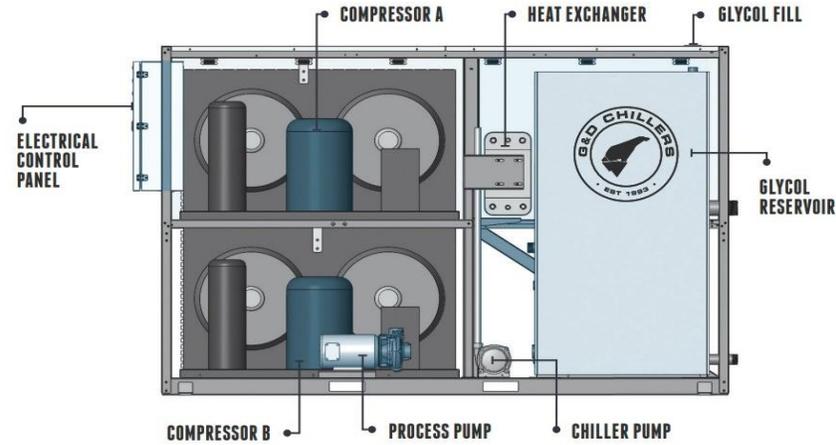
- Repurposing spent wash
- Waiting time reduction
- Equipment capacity increase



ATTEMPTS AND PROPOSED SOLUTIONS



KEY COMPONENTS



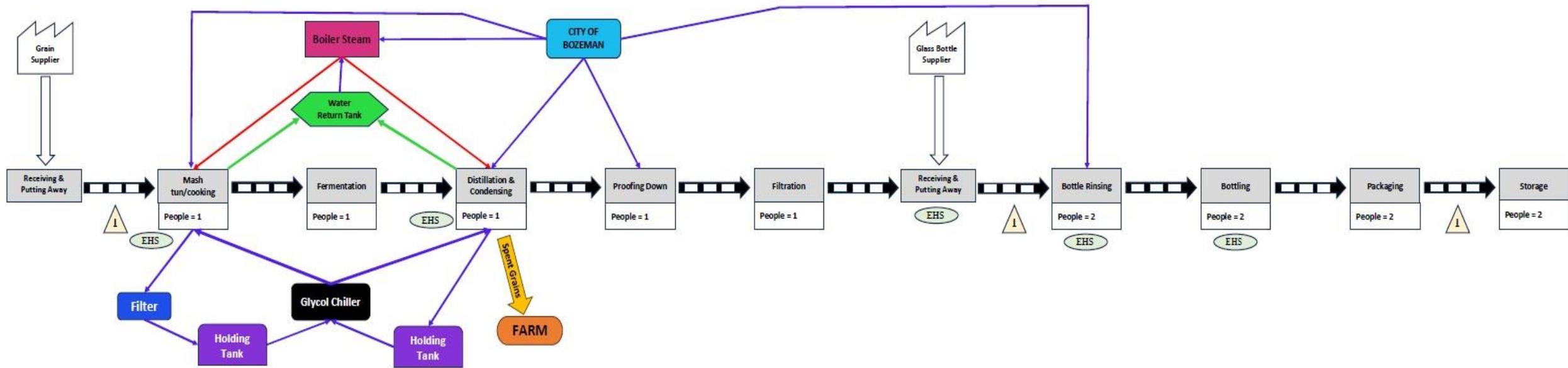
- ✓ Anaerobic Digestion -> Biogas, Water and CO₂
- ✓ Aerobic Digestion -> Biogas, Water and CO₂
- ✓ Dewatered Spent Wash -> Animal Feed
- ✓ Installation of Energy Meters on each Equipment



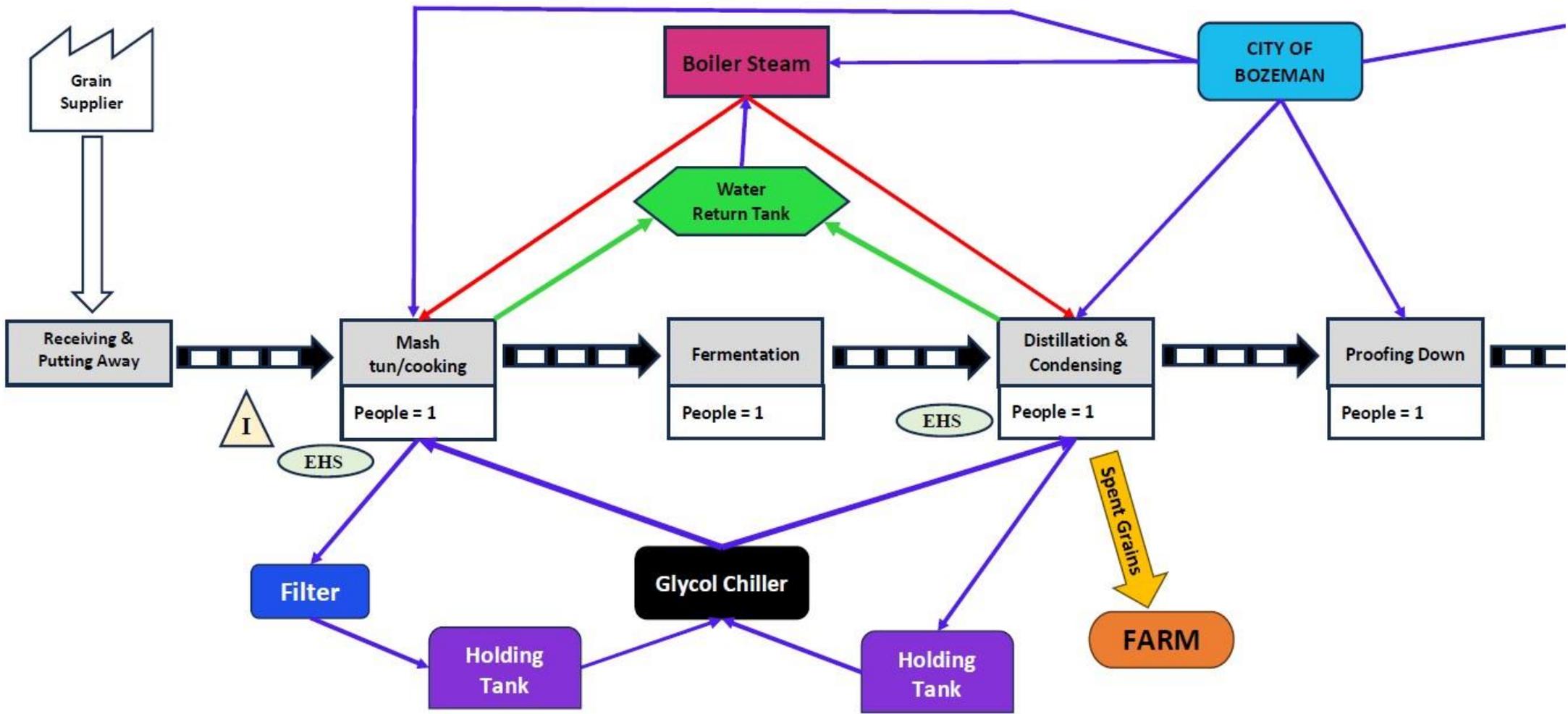
Vendome
COPPER
& BRASS WORKS
INCORPORATED



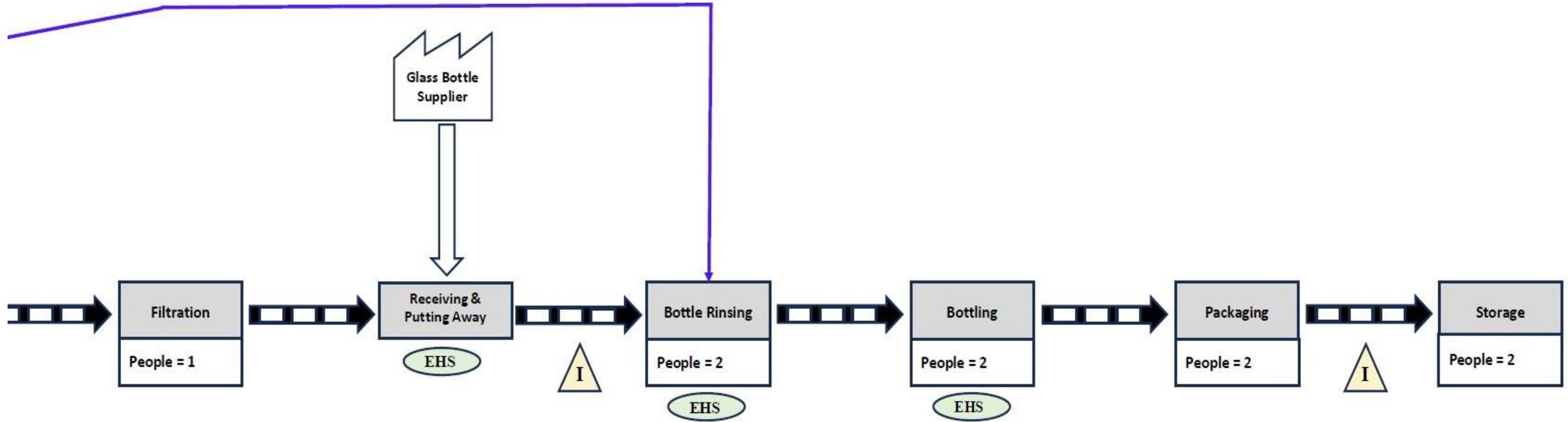
P2 OUTCOMES (FUTURE STATE VALUE STREAM MAP)



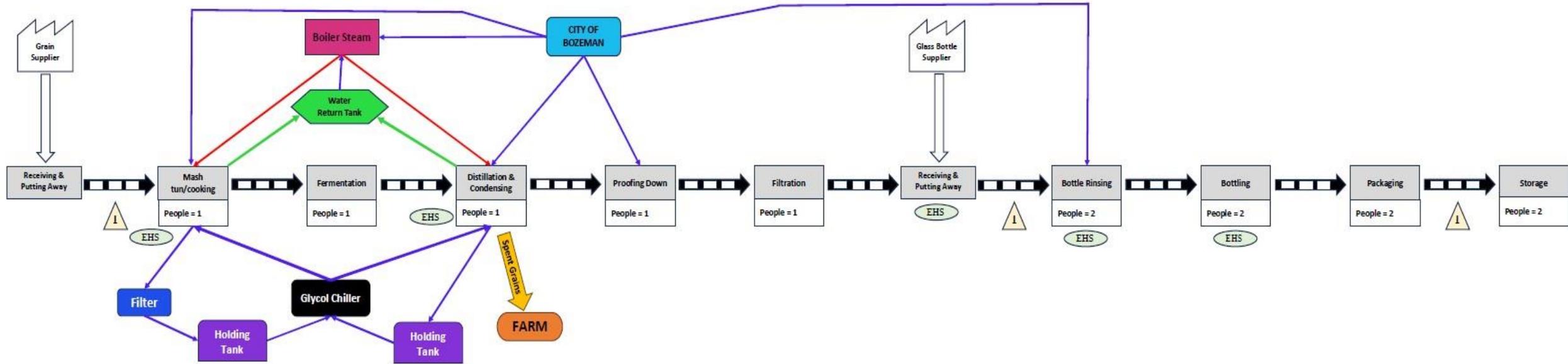
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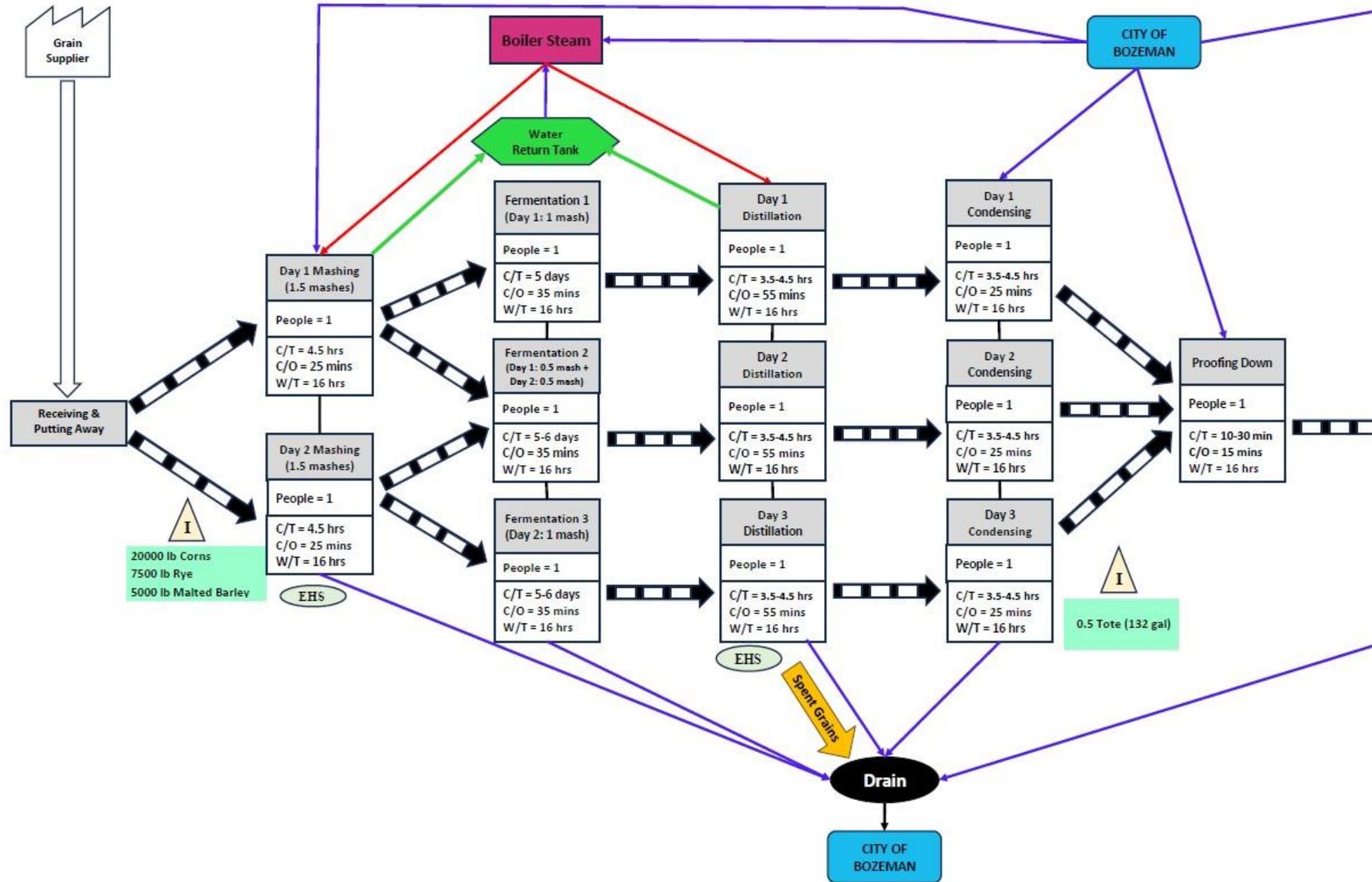
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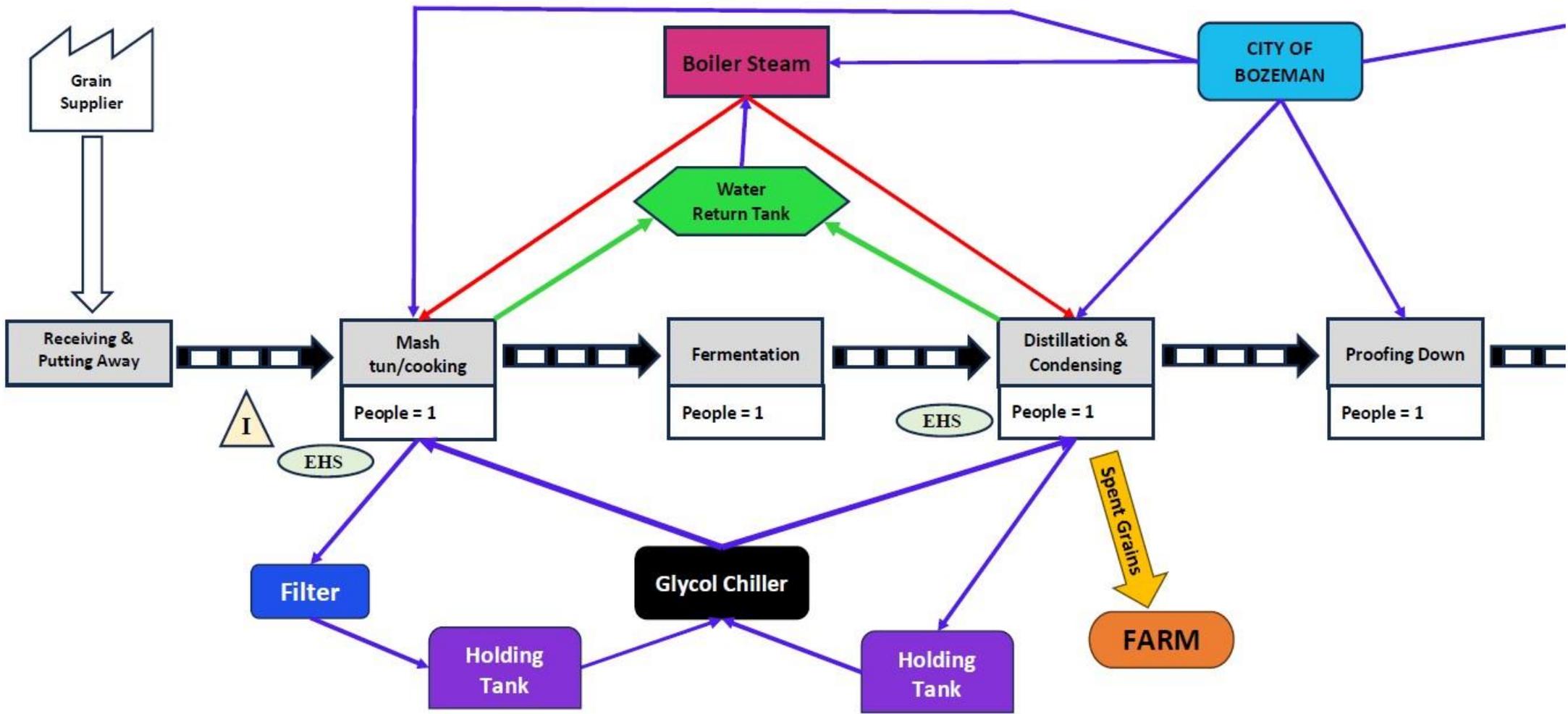
P2 OUTCOMES (FUTURE STATE VALUE STREAM MAP)



VALUE STREAM MAP (CURRENT STATE)



VALUE STREAM MAP (FUTURE STATE)



P2 OUTCOMES (TABLE)

Recommended P2 Actions	If Implemented:				If Not Implemented:	
	\$		Annual Reductions			
	One-time Cost to Implement (\$)	Annual Savings from P2 Actions (\$)	Water Pollution (lbs)	Water Use (gal.)	Barrier to Implementation	Plans to Implement within 5 years? (Pick Y/N)
Glycol Chiller Installation	TBD	2,444		404,592	Funds	Y
Fully/Semi-Automated Bottling Line	TBD	-	-	-	Funds	Y
Higher Capacity Distillery Equipment Purchase	483,602	-	-	-	Funds	Y
Spent Wash Repurposing	-	-	301,838	-	Lack of Technical Know-How for the Digesters	Y

Density of Spent Wash ≈ 8.22 lbs/gal.

❖ Personal Learning:

- Understanding the production process of alcoholic beverages making
- LEAN principles
- Types of waste



❖ Recommendations for Future P2 Interns:

- Do the Gemba Walk
- Draw an initial flow chart of the production process and work from there
- Ask questions and seek feedback
- Help out at the business as much as you can

❖ Recommendations for P2 Advisors:

- Training week should be excluded from the 10 weeks of internship



ACKNOWLEDGEMENT

FUNDING: Environmental Protection Agency (EPA)

LAND ACKNOWLEDGEMENT: “Montana State University is located upon the homelands of indigenous peoples: people with proud heritage, a vibrant present, and a bright future. We acknowledge the Assiniboine, Blackfeet, Chippewa Cree, Crow, Gros Ventre, Kootenai, Little Shell, Northern Cheyenne, Pend d’Oreille, Plains Cree, Salish, Sioux, Hidatsa, Mandan, Arikara, and the other indigenous nations of this region in the past, present, and future. We recognize that this rich human tapestry is central to our institutional mission of learning, discovery, and engagement.”

SPECIAL THANKS TO:

- Jim and MaryPat Harris
- Cortney Peres
- Tim Mastas
- Alistair Stewart
- Jennifer Grossenbacher
- Barbara Watson
- Dr. Wan Yuan Kuo



REFERENCES

- ❖ **EPA Lean and Environmental Toolkit**
- ❖ **EPA Lean and Water Toolkit**
- ❖ **Energy Efficiency and Cost Saving Opportunities for Distilleries: An ENERGY STAR® Guide for Energy and Plant Managers**

THANK YOU

