

MA No. 172730
Log No. 14083

The Bull Mart LLC

Animal Waste Management Plan

September 2014

Operated by:

Louie Molt
72299 Turnout Road
Burns, OR 97720
541-573-7888

Facility Location:

72299 Turnout Road
Burns, OR 97720

Operation Type:

Beef Feedlot
Medium Confined CAFO

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ODA - AREA V

As owner and operator of The Bull Mart LLC feedlot, I intend to manage in accordance with the practices and operation and maintenance described in this Animal Waste Management Plan.

Signature of Legally Authorized Representative: _____

Print Name: Louie MOLT

Date: 12/3/14

GENERAL NARRATIVE DESCRIPTION

The Bull Mart feedlot is located on Turnout Road near Burns, Oregon and is owned by Louie Molt. This feedlot is a beef backgrounding, finishing operation and bull development yard. There are 419.2 acres of cropland available for manure application.

The feedlot is in operation from October through May and animal numbers may reach up to 600 head. The cattle are of mixed and purebreds. Up to 400 animals are brought onto the feedlot each fall at a weight of approximately 500 pounds. These background cattle are kept at the operation for about one month before being shipped off at a weight of 550 to 600 pounds. Up to 100 animals are kept in the pens and finished out, the average weight while at the feedlot is approximately 1,000 pounds. The purebred bulls (up to 100 head) being developed at the feedlot are sold from January through May. The bulls average weight are approximately 1,000 pounds.

Manure Collection Methods

All cattle are confined in earthen pens. The manure is collected in the pens where it dehydrates and is used as bedding for the cattle. When the cattle are removed from the facility, the pens are cleaned and the dry manure is used as a soil amendment. Some manure is left in the pens and is mounded for bedding in the fall.

An earthen sediment and abatement pond was constructed with assistance from Harney Watershed Council. The pond is permitted through the Oregon Water Resources Department. All storm runoff from the feedlot filters through adjacent rangeland collecting in the sediment pond.

Manure Storage Facilities and Transfer

The manure generated at the facility is handled in a dry solid form. Dry manure is scraped and stacked within the feedlot during the confinement period, and then land applied during the growing season. All manure will be contained within the facilities. Solid manure is transported to fields using two solid manure spreaders, dump trucks and/or belly dumps.

Manure Utilization

The land available for manure application is owned or leased by Louie Molt. The crops are used as feed for the cattle. Additional feed may be imported to the feedlot. Dry manure is spread on grass fields or alfalfa in rotation, typically in the fall of the year. Manure is not only used for nutrient benefits, but also to improve soil tilth through the inputs of organic material. This plan is balanced for nitrogen rates of manure application.

SPECIFIC DESCRIPTIONS AND CALCULATIONS

Land Application Areas

Maps that show aerial imagery of the production area, field boundaries and acres, surface water features, and soils are attached (located on pages 8 through 14). Also soil map unit descriptions begin on page 16 for all soils in manure application areas.

Manure and Waste Volumes

Calculated volumes of all manure have been completed based on the Agricultural Waste Management Field Handbook produced by the Natural Resource Conservation Service (NRCS) (see spreadsheet starting on page 23 titled Waste, Water and Nutrient Computations).

Nutrient Content of Manure, Litter and Process Wastewater

The same spreadsheet estimates the nutrient content of manure.

Farm Nutrient Balance

The spreadsheet also includes calculated data for nutrient balance for the operation. A phosphorus index based on the NRCS Agronomy Technical Note 26 was completed for each field. The field information, weighted value rating and the site vulnerability class for each field are shown in an attached spreadsheet titled Phosphorus Index Summary (see page 25). Based on the results of the phosphorus index and the nutrient balance The Bull Mart feedlot manure application rates can be made to meet the nitrogen needs of the crop.

Application Schedule and Limitations

Solid manure is applied onto farmland at agronomic rates in the summer and fall. Manure is applied at agronomic rates using manure spreaders. The equipment is calibrated using a drive-on scale method as follows:

1. Load the spreader to an average full level.
2. Weigh the loaded spreader and tractor; spread the load and re-weigh the empty spreader and tractor. Subtract to get the "pounds of manure applied."
3. Measure the land area covered when emptying the spreader. Calculate the land area covered with one tank wagon load as:

$$\frac{\text{width (ft)} \times \text{distance (ft)}}{43,560 \text{ ft}^2 \text{ per acre}} = \text{total area in acres}$$

4. Calculate the tons of manure applied per acre:

$$\frac{\text{pounds manure applied}}{\text{total acres covered (acres) x 2,000 lb/ton}} = \frac{\text{tons}}{\text{ac}}$$

5. Multiply the tons/acre by the nutrient content in lbs/ton to estimate nutrient application rate.
6. Adjust manure application rate to obtain the **desired nutrient application rate**.

Manure will not be applied to saturated or frozen soil, or during any precipitation that is excessive enough to cause runoff or ponded water. A 35-foot vegetated setback is implemented when applying manure to cropland that is adjacent to surface waters of the state.

At full capacity the facility will generate approximately 28,278 cubic feet of manure (see Water, Waste, and Nutrient Computations spreadsheet on page 23). The 12-acre feedlot has the capacity to store at least 522,720 cubic feet of manure, which provides more than 365 days of storage. As the annual nitrogen needs of the crops exceed the annual nitrogen generated by cattle in confinement, the feedlot provides more than adequate storage capacity for manure solids.

Sprinkler and flood irrigation systems are used on all of the manure application acreage. To decrease non-point source pollution of surface and groundwater resources, irrigation water is applied at the volume, frequency and application rate appropriate for crop production. Irrigation water will not be applied at rates that exceed soil infiltration or crop evapotranspiration. No tile lines or other form of artificial drainage are used on the property. The following table shows a one-time irrigation event amount based on 30 inches of managed root depth, 50% soil moisture depletion, the soil's available water capacity (AWC), and the consumptive crop use of grass hay crops.

Field	Soil	Soil Depth	AWC (in)	Irrigation Period	Net Application
Moms	Reluctan	30 inches	3.9	Apr - Aug	1.95 inches
Mustang	Voltage-Widowspring	36 inches	10.7	Apr - Aug	2.57 inches
Eggleston or LCS Home	Fury-Skidoosprings-Opie complex	12 inches	1.8	Apr - Aug	0.27 inches
Eggleston or LCS Home	Fury	80 inches	11.6	Apr - Aug	2.86 inches
Eggleston or LCS Home	Widowspring	80 inches	12.6	Apr - Aug	3.11 inches

Animal Mortality Management

Currently natural methods are utilized for managing animal mortalities. A deceased feedlot animal is placed in a remote location that is at least one-half mile from any dwelling and at least one-fourth mile from any running stream, then nature is allowed to take it's course.

The facility may also utilize burial; deceased animals are buried individually and the burial sites are at least 500 feet from surface waters or wells and the bottom of the hole is above the water table. The animal is buried to such a depth that no part of the body is nearer than four feet to the natural surface of the ground. Every part the body is covered with quicklime and then by at least four feet of earth.

The facility does not import deceased animals or animal byproducts generated from butchering. If a catastrophic loss of animals occurs the facility will contact the Oregon Department of Agriculture, Oregon Department of Environmental Quality, and local land use planning authority for guidance regarding mortality management for large volumes.

Operation and Maintenance

Animal Access Lanes or Walkways: Damaged components will be repaired or replaced as needed. Debris and excess manure will be removed from roadway surfaces, road ditch and drainage areas. Maintain drainage area capacities. Maintain good vegetative cover on all slopes and watercourses.

Culverts: Inspect annually or after large rainfall event. All foreign objects restricting water flow will be removed. Damaged sections will be repaired or replaced. Erosion around inlet or outlet will be corrected.

Feedlot Pens: Maintaining a firm, dry feedlot surface is an important factor in good animal health and the environment. Diversion ditches or berms should direct clean water flow away from feedlot pens and holding areas. Storm water runoff from pens will be collected and stored appropriately. Dry manure will be contained within the pen until removed for storage or field application. Manure accumulations created by manure packs or mounding will be managed such that a pollution hazard is not created. Short-term mounding may be used in conjunction with quick clean-ups used to reduce manure pack from around aprons and under fences. Manure will be removed annually from pens. When removing manure from pens, care is taken to maintain the integrity of the compacted protective seal or "hard pan".

Fencing: Fences will be inspected periodically. Broken or decayed posts will be replaced. Sagging wire will be tightened. Broken wire will be spliced or replaced. Broken or missing insulators for electric fencing will be replaced. Vegetation will be controlled under the fences. Electric fencing will be sufficiently charged to detour animals.

Irrigation Water Management: Irrigation water application will be at rates that minimize transport of sediment, nutrients, and chemicals to surface water and ground water. Equipment modifications and/or soil amendments such as polyacrylamides and mulches should be considered to reduce erosion if needed. Additional irrigation water management guidance is described on page 4.

Filter Strips: Maintain vigorous growth of vegetative covering. This includes reseeding, fertilization and application of herbicides when necessary. Periodic mowing, harvesting or grazing may also be needed to control height. Remove all foreign debris that hinders system operation. Limit the traffic from filter strip area. Limit livestock usage to vegetative growth periods when the animals will not damage vegetative root system or compact the soil. Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage.

Manure Application Equipment: All manure application equipment (including but not limited to spreaders, tank wagons, etc.) will be operated and maintained according to the manufacturer's manual. Equipment found to be broken or worn will be replaced. Equipment will be calibrated to ensure recommended rates are applied. Wear protective clothing when appropriate. When cleaning equipment after nutrient application, remove and save wastes in an appropriate manner. Avoid applying manure near surface water by establishing buffer strips and set backs, and use extreme care to avoid contaminating ground water.

Trough or Tank: Watering facility will be inspected periodically. Damaged tank/trough will be repaired or replaced. Float valves will be maintained in good working order. Area immediately surrounding the trough/tank will be maintained in a stable condition. Watering facilities will not be allowed to overflow if additional liquid will affect waste storage capacities.

Sediment Abatement Pond: Prior to the storage season, if necessary, empty the pond to provide storage capacity for the accumulation of precipitation runoff during the winter storage period. Sediment, sludge and/or accumulated solids will be removed from the pond periodically when buildup limits storage capacity in the pond.

Immediately repair any vandalism, vehicular, or livestock damage to any earth fill. Immediately remove any obstructions or blockage of spillways, trash racks or pipe inlets. Settlement or cracks in earthen sections should be investigated to determine cause and immediately repaired. Maintain vegetative coverings on the dikes to eliminate soil erosion. Control undesirable vegetation growth by spraying or mowing. Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity. Fill and reseed eroded embankment areas or repair with well-graded rock riprap. Safety feature such as signs and fences should be kept in good order. Operate systems in a manner that minimizes odor and drift.

RECORD KEEPING AND REPORTING

Monitoring:

At a minimum of once of every five years collect and analyze representative soil samples for phosphorus and nitrogen content from all fields where manure, litter and other process wastewaters are applied.

The following list of documents provide protocols for testing: manure, litter and process waste water; measuring crop nutrient removals; soil testing to evaluate nutrient application and crop uptake, and calculating manure application rates.

1. PNW 570-E, Monitoring Soil Nutrients Using a Management Unit Approach
2. E306, Manure Sampling & Analysis
3. EM 8768, Calculating Dairy Manure Nutrient Application Rates.
4. EM 8832-E, Post-harvest Soil Nitrate Testing for Manured Copping Systems West of the Cascades

Inspections:

- a) Periodically inspect:
 - a. Storm water diversion devices, runoff diversion structures, animal waste storage structures, and devices channeling contaminated storm water to wastewater and manure storage and containment structures.
 - b. Water lines, including drinking water or cooling lines.
 - c. Liquid impoundments for manure and process wastewater.
- b) When equipment is in use, periodically inspect the equipment used for land application of manure, litter, or process wastewater.

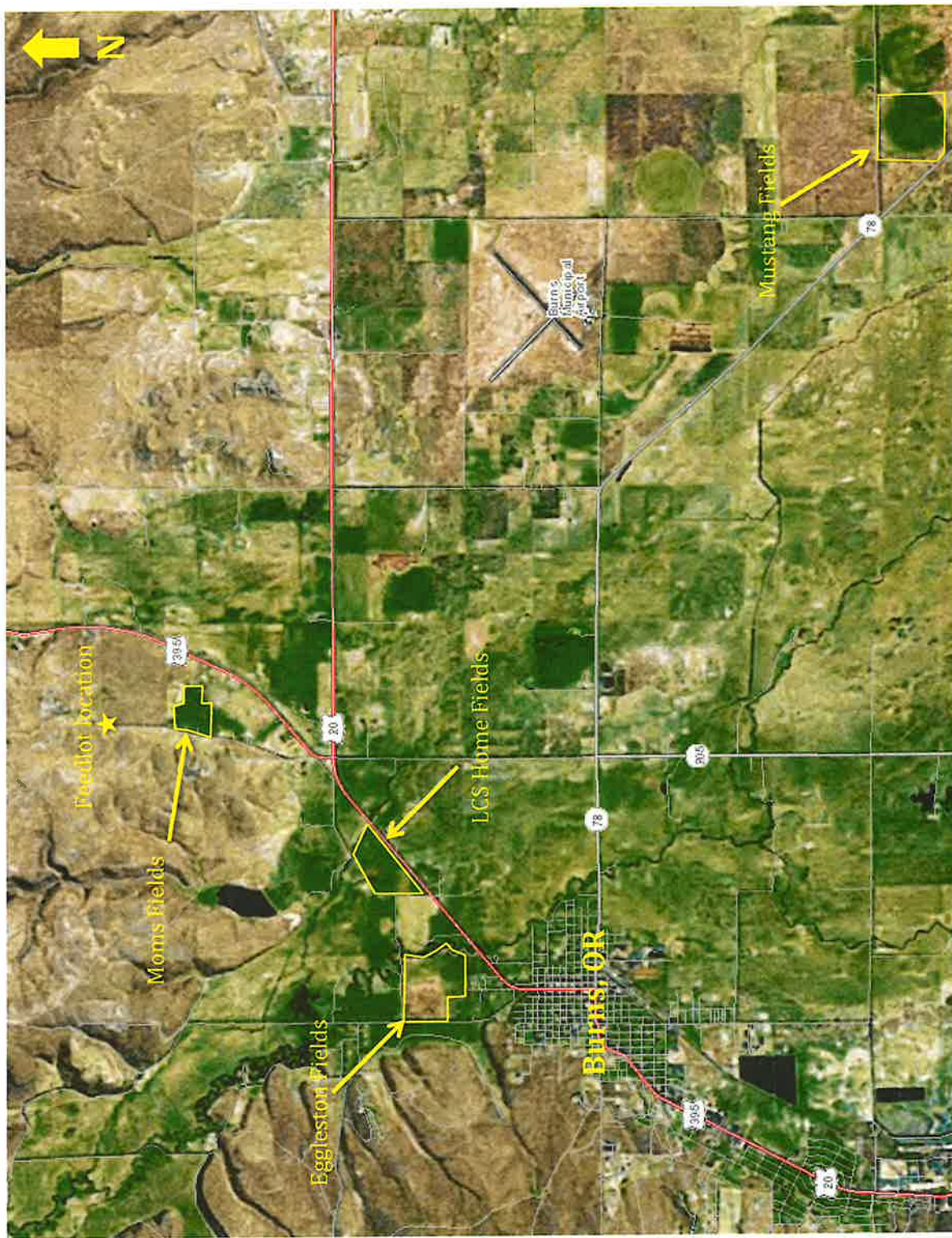
Record Keeping:

- a) Applications of manure, litter and process waste will be kept, including the date and the amount of N and P applied during each application.
- b) Records of exporting manure, litter and process waste will also be kept.

Reporting to the Oregon Department of Agriculture (ODA):

- a) Any discharge will be reported orally to ODA within 24 hours. Within 5 days, a written statement describing this discharge will also be submitted to ODA.
- b) The amount of manure, litter and process waste applied will be reported annually.
- c) The amount of manure, litter and process waste exported will be reported annually.

Vicinity Map



Production Area Map



Field Summary

<u>Field</u>	<u>Acres</u>
LCS Home	87.2
1	25.1
2	2.1
3	5.9
4	12.5
5	2.3
6	10.2
7	29.1
Moms	47
1	8.2
2	11.8
3	12.1
4	9.5
5	4
6	1.4
Mustang	153
1	125
2	3
3	7
4	9
5	9
Eggleston	132
1	30
2	20
3	22
4	28
5	27
6	5
Total	419.2

LCS Home Fields and Soils Map



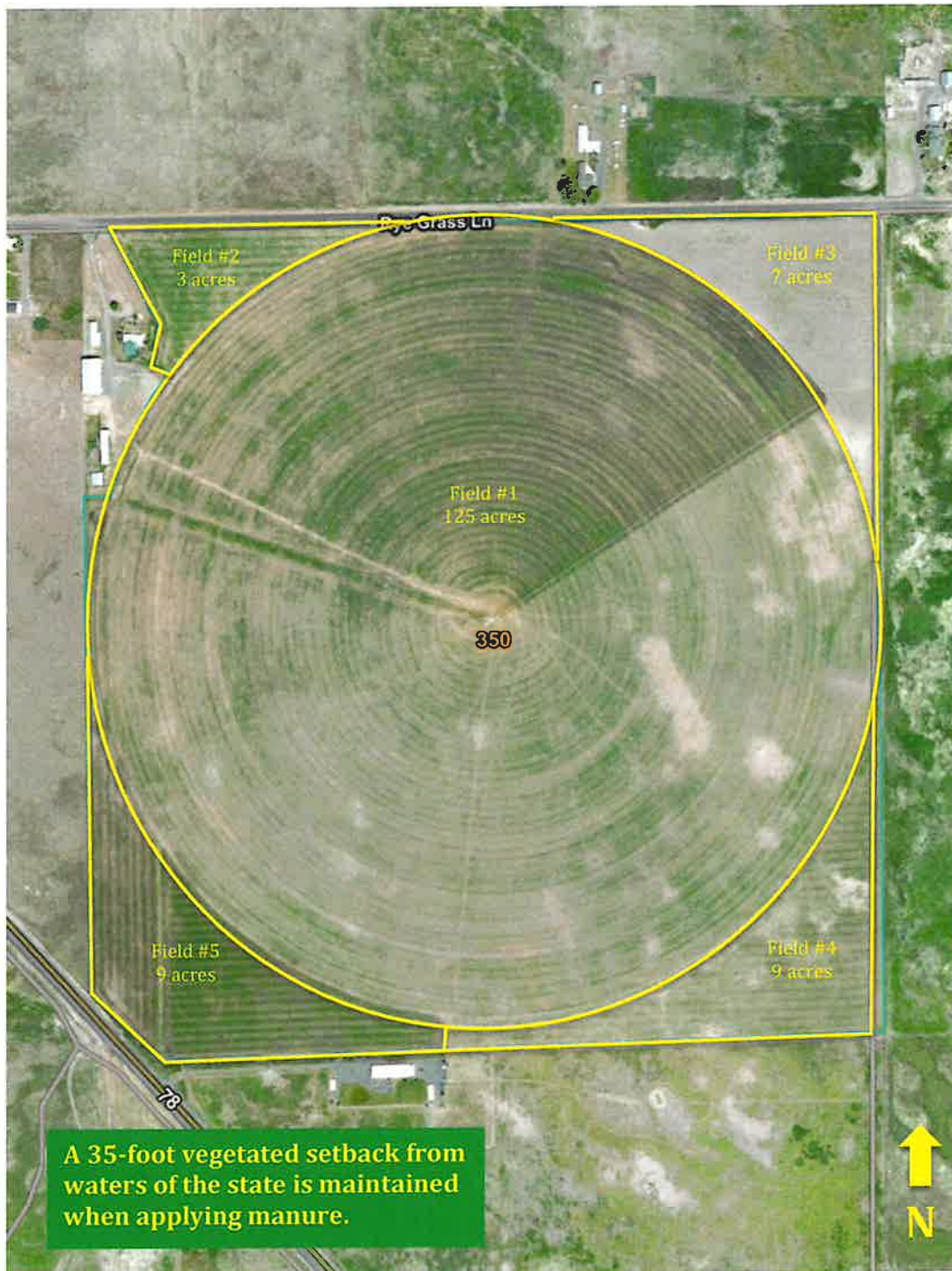
Soils and aerial imagery from Natural Resource Conservation Service Web Soil Survey.
Map not to scale.
Map legend attached.

Moms Fields and Soils Map



Soils and aerial imagery from Natural Resource Conservation Service Web Soil Survey.
Map not to scale.
Map legend attached.

Mustang Fields and Soils Map



Soils and aerial imagery from Natural Resource Conservation Service Web Soil Survey.
Map not to scale.
Map legend attached.

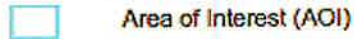
Eggleston Fields and Soils Map



Soils and aerial imagery from Natural Resource Conservation Service Web Soil Survey.
 Map not to scale.
 Map legend attached.

MAP LEGEND

Area of Interest (AOI)



Area of Interest (AOI)

Soils



Soil Map Unit Polygons



Soil Map Unit Lines



Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

Soil Map Unit Descriptions

118—Fury silt loam, 0 to 1 percent slopes

Map Unit Setting

- Elevation: 4,000 to 5,100 feet
- Mean annual precipitation: 10 to 12 inches
- Mean annual air temperature: 43 to 45 degrees F
- Frost-free period: 50 to 80 days

Map Unit Composition

- Fury and similar soils: 85 percent
- Minor components: 10 percent

Description of Fury

Setting

- Landform: Lake plains
- Landform position (three-dimensional): Talf
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Lacustrine deposits derived from igneous rock

Typical profile

- H1 - 0 to 14 inches: moderately alkaline, silt loam
- H2 - 14 to 21 inches: slightly alkaline, silty clay loam
- H3 - 21 to 27 inches: slightly alkaline, silty clay loam
- H4 - 27 to 34 inches: slightly alkaline, silt loam
- H5 - 34 to 44 inches: slightly alkaline, silt loam
- H6 - 44 to 60 inches: slightly alkaline, silty clay loam

Properties and qualities

- Slope: 0 to 1 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: About 0 to 12 inches
- Frequency of flooding: None
- Frequency of ponding: Frequent
- Calcium carbonate, maximum in profile: 10 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile: 10.0
- Available water storage in profile: High (about 11.8 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 5w
- Land capability classification (nonirrigated): 5w
- Hydrologic Soil Group: C/D
- Ecological site: BASIN WET MEADOW (R023XY117OR)

Minor Components

Opie

- Percent of map unit: 5 percent
- Landform: Lake plains
- Ecological site: SODIC MEADOW 6-10 PZ (R024XY002OR)

Skidoosprings

- Percent of map unit: 5 percent
- Landform: Lake plains
- Ecological site: SODIC BOTTOM 7-10 PZ (R024XY003OR)

Soil Map Unit Descriptions

124—Fury-Skidoosprings-Opie complex, 0 to 2 percent slopes

Map Unit Setting

- Elevation: 4,000 to 4,500 feet
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 43 to 46 degrees F
- Frost-free period: 50 to 100 days

Map Unit Composition

- Fury and similar soils: 35 percent
- Skidoosprings and similar soils: 25 percent
- Opie and similar soils: 20 percent
- Minor components: 10 percent

Description of Fury

Setting

- Landform: Lake plains
- Landform position (three-dimensional): Dip
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Lacustrine deposits derived from igneous rock

Typical profile

- H1 - 0 to 14 inches: moderately alkaline, silt loam
- H2 - 14 to 21 inches: slightly alkaline, silty clay loam
- H3 - 21 to 27 inches: slightly alkaline, silty clay loam
- H4 - 27 to 34 inches: slightly alkaline, silt loam
- H5 - 34 to 44 inches: slightly alkaline, silt loam
- H6 - 44 to 60 inches: slightly alkaline, silty clay loam

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: About 0 to 12 inches
- Frequency of flooding: None
- Frequency of ponding: Frequent
- Calcium carbonate, maximum in profile: 10 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile: 10.0
- Available water storage in profile: High (about 11.8 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 5w
- Land capability classification (nonirrigated): 5w
- Hydrologic Soil Group: C/D
- Ecological site: BASIN WET MEADOW (R023XY117OR)

Description of Skidoosprings

Setting

- Landform: Lake plains
- Landform position (three-dimensional): Rise
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Lacustrine deposits derived from igneous rock

Soil Map Unit Descriptions

Typical profile

- H1 - 0 to 11 inches: very strongly alkaline, sandy loam
- H2 - 11 to 23 inches: very strongly alkaline, sandy loam
- H3 - 23 to 30 inches: very strongly alkaline, sandy loam
- H4 - 30 to 41 inches: very strongly alkaline, sandy loam
- H5 - 41 to 49 inches: , cemented material
- H6 - 49 to 60 inches: strongly alkaline, coarse sandy loam

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: 40 to 50 inches to duripan
- Natural drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
- Depth to water table: About 0 to 12 inches
- Frequency of flooding: None
- Frequency of ponding: Occasional
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Nonsaline to moderately saline (2.0 to 10.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile: 350.0
- Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 6s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: A/D
- Ecological site: SODIC BOTTOM 7-10 PZ (R024XY003OR)

Description of Opie

Setting

- Landform: Lake plains
- Landform position (three-dimensional): Talf
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Lacustrine deposits derived from igneous rock

Typical profile

- H1 - 0 to 7 inches: very strongly alkaline, silt loam
- H2 - 7 to 10 inches: very strongly alkaline, silty clay loam
- H3 - 10 to 16 inches: strongly alkaline, silt loam
- H4 - 16 to 26 inches: strongly alkaline, silty clay loam
- H5 - 26 to 44 inches: strongly alkaline, silt loam
- H6 - 44 to 64 inches: moderately alkaline, gravelly loam

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: About 0 to 12 inches
- Frequency of flooding: None
- Frequency of ponding: Occasional
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Moderately saline to strongly saline (16.0 to 30.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile: 10.0
- Available water storage in profile: Moderate (about 7.5 inches)

Soil Map Unit Descriptions

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 6s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: C/D
- Ecological site: SODIC MEADOW 6-10 PZ (R024XY002OR)

Minor Components

Crowcamp

- Percent of map unit: 10 percent
- Landform: Lake plains
- Ecological site: PONDED CLAY (R023XY200OR)

277—Reluctan loam, 2 to 20 percent slopes

Map Unit Setting

- Elevation: 4,000 to 5,600 feet
- Mean annual precipitation: 11 to 13 inches
- Mean annual air temperature: 43 to 45 degrees F
- Frost-free period: 50 to 80 days

Map Unit Composition

- Reluctan and similar soils: 85 percent

Description of Reluctan

Setting

- Landform: Hills, plateaus
- Landform position (two-dimensional): Summit
- Landform position (three-dimensional): Interfluve
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Residuum and colluvium derived from basalt and/or welded tuff

Typical profile

- H1 - 0 to 2 inches: neutral, loam
- H2 - 2 to 9 inches: moderately alkaline, sandy loam
- H3 - 9 to 26 inches: moderately alkaline, sandy clay loam
- H4 - 26 to 36 inches: , unweathered bedrock

Properties and qualities

- Slope: 2 to 20 percent
- Depth to restrictive feature: 20 to 40 inches to lithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): None specified
- Land capability classification (nonirrigated): 6e
- Hydrologic Soil Group: C
- Ecological site: DROUGHTY LOAM 11-13 PZ (R023XY316OR)

Soil Map Unit Descriptions

350 — Voltage-Widowspring complex, 0 to 2 percent slopes

Map Unit Setting

- Elevation: 4,000 to 4,500 feet
- Mean annual precipitation: 10 to 12 inches
- Mean annual air temperature: 43 to 46 degrees F
- Frost-free period: 50 to 90 days

Map Unit Composition

- Voltage and similar soils: 65 percent
- Widowspring and similar soils: 20 percent
- Minor components: 15 percent

Description of Voltage

Setting

- Landform: Lake terraces
- Landform position (three-dimensional): Tread
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Lacustrine deposits derived from igneous rock

Typical profile

- H1 - 0 to 4 inches: moderately alkaline, silt loam
- H2 - 4 to 38 inches: moderately alkaline, silt loam
- H3 - 38 to 64 inches: strongly alkaline, fine sandy loam

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 30 percent
- Salinity, maximum in profile: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile: 10.0
- Available water storage in profile: High (about 10.0 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 4s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: B
- Ecological site: DRY FLOODPLAIN 6-10 PZ (R024XY004OR)

Description of Widowspring

Setting

- Landform: Lake plains
- Landform position (three-dimensional): Talf
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Lacustrine deposits derived from igneous rock

Soil Map Unit Descriptions

Typical profile

- H1 - 0 to 22 inches: neutral, silt loam
- H2 - 22 to 43 inches: neutral, silt loam
- H3 - 43 to 63 inches: neutral, loam

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
- Depth to water table: About 36 to 60 inches
- Frequency of flooding: None
- Frequency of ponding: Rare
- Available water storage in profile: Very high (about 12.0 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 4c
- Land capability classification (nonirrigated): 4c
- Hydrologic Soil Group: B
- Ecological site: LOAMY BOTTOM (R023XY104OR)

Minor Components

Crowcamp

- Percent of map unit: 5 percent
- Landform: Lake plains
- Ecological site: PONDED CLAY (R023XY200OR)

Ausmus

- Percent of map unit: 5 percent
- Landform: Lake plains
- Ecological site: SODIC BOTTOM 7-10 PZ (R024XY003OR)

Opie

- Percent of map unit: 5 percent
- Landform: Lake plains
- Ecological site: SODIC MEADOW 6-10 PZ (R024XY002OR)

370—Widowspring silt loam, 0 to 2 percent slopes

Map Unit Setting

- Elevation: 4,000 to 4,500 feet
- Mean annual precipitation: 0 to 12 inches
- Mean annual air temperature: 43 to 46 degrees F
- Frost-free period: 50 to 90 days

Map Unit Composition

- Widowspring and similar soils: 85 percent
- Minor components: 12 percent

Description of Widowspring

Setting

- Landform: Lake plains
- Landform position (three-dimensional): Talf
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Lacustrine deposits derived from igneous rock

Soil Map Unit Descriptions

Typical profile

- H1 - 0 to 22 inches: neutral, silt loam
- H2 - 22 to 43 inches: neutral, silt loam
- H3 - 43 to 63 inches: neutral, loam

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
- Depth to water table: About 36 to 60 inches
- Frequency of flooding: None
- Frequency of ponding: Rare
- Available water storage in profile: Very high (about 12.0 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability classification (irrigated): 4c
- Land capability classification (nonirrigated): 4c
- Hydrologic Soil Group: B
- Ecological site: LOAMY BOTTOM (R023XY104OR)

Minor Components

Crowcamp

- Percent of map unit: 3 percent
- Landform: Lake plains
- Ecological site: PONDED CLAY (R023XY200OR)

Skidoosprings

- Percent of map unit: 3 percent
- Landform: Lake plains
- Ecological site: SODIC BOTTOM 7-10 PZ (R024XY003OR)

Opie

- Percent of map unit: 3 percent
- Landform: Lake plains
- Ecological site: SODIC MEADOW 6-10 PZ (R024XY002OR)

Fury

- Percent of map unit: 3 percent
- Landform: Lake plains
- Ecological site: BASIN WET MEADOW (R023XY117OR)

Waste, Water and Nutrient Computations

Number of Animals

	Animals	Avg. Weight lb	Total 1000# Animal Units	Confinement Period (Days)
Background	400	550	220	30
Butcher Pens	100	1000	100	60
Breeding Bulls	100	1000	100	210
Total	600	2550	420	

Solid Storage (Feedlot pen size)

Pens and Yard 12 acres

Evaporation Ponds for storm runoff

Sediment & Abatement Pond 9 acre-feet Constructed with assistance from the watershed council

Total weight and volume of manure produced during confinement

*Estimated values from NRCS Agricultural Waste Management Handbook

Manure Produced

	lb/day/Animal Unit	Total Weight ton (as excreted)	Total Weight ton (at application)
Background	58.2	192	58
Butcher Pens	51.2	154	46
Breeding Bulls	51.2	538	161
Total		883	265

	Cu ft/day/Animal Unit	Total Volume Cu ft
Background	0.93	6138
Butcher Pens	0.82	4920
Breeding Bulls	0.82	17220
Total		28278

Total Nutrient Production

*Estimated values from NRCS Agricultural Waste Management Handbook (as excreted)

	Nutrients Produced lb/day	Total Nutrients Produced lb
Nitrogen	0.30	10080
Phosphorus	0.10	3360

Nutrient Losses

*Estimate from NRCS ORAWM Program and OSU Extension Publication EC 1094

	Loss	N	P	Remaining nutrients for crops	
				N (lbs)	P (lbs)
Storage	50%	70%		5040	2352
Application	70%	100%		3528	2352
Denitrification	95%	100%		3352	2352

Nutrients Utilized

*Estimate from NRCS ORAWM Program

	Crop	Acres	Yield Units per acre	Yield	N Utilized (lbs/acre)	P Utilized (lbs/acre)
	Alfalfa Hay	67.2	10n	6	364	48
	Orchard Grass Hay/Pasture	47	10n	4	250	41
	Barley Grain	153	10n	5	202	38
	Triticale, Haylage	132	10n	4	198	27
Total		419.2				

Waste, Water and Nutrient Computations

Volume and Nutrients Exported

0% of manure is exported to neighboring farmers

Total Exported tons	N exported lbs	P exported lbs
0	0	0

Nutrients remaining for crop production on farm after export

Remaining N lbs	Remaining P lbs
3352	2352

Nutrient Utilization

Crop	Acres applied	Max Tons/ac (based on N)	lbs of N applied	lbs of P applied
Alfalfa Hay	0	0	0	0
Orchard Grass Hay/Pasture	47	17.86	11750	3324
Barley Grain	153	14.43	30906	8742
Triticale, Haylage	132	14.00	25872	7318
Total	332		68528	19384

Gross Nutrient Balance	Acres	lbs of N	lbs of P
	332	-65176	-17032

Climatic and Hydrologic Data

Climatic Station- Malheur Branch Experiment Station

25 year- 24 hour storm rainfall = 1.8 inches

Month	Average Monthly in Inches		% Lot Runoff Factors	
	Precipitation	Evaporation	Concrete*	Unpaved
January	1.29	0.74	25	0
February	1.04	1.09	25	0
March	1.08	2.06	20	0
April	0.84	3.79	25	0
May	0.98	5.12	30	0
June	0.76	6.08	35	0
July	0.36	7.62	30	0
August	0.38	6.51	30	0
September	0.48	4.03	30	0
October	0.65	1.98	30	0
November	1.19	0.50	35	0
December	1.38	0.71	25	0
Annual	10.43	40.23		

*No concrete lot runoff contributing to the manure system.

25-year, 24-hour storm event runoff volume from pens and yard.

NRCS National Engineering Handbook part 650 Engineering Field Handbook Ch. 2 Estimating Runoff

$$Q = \frac{[P - 0.2s]^{0.2}}{P + 0.85}$$

$$\begin{aligned}
 P &= 1.8 \\
 CN &= 90 \\
 S &= \{1000/CN\} - 10 \\
 \text{Numerator} &= 1.111111111 \\
 \text{Denominator} &= 2.489382716 \\
 Q &= 0.925893489 \\
 \text{Surface Area (acres)} &= 12 \\
 \text{Surface Area (SF)} &= 522720 \\
 \text{Runoff Volume (ac-ft)} &= 0.93
 \end{aligned}$$

Phosphorus Index Summary

Field	Moms 1	Moms 2	Moms 3	Moms 4	Moms 5	Moms 6	Mustang Pivot	Mustang Corners	Eggleston 1/2	Eggleston 3
Map Unit	277	277	277	277	277	277	350	350	370	370
Hydrologic soil group	C	C	C	C	C	C	B	B	B	B
Average Slope	4%	4%	4%	4%	4%	4%	1%	1%	1%	1%
Flood Frequency	None	None	None	None	None	None	None	None	None	None
Soil Test P Olsen 1ft (ppm)	14	14	14	14	14	14	14	14	6	14
Commercial Application Rate (lbs P2O5/ac)	0	0	0	0	0	0	0	0	0	0
Organic Application Rate (lbs P2O5/ac)	162	162	162	162	162	162	162	162	162	162
Nutrient Application Method	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader

Transport Factors

Soil Erosion	3	3	3	3	3	3	3	3	3	3
Sprinkler Irrigation	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0	0	0
Surface Irrigation	0	0	0	0	0	0	0	2	2	2
Runoff Class	1	1	1	1	1	1	0.5	0.5	0.5	0.5
Distance to Perennial Surface Waters	0	0	0	0	0	0	0	0	0	0
Subsurface Drainage	0	0	0	0	0	0	0	0	0	0
Transport Factors Total	4.25	4.25	4.25	4.25	4.25	4.25	3.75	5.5	5.5	5.5

Source Factors

Soil P	0	0	0	0	0	0	0	0	0	0
Commercial P Application	0	0	0	0	0	0	0	0	0	0
Commercial P Method	0	0	0	0	0	0	0	0	0	0
Organic P Application	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
Organic P Application Method	8	8	8	8	8	8	8	8	8	8
Source Factors Total	11.24	11.24	11.24	11.24	11.24	11.24	11.24	11.24	11.24	11.24
Total Rating Value	47.77	47.77	47.77	47.77	47.77	47.77	42.15	61.82	61.82	61.82
Site Vulnerability Class	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium

Phosphorus Index Summary

Field	Eggleston 4	Eggleston 5	Eggleston 6	LCS Home 1	LCS Home 2	LCS Home 3	LCS Home 4	LCS Home 5	LCS Home 6	LCS Home 7
Map Unit	370/118	370	370/118	370/118	118	370/118	124	370/118	370/118	118/124
Hydrologic soil group	B/C/D	B	B/C/D	B/C/D	C/D	B/C/D	C/D	B/C/D	B/C/D	C/D
Average Slope	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Flood Frequency	None	None	None	None	None	None	None	None	None	None
Soil Test P Olsen 1ft (ppm)	5	37	37	10	13	13	13	13	13	17
Commercial Application Rate (lbs P2O5/ac)	0	0	0	0	0	0	0	0	0	0
Organic Application Rate (lbs P2O5/ac)	162	162	162	162	162	162	162	162	162	162
Nutrient Application Method	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader	Spreader

Transport Factors

Soil Erosion	3	3	3	3	3	3	3	3	3	3
Sprinkler Irrigation	0	0	0	0	0	0	0	0	0	0
Surface Irrigation	2	2	2	2	2	2	2	2	2	2
Runoff Class	1	0.5	1	1	1	1	1	1	1	1
Distance to Perennial Surface Waters	0	0	0	0	0	0	0	0	0	0
Subsurface Drainage	0	0	0	0	0	0	0	0	0	0
Transport Factors Total	6	5.5	6	6	6	6	6	6	6	6

Source Factors

Soil P	0	1.7	1.7	0	0	0	0	0	0	0
Commercial P Application	0	0	0	0	0	0	0	0	0	0
Commercial P Method	0	0	0	0	0	0	0	0	0	0
Organic P Application	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
Organic P Application Method	8	8	8	8	8	8	8	8	8	8
Source Factors Total	11.24	12.94	12.94	11.24	11.24	11.24	11.24	11.24	11.24	11.24
Total Rating Value	67.44	71.17	77.64	67.44	67.44	67.44	67.44	67.44	67.44	67.44
Site Vulnerability Class	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium