OREGON DEPARTMENT OF AGRICULTURE

CONFINED ANIMAL FEEDING OPERATION (CAFO) ANIMAL WASTE MANAGEMENT PLAN/NUTRIENT MANAGEMENT PLAN SIGNATURE SHEET

Facility name: Rising Sun Dairy

Facility address: 12092 Parrish Gap rd

Turner, OR, 97392

Operator's name: Mark Van Dam

Mailing address: 12092 Parrish Gap rd

Turner, OR, 97392

Complete if different than the operator

Legal landowner: _____

Mailing address: _____

_____

As the Operator of Mark Van Dam, I agree to manage this facility in accordance with Animal Waste Management Plan (AWMP)/Nutrient Management Plan (NMP) # 22015 on file with ODA and maintain those practices as described in the plan. This signed AWMP is incorporated into the CAFO NPDES and WPCF General Permits by reference (Permit Condition S3.A.2.).

If changes are made to the animal population, facilities or change in the type of manure system of the CAFO, a new AWMP/NMP must be submitted to ODA for approval at least 45 days before the modification is implemented unless a different schedule is allowed by ODA in writing (Permit Condition S3.D.1and 2).

Operator's signature	Date	ODA USE ONLY
	7/31/2025	MA# _____
Operator's name (Please print clearly) Mark Van Dam		AWMP# _____
		Received Date _____
		Approval Date _____

Nutrient Management Plan

For The Gap

Printed on Mon Apr 04 09:53:47 GMT-07:00 2022

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GENERAL INFORMATION

2021 Operation Information for The Gap

Calendar Year: 2021 **Reporting period:** January 1 through December 31, 2021

Name:	John Van Dam		
Business	The Gap		
Mailing	12092 Parrish Gap Road, Turner, OR, 97392		
Facility	12092 Parrish Gap Road, Turner, OR 97392	**County:**	Marion
Telephone	(503)910-8796	**Cell Phone**	null
E-mail	jhnvndm@hotmail.com		

Permitted and Actual number of animals by type at the CAFO averaged over the year [S4.D.2(a)/S4.D.2(a)(ii) of

Animal Type	Average Weight (Lbs)	Days on Farm		Permitted	Actual
		Start Month	End Month		
Calf	300	01/01	12/31	200	50
Dairy Heifers	750	01/01	12/31	200	1
Milker - Dry	1200	01/01	12/31	50	300
Milker - Holstein	1200	01/01	12/31	250	100
			Total Animals -	700	451
			Manure Solids Generated (CF) -	216,898	158,232
			Bedding Generated (CF) -	0	0
			Imported Solids (CF) -	0	0
			Total Solids Generated (CF) -	216,898	158,232
			Total Solids to Store based on a Volume Reduction Factor of 0.2 (CF) -	173,518	126,584
			Manure Liquids Generated (CF) -	54,224	39,558
			Rainfall-Evaporation on Storage plus Runoff Generated (CF) -	68,897	68,897
			Process Water Generated (CF) -	540,000	540,000
			Imported Liquids (CF) -	0	0
			Total Liquids to Store (CF) -	663,121	648,455
			Liquids Applied to Land (CF) -		0
			Solids Applied to Land (CF) -		8,122
			Grazing Manure Applied to Land (CF) -		0
			Liquids Exported (CF) -		650,000
			Solids Exported (CF) -		156,250
			Solids Recycled for Bedding (CF) -		0
			Acres of Land for Land Application Covered by NMP -		11.3 AC
			Acres of Land Under Operator Control Used for Manure Applications -		11.3 AC

GENERAL INFORMATION

2021 Storage Facilities for The Gap

Facility Name	Description	Type	Storage Period (days)	Diameter (ft)	Top Length (ft)	Top Width (ft)	Depth (ft)	Side slope Z	Free board (ft)	Volume (CF)	Uncovered Surface Area (SF)
Manure Pond		Liquid	194		450	123	16	3	1	444,686	55,350
Solids Stack		Solid	89		123	63	4	0	0	30,996	7,749

GENERAL INFORMATION

2021 Storage Period Calculations for The Gap

Solids Storage

Storage Unroofed Surface Area, SF	7749	Volume Reduction Factor =	20
Available Storage, CF =	30996	Solids Storage Period, Days =	89

Month	Number Of Days	Manure Lost In Grazing	Filtered Solids (CF)	Bedding (CF)	Solids Removal Factor (Pct)	Imported Solids (CF)	Solids To Store (CF)	Storage Volume Needed, CF
October 2021	31	0	13439	0	80	0	10751	10751
November 2021	30	0	13005	0	80	0	10404	21155
December 2021	31	0	13439	0	80	0	10751	31906
January 2021	31	0	13439	0	80	0	10751	42657
February 2021	28	0	12138	0	80	0	9711	52368
March 2021	31	0	13439	0	80	0	10751	63119
April 2021	30	0	13005	0	80	0	10404	73523
May 2021	31	0	13439	0	80	0	10751	84274
June 2021	30	0	13005	0	80	0	10404	94678
July 2021	31	0	13439	0	80	0	10751	105429
August 2021	31	0	13439	0	80	0	10751	116180
September 2021	30	0	13005	0	80	0	10404	126584
Annual	**365**	**0**	**158232**	**0**	**80**	**0**	**126584**	

Liquids Storage

Climate Station: SALEM WSO AIRPORT

Storage Unroofed Surface Area, SF =	55350	25Yr-24Hr Storm Precip, In =	4	Total 25Yr-24Hr Storm Storage Needed, CF	21,033
Available Liquid Storage, CF =	444686	25Yr-24H4 Storm Runoff, CF =	0	Storage Period without 25yr-24hr Storm =	194
Unroofed Runoff Area, SF =	0	25Yr-24Hr Storm on Unroofed Storages, CF =	21,033	Storage Period with 25yr-24hr Storm =	182

Month	Number Of Days	Rainfall (Inches)	Evaporation (Inches)	Rain-Evap on Storages (CF)	Rainfall Runoff (CF)	Manure (CF)	Process Water (CF)	Imported Liquids (CF)	Monthly Liquids to Store (CF)	Total Storage Volume Needed (CF)
October 2021	31	3.03	1.65	7256	0	3360	45000	0	55616	55616
November 2021	30	6.39	0.73	29762	0	3251	45000	0	78013	133629
December 2021	31	6.46	0.42	31760	0	3360	45000	0	80120	213749
January 2021	31	6.02	0.46	29236	0	3360	45000	0	77596	291344
February 2021	28	5.09	0.78	22663	0	3035	45000	0	70698	362042
March 2021	31	4.17	1.52	13934	0	3360	45000	0	62294	424336
April 2021	30	2.76	2.31	2366	0	3251	45000	0	50618	474954
May 2021	31	2.13	3.61	-6827	0	3360	45000	0	41533	516487
June 2021	30	1.45	4.18	-12592	0	3251	45000	0	35659	552146
July 2021	31	0.57	5.22	-21448	0	3360	45000	0	26912	579058
August 2021	31	0.68	4.76	-18819	0	3360	45000	0	29541	608598
September 2021	30	1.43	3.25	-8395	0	3251	45000	0	39857	648455
Annual	**365**	**40.18**	**28.89**	**68897**	**0**	**39558**	**540000**	**0**	**648455**	

GENERAL INFORMATION

2021 Annual Nutrient Balance for The Gap

Nutrient Concentrations:	Nitrogen (Total N)	Phosphorus (P_2O_5)	Potassium (K_2O)	Units
Liquid Manure -	3.90	4.40	6.50	lbs/1000 Gal
Solid Manure -	25.20	6.30	26.30	lbs/Ton

Nutrients Generated:	N Generated	P_2O_5 Generated	K_2O Generated
Liquid Manure -	18917 lbs	21342 lbs	31528 lbs
Solid Manure -	51039 lbs	12760 lbs	53267 lbs
Grazing Manure -	0 lbs	0 lbs	0 lbs
Total -	**69955 lbs**	**34102 lbs**	**84794 lbs**

Exported Nutrients:	N Exported	P_2O_5 Exported	K_2O Exported
Liquid Manure -	18962 lbs	21393 lbs	31603 lbs
Solid Manure -	63000 lbs	15750 lbs	65750 lbs
Total -	**81962 lbs**	**37143 lbs**	**97353 lbs**

Crop Nutrient Removal:	N Utilized	P_2O_5 Utilized	K_2O Utilized
Total -	**3277 lbs**	**1036 lbs**	**2723 lbs**

Annual Nutrient Budget:	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
Nutrients Generated -	69955 lbs	34102 lbs	84794 lbs
Nutrients Removed by Crop and Exported -	85239 lbs	38178 lbs	100076 lbs
Net Annual Nutrient Balance -	**-15283 lbs**	**-4077 lbs**	**-15282 lbs**

Note: Total nutrients generated are computed from analytical data by taking the total volume of material applied times the nutrient analysis of the material. The total nutrients utilized are computed using the crop yield data times the crop uptake of nutrients.

GENERAL INFORMATION

Background And Site Information

The Gap Dairy Business Narrative

Gap Dairy is operated by John Van Dam with a co-located creamery operated by Mark Van Dam. The facilities are located on Parrish Gap Road approximately 15.9 miles southeast of Salem, Oregon in Marion County, Oregon near the town of Turner.

The Gap Dairy is currently milks about 10 cows to provide milk for the Creamery but wishes to gradually increase over time to a 100-cow milking herd as bottled milk sales increase.

The facility is currently permitted for 300 head of mature cows and 400 head of young stock and wishes to retain that number of permitted animals.

All of the livestock are confined to livestock barns from January through December.

The manure, bedding, and wasted feed collected in the livestock barns is removed periodically by scraping with a tractor to the pond and/or the solids storage area. The solids storage slab drains to an underground tank where the liquids are pumped periodically to the Waste Storage Pond (WSP). A portion of the manure solids may be applied to the owned fields with a manure spreader at agronomic rates while the rest is exported to neighboring cropland. All of the collected liquid manure (LM) is exported.

Mortalities are removed by Whites hauling.

Emergency Response Plan

In Case of an Emergency Storage Facility Spill, Leak or Failure-

Implement the following first containment steps:

Stop all other activities to address the spill.
Stop the flow. For example, use skid loader or tractor with blade to contain or divert spill or leak.
Call for help and excavator if needed.
Complete the clean-up and repair the necessary components.
Assess the extent of the emergency and request additional help if needed.

In Case of an Emergency Spill, Leak or Failure during Transport or Land Application-

Implement the following first containment steps:

Stop all other activities to address the spill and stop the flow.
Call for help if needed.
If the spill posed a hazard to local traffic, call for local traffic control assistance and clear the road and roadside of spilled material.
Contain the spill or runoff from entering surface waters using straw bales, saw dust, soil or other appropriate materials.
If flow is coming from a tile, plug the tile with a tile plug immediately.
Assess the extent of the emergency and request additional help if needed.

Contacts to be made by the owner or operator within 24 hours-

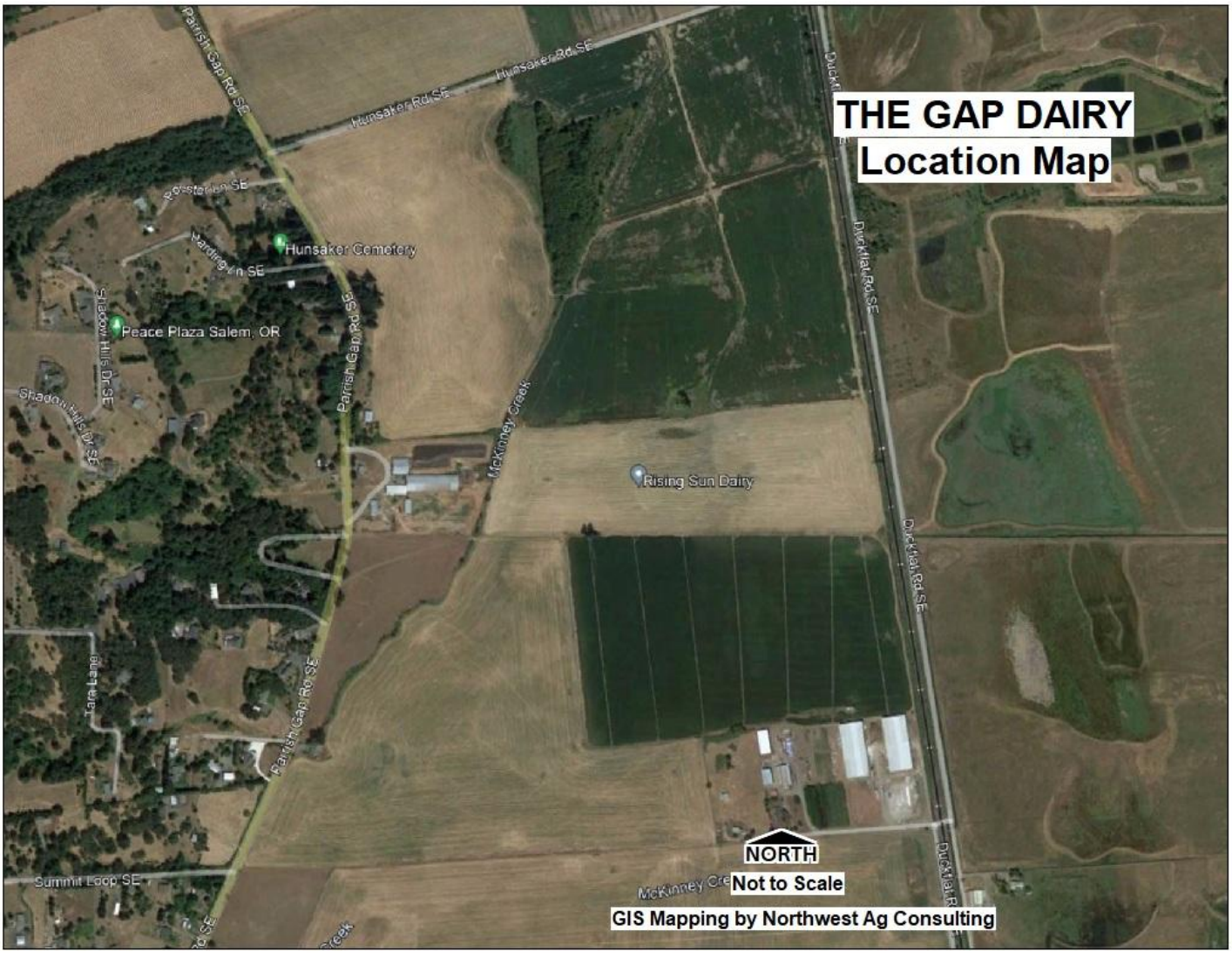
Organization	Phone Number
Oregon Department of Agriculture Natural Resources Division TTD 635 Capitol St., N.E. Salem, OR 97301-2532	(503) 986-4699 (503) 986-4762
Oregon Emergency Response (System OERS)	(800) 452-0311

Be prepared to provide the following information:

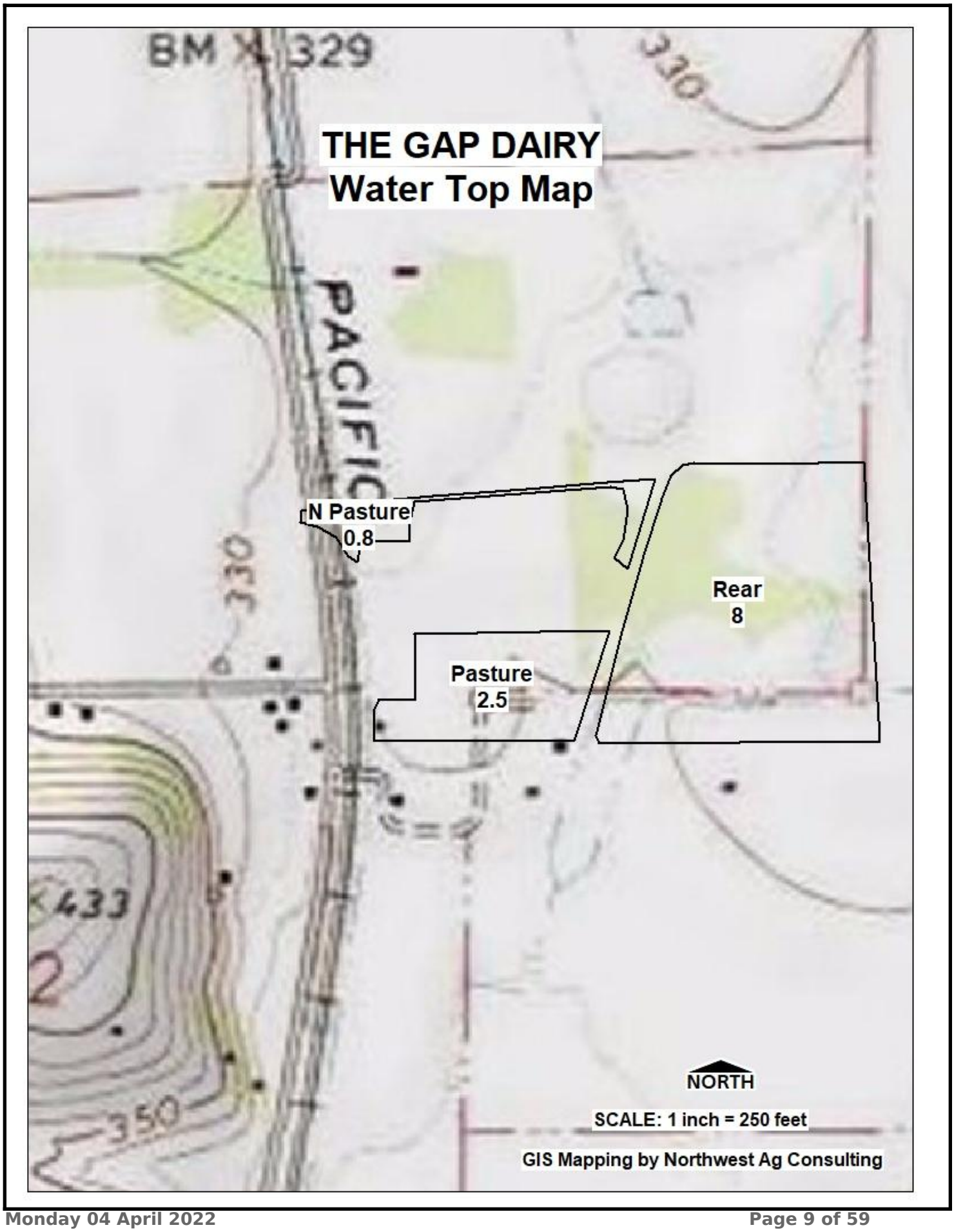
Your name and contact information.
Farm location (driving directions) and other pertinent information.
Description of emergency.
Estimate of the amounts, area covered, and distance traveled.
Whether manure has reached surface waters or major field drains. Include the name of the surface water source that manure reached. Contact the Oregon Emergency Response System if manure entered a drinking water source.
Whether there is any obvious damage: employee injury, fish kill, or property damage.
If a grab sample of the discharge was taken.
Current status of containment efforts.

GENERAL INFORMATION

Location Maps for The Gap



Topographical Maps for The Gap



Animal Mortality

To decrease non-point source pollution of surface and ground water resources, reduce the impact of odors that result from improperly handled animal mortality, and decrease the likelihood of the spread of disease or other pathogens, approved handling and utilization methods shall be implemented in the handling of normal mortality losses.
Animal mortalities must be handled in accordance to ORS 601.140 to prevent the discharge of pollutants to state waters. Animal mortalities will be managed to ensure that they are not disposed of in a liquid manure, storm water, process waste water storage or treatment system, or that is not specifically designed to treat animal mortalities.
Under no circumstances are animal mortalities to be disposed of in any type of liquid manure storage facility.

Guidance for Proper Management of Dead Animals
Refer to Plan for Catastrophic Animal Mortality Handling for guidance on what steps to take for a catastrophic animal mortality event. Having dead animals sent to an acceptable disposal site is the best method to deal with animal mortalities. A list of landfills and phone numbers can be found on the internet at http://www.deq.state.or.us/lq/sw/disposal/permittedfacilities.html. If a local landfill is not permitted to accept animal carcasses, the Oregon Department of Environmental Quality (DEQ) may grant an exception. Phone numbers to local DEQ offices can be found in most phone books or on the internet at http://www.deq.state.or.us/about/locations.html.

Under no circumstances are animal mortalities to be disposed of in any type of liquid manure storage facility.

Acceptable methods and guidance for animal mortality disposal are:
Composting- Composting animal mortalities requires a composting plan be prepared and submitted to the Oregon Department of Agriculture, Natural Resources Division. A composting plan consists of a site plan drawing of the composting facility, a description of how any runoff from the facility will be contained, a description of the composting process to be used and how the compost will be used. The composting facility for animal mortalities must have a concrete floor or similar impervious surface to prevent nutrient leaching. A roof covering the animal mortality composting facility is recommended to control moisture added by rainfall and rainfall runoff. Assistance to develop a composting plan is available from the Natural Resources Division of the Oregon Department of Agriculture, (503) 986-4700. A permit is also needed from the Department of Environmental Quality (DEQ) if animal mortalities will be imported from other farms for composting.
Rapid composting of dead animals occurs when the carbon to nitrogen (C:N) ratio of the compost mix ranges between 10 and 20 to 1. To achieve the recommended C:N ratio, build the initial compost pile by placing 18 inches of sawdust or other bulking agent on the floor of the composting area. The bulking agent should extend beyond the perimeter of the animal to be composted by at least 2 feet. If using a compost bin the bulking material should extend at least 1 foot beyond the perimeter of the animal being composted. Using a bulking agent such as sawdust will absorb any liquids as the animal decomposes during the composting process.
Once the bulking agent has been placed on the floor of the composting area, place the animal carcass on top. To decrease composting time and prevent bloating the body cavity should be cut open. Cover the carcass with 1 to 3 feet of separated manure solids or other material that has a moisture content between 30 to 60 percent and a C:N ratio of not more than 30 to 1. Use 1 foot of material for small carcasses and 3 feet for large carcasses such as cattle. Be careful not to add material that is to wet as it will hinder the composting

process and cause odors. Small animals can be layered in a compost pile by placing 12 inches of the bulking agent between layers as shown in the figure below. Be sure the total height of the compost pile does not exceed 7 feet in height as it may spontaneously combust causing a fire.
The first heating or primary composting cycle will take approximately 15 to 90 days depending on the size of the animal being composted. Refer to the table below for estimated primary composting times. Check pile temperature using thermometer probe on a daily basis. The pile temperature should be checked at multiple points around the compost pile and at a point approximately 3 feet into the pile. The temperature of the compost pile should reach 130 degrees Fahrenheit (F) within a few days. Temperatures should peak between 130 and 150 degrees F in 3 to 4 days. When the temperature of the compost pile falls below 130 degrees F, the compost needs to be aerated by turning or other means. Be sure carcasses remain covered with the bulking agent after being aerated. It is important to maintain a temperature above 130 degrees F for at least 7 days during the primary composting cycle as failure to do so may result in the incomplete destruction of pathogens and can cause fly and odor problems. After aerating the compost pile, the secondary composting times will be similar to the first.
CAUTION: It is unclear whether prions that are the proteins that cause Bovine Spongiform Encephalitis (BSE or Mad Cow Disease) are destroyed in the composting process. Animals showing signs of Mad Cow Disease and those with anthrax should not be composted and must be reported to the Oregon Department of Agriculture, Animal Health and Identification Division at (503) 986-4680 for guidance on disposal.
After aerating the compost pile by turning or other means, be sure to check the moisture content and add water if necessary being careful not to add to much water. The compost pile should feel moist to the touch but you should not be able to squeeze any water out of it.
Odors given off by the composting operation is a good indicator of how the compost operation is proceeding. Foul odors may mean that the process has turned from aerobic to anaerobic. Anaerobic conditions are the result of insufficient oxygen in the compost. This may be caused by excessive moisture in the compost or the need for turning or aerating of the compost pile.
After the composting process is finished, it may be used as a bulking agent for a new compost pile. A rule of thumb is to use 50 percent of the composted material for a bulking agent but you may want to use more or less depending on how degraded the bulking agent is in the finished compost. Using finished compost in a new compost pile reduces the amount of bulking agent needed for the new pile and provides microbial inoculants to get the composting process started.
Finished compost can also be applied to crop and pasture land fields for utilization of the nutrients and organics in the composted material. Compost from animal mortalities should not be applied to crops that will be consumed directly by humans. The nutrient content of the composted material should be determined and application equipment calibrated to ensure nutrients contained in the composted material are not over applied.

Natural Disposal- To allow nature to take its course the dead animal needs to be transported to a location at least ½ mile from any off-farm dwelling and at least ¼ mile from any water way in accordance with ORS 601.140. Once this criteria is met the carcass can be left to degrade naturally with the help of scavengers. This method is not an acceptable means of disposal for a large number of animal mortalities or for byproducts generated during butchering.

Landfill- Dead animals may be transported to a permitted landfill that accepts animal carcasses for disposal. Be sure to call the chosen landfill first to insure a landfill will accept your animal carcasses. Refer to the website given previously for permitted landfills to call. Contact the landfill operator and the DEQ at (800) 452-4011 if the landfill you would like to use is not a permitted facility to see if an exception may be granted for the disposal of animal carcasses.

Incineration- Dead animals may be burned as a method of disposal and as a method to control diseases. The economics of incineration and availability of incineration units usually make this option undesirable. A permit is needed from the Oregon Department of Environmental Quality (DEQ) Air Quality program to operate an incineration unit. Contact your DEQ at (800) 452-4011 for guidance on incineration of animal carcasses.

Burial- Dead animals may be buried in accordance with ORS 601.090(7) as a method of disposal. Large animals such as an adult cow will require a hole approximately 2 feet by 7 feet by 8 feet deep. Be sure to select a site that doesn't have a water table to insure the bottom of the hole will be dry. The animal carcass should be covered with hydrated lime and covered with at least 4 feet of soil mounded 2 feet above the natural ground line to allow for settling as the carcass decomposes. Burial sites should be located at least 500 feet down slope from surface waters or wells.
Burial is not an acceptable method of disposal for animal byproducts generated from butchering. Burial of large numbers of animal mortalities is not acceptable unless performed in accordance with a Catastrophic Animal Mortality Management Plan. Burial of imported animal mortalities is subject to disposal regulations and the Oregon Department of Environmental Quality (DEQ), the Oregon Department of Agriculture (ODA) and the local land use planning authority should be contacted.

Plan for Catastrophic Animal Mortality Handling

The following information describes how you plan to manage catastrophic loss of animals in a manner that protects surface and ground water quality. You must follow all national, state and local laws, regulations and guidelines that protect soil, water, air, plants, animals and human health.

Guidance in the event of a catastrophic animal mortality event:
Remove animal mortalities from the livestock production area and place in an area designated for mortality storage to be determined at the time of the catastrophic event.

Contact the state veterinarian if animal death is suspicious or animal displayed unusual symptoms before death.
If it is determined that a disease outbreak may be eminent, implement procedures as directed by the State Veterinarian. This may include killing exposed animals, burning carcasses and burial of ashes in a predetermined catastrophic mortality burial areas.
Refer to state guidance regarding appropriate catastrophic animal mortality handling methods.

Contact Information-

Organization	**Phone Number**
Oregon Department of Agriculture Natural Resources Division 635 Capitol St. NE Salem, OR 97301-2532	(503) 986-4699 TTD- (503) 986-4762
Oregon Emergency Response System (OERS)	(800) 452-0311
Oregon State Veterinarian USDA APHIS 530 Center Street NE, Suite 335 Salem, OR 97301	(503) 378-4710 (503) 399-5871 Fax- (503) 399-5607

Operation and Maintenance Considerations

WASTEWATER COLLECTION TANK-

The wastewater collection tank shown on the Production Area Map is used to collect and temporarily store wastewater and solids containing manure generated by the farm. Wastewater and solids temporarily stored in the wastewater collection tank is periodically pumped to the solid/liquid separation facility which drains to the wastewater storage ponds. Any annual buildup of solids in the wastewater collection tank must be removed to maintain design capacity and applied to land application areas in accordance with guidance given in Section 3, Utilization Area.

Inspect the collection tank weekly to insure structural integrity. If the structural integrity of the tank is compromised, immediately empty the tank to determine the cause and make necessary repairs before putting the tank back into service. For tanks that develop minor seeps or leaks visible on the exterior, the leaks must be repaired to maintain the structural stability of the tank. Hydraulic Cement may be a viable, alternate repair method. Hydraulic Cement must be applied according to the directions provided by the cement manufacturer. Hydraulic Cement may be applied to either the inside (preferred) or outside of the tank. If repair(s) are made to the inside of the tank, the permittee should photo document the repair since it may be submerged by liquid during an inspection. If future inspections show minor leaks are still present after a repair is made using Hydraulic Cement, consult an engineer for other potential repair options. Do not allow equipment that exceeds the design limit of the tanks on or within 20 feet of the structure.

Keep pumps, agitators, piping, valves and all other electrical and mechanical equipment in good condition by following the manufacturer’s recommendations. Maintain grounding rods and wiring for all electrical equipment in good condition. Immediately remove all foreign debris within the structure that may cause damage to pumps or agitators.

Pump the wastewater collection tank completely empty during the summer months and cleanout any debris and other solid materials that may have accumulated in the tank. Inspect the tank for structural damage and if structural damage to a tank is discovered seek the services of a qualified engineer to assess the damage and recommend necessary repairs before putting the tank back into service. Follow the guidance given in Section 3, Utilization Area, when applying wastewater to fields.

Do not dispose of animal carcasses in the wastewater collection tank. It is against the law to do so.

Maintain all fences, railings, and/or warning signs to provide warning and/or prevent unauthorized human or livestock entry. Immediately repair vandalism, vehicular or livestock damage to the structure, earthen areas surrounding the structure, or any appurtenances. Maintain lids, grates and shields on openings.

Provide proper ventilation before entering the tank, for any reason what so ever. Provide and use self - contained breathing apparatus (scuba) equipment when entering a tank. No persons should enter the tank unless safety ropes are used and someone else capable of providing rescue assistance is outside the tank.

Do not assume any tank, including open top tanks, are well ventilated.

WASTEWATER STORAGE PONDS-

The wastewater storage ponds shown on the Production Area Map are used to store wastewater containing manure generated by the farm. The storage capacity and estimated storage period for the wastewater storage ponds are shown on the Summary pages.

Emptying of the wastewater storage ponds should begin in the spring and continue through the spring and summer months as weather conditions permit applying wastewater in accordance with the guidance given in Section 3, Manure Utilization. To function

properly and have the greatest management flexibility, the wastewater storage ponds must be as empty as possible in the fall before the fall and winter rainy season begins. Any annual sludge buildup in the wastewater storage ponds must be removed to maintain design capacity and applied to land application areas in accordance with guidance given in Section 3, Utilization Area.
Inspect the wastewater storage ponds weekly to insure structural integrity and that at least 1 foot-6 inches of freeboard is being maintained to accommodate excess rainfall such as a 25 year-24hour storm and prevent overtopping embankment. If the structural integrity of a wastewater storage ponds embankment is found to be compromised, immediately draw the liquid level down below the damaged area to determine the cause. Seek the services of a qualified engineer to assess the damage and recommend necessary repairs before allowing wastewater levels above the damaged area.
Pump the wastewater storage pond to the lowest level possible during the summer months and inspect the embankments for structural damage. If structural damage to the embankment of a wastewater storage pond is discovered, seek the services of a qualified engineer to assess the damage and recommend necessary repairs before allowing wastewater levels above the damaged area. Follow the guidance given in Section 3, Utilization Area, when applying wastewater to fields.
Do not permit livestock access to the pond or on pond embankments. Control undesirable vegetation growth by spraying or mowing. Control rodents as necessary. Check elevations of earthfills periodically and restored to grade and shape as necessary. Fill and reseed eroded embankment areas or repair with well graded rock riprap. Safety features such as signs and fences should be kept in good repair.
Do not dispose of animal carcasses in any settling basin or wastewater storage pond. It is against the law to do so.

WASTEWATER STORAGE TANKS-
The wastewater storage tank shown on the Production Area Map is used to store wastewater containing manure generated by the farm. The storage capacity and estimated storage period for the wastewater storage tank is shown on the Summary pages. Emptying of the wastewater storage tank should begin in the spring and continue through the spring and summer months as weather conditions permit applying wastewater in accordance with the guidance given in Section 3, Utilization Area. To function properly and have the greatest management flexibility, the wastewater storage tank must be as empty as possible in the fall before the fall and winter rainy season begins. Any annual buildup of solids in the wastewater storage tank must be removed to maintain design capacity and applied to land application areas in accordance with guidance given in Section 3, Utilization Area.
Inspect all tanks weekly to insure structural integrity. If the structural integrity of a tank is compromised, immediately empty the tank to determine the cause and make necessary repairs before putting the tank back into service. For tanks that develop minor seeps or leaks visible on the exterior, the leaks must be repaired to maintain the structural stability of the tank. Hydraulic Cement may be a viable, alternate repair method. Hydraulic Cement must be applied according to the directions provided by the cement manufacturer. Hydraulic Cement may be applied to either the inside (preferred) or outside of the tank. If repair(s) are made to the inside of the tank, the permittee should photo document the repair since it may be submerged by liquid during an inspection. If future inspections show minor leaks are still present after a repair is made using Hydraulic Cement, consult an engineer for other potential repair options. Do not allow equipment that exceeds the design limit of the tanks on or within 20 feet of the structure.
Inspect all uncovered tanks on a biweekly basis to insure at least 6 inches of freeboard is being maintained to accommodate excess rainfall such as a 25 year-24hour storm and prevent overtopping of the tank.
Keep pumps, agitators, piping, valves and all other electrical and mechanical equipment in

good condition by following the manufacturer's recommendations. Maintain grounding rods and wiring for all electrical equipment in good condition. Immediately remove all foreign debris within the structure that may cause damage to pumps or agitators.
Pump the wastewater storage tanks completely empty during the summer months and cleanout any debris and other solid materials that may have accumulated in the tanks. Inspect the tanks for structural damage and if structural damage to a tank is discovered seek the services of a qualified engineer to assess the damage and recommend necessary repairs before putting the tank back into service. Follow the guidance given in Section 3, Utilization Area, when applying wastewater to fields.
Do not dispose of animal carcasses in any wastewater storage tank. It is against the law to do so.
Maintain all fences, railings, and/or warning signs to provide warning and/or prevent unauthorized human or livestock entry. Immediately repair vandalism, vehicular or livestock damage to the structure, earthen areas surrounding the structure, or any appurtenances. Maintain lids, grates and shields on openings.
Provide proper ventilation before entering the tank, for any reason what so ever. Provide and use self - contained breathing apparatus (scuba) equipment when entering a tank. No persons should enter the tank unless safety ropes are used and someone else capable of providing rescue assistance is outside the tank.
Do not assume any tank, including open top tanks, are well ventilated.

RAINFALL RUNOFF CONTROL AREA-
The rainfall runoff control area is used to capture and store rainfall runoff containing manure generated by the farm. The rainfall runoff stored in the rainfall runoff control area should evaporate during the spring and summer months. If the stored rainfall runoff is not totally evaporated by the fall, the rainfall runoff control area must be pumped to the lowest level possible to function properly and have the greatest management flexibility before the fall and winter rainy season begins.
Any annual sludge buildup in the rainfall runoff control area must be removed to maintain design capacity taking care not to damage the soil liner and applied to land application areas in accordance with guidance given in Section 3.
Inspect the rainfall runoff control area weekly to insure structural integrity and that at least 1 foot-6 inches of freeboard is being maintained on the earthfill embankment(s) to accommodate excess rainfall such as a 25 year-24hour storm and prevent overtopping the embankment(s). If the structural integrity of the rainfall runoff control area embankment is found to be compromised, immediately draw the liquid level down below the damaged area to determine the cause. Seek the services of a qualified engineer to assess the damage and recommend necessary repairs before allowing rainfall runoff levels above the damaged area.
Inspect the rainfall runoff control area during the summer months when all the rainfall runoff has evaporated and inspect the embankments for structural damage. If structural damage to the embankment of the rainfall runoff control area is discovered, seek the services of a qualified engineer to assess the damage and recommend necessary repairs before allowing rainfall runoff levels above the damaged area. Follow the guidance given in Section 3 if rainfall runoff has to be applied to the crop land fields.
Control undesirable vegetation growth by spraying or mowing. Control rodents as necessary. Check elevations of earthfills periodically and restore to grade and shape as necessary. Fill and reseed eroded embankment areas or repair with well graded rock riprap. Safety features such as signs and fences should be kept in good repair. Do not dispose of animal carcasses in any rainfall runoff containment area. It is against the law to do so.

SOLIDS STORAGE FACILITY-

PRODUCTION AREA

The solids storage facility shown on the Production Area Map is used to store solids containing manure generated by the farm. The storage capacity and estimated storage period for the solids storage facility are shown on the Summary pages. Emptying of the solids storage facility should begin in the spring and continue through the spring and summer months as weather conditions permit applying solids in accordance with the guidance given in Section 3, Utilization Area. To function properly and have the greatest management flexibility, the solids storage facility must be as empty as possible in the fall before the fall and winter rainy season begins.
Periodically inspect concrete and asphalt slabs, walls and curbs and repair or replace broken sections as needed. Cleanup any spillage of manure and organics from outside of the solids storage area and place them back in the solids storage facility.
Maintain all fences, railings, and/or warning signs to provide warning and/or prevent unauthorized human or livestock entry. Immediately repair vandalism, vehicular or livestock damage to the structure, earthen areas surrounding the structure, or any appurtenances.

BUILDING ROOFS-
Inspect building roofs annually as a minimum. Repair and/or replace all rusted sections and secure loose sections as needed. Immediately replace all broken trusses, rafters, beams, poles as needed. Immediately determining the cause and necessary modification(s) to prevent reoccurring structural failure is essential.
Inspect rain gutters, downspouts, pipelines, trash guards, pumps, structures and appurtenances for proper operation. Keep them free of all foreign material, weeds and sediment. Repair or replace any damaged component as needed.
Keep downspouts and outlets free flowing. Repair or replace broken rodent guards as needed. If the hydraulic capacity is insufficient, replace gutters (and downspouts if needed or make provisions for the waste management system to handle the extra water.
Protect downspouts from damage by livestock and equipment and repair any damaged components as needed.
Keep gutters, downspouts, pumps, conveyance pipelines and ditches and appurtenances in good operating condition with O & M performed as per site specific recommendations for each component.

COMPOSTING FACILITY-
The composting facility shown on the Production Area Map is used to compost solids containing manure and store compost until it can be applied to the crop land fields. Emptying of the composting facility should begin as soon as possible in the spring after the composting process has been completed and the compost has been allowed to complete the curing process. Emptying should continue throughout the spring and summer months applying the composted solids to the crop land fields in accordance with the guidance given in Section 3, Utilization Area. To function properly and have the greatest management flexibility, the composting facility must be as empty as possible in the fall before the rainy season begins.
The cause for any excess leachate from the composting process during the seasonal composting process performed in farm fields will be determined the operator will determine the cause of the excess leachate and take immediate corrective action such as turning the windrow pile(s) and inspecting the feedstock and compost for the presence of excess leachate.
Guidance for the composting process-
Take a representative sample of the raw compost mixture and have a laboratory determine the moisture content, pH, and the carbon and nitrogen content.
The carbon to nitrogen ratio should range between 25 and 40 to 1. Make adjustments as needed to the ingredients of the raw compost mixture as necessary to achieve a carbon to

nitrogen ratio within the acceptable range.
The moisture content should be between 40 and 60 percent. Add water or drier material to adjust the moisture content. Care must be taken to see that the carbon to nitrogen ratio of the mix is still in the 25 – 40 to 1 range after adjusting the moisture content.
The pH preferably should range between 6.5 and 8 however composting may be achieved between a pH of 5.5 and 9.0.
Check pile temperature using thermometer probe on a daily basis. The pile temperature should be checked at a point one-third the distance from the outside of the pile to the center of the mass. Initially it will take approximately 2 to 3 days for the compost to get above 105 degrees F. Compost temperatures should peak between 130 and 140 degrees F in 5 to 7 days. When the temperature of the compost material falls below 110 degrees F the compost needs to be aerated by turning or other means. Failure to achieve the desired temperatures may result in the incomplete destruction of pathogens and weed seeds and can cause fly and odor problems.
Odors given off by the composting operation is a good indicator of how the compost operation is proceeding. Foul odors may mean that the process has turned from aerobic to anaerobic. Anaerobic conditions are the result of insufficient oxygen in the compost. This may be caused by excessive moisture in the compost or the need for turning or aerating of the compost material.
For a well managed windrow or static pile composting operation, the composting time during the summer months should range from 14 days to a month. To ensure a finished compost, observe that the composted material has little or no trace of the original raw material and has little odor. The material should be black to brown in color. Particle size should be consistent and soil-like in texture.
All materials that are not considered feedstocks for the composting process (i.e. plastic ear tags, plastic gloves, etc…) are to be collected and transported to a permitted landfill by a garbage collection service or other means. It is anticipated that there will be no other material that will require offsite disposal.
Periodically inspect concrete and asphalt slabs, walls and curbs and repair or replace broken sections as needed. Cleanup any spillage of composted material from outside of the composting area and place them back in the composting facility.
Maintain all fences, railings, and/or warning signs to provide warning and/or prevent unauthorized human or livestock entry. Immediately repair vandalism, vehicular or livestock damage to the structure, earthen areas surrounding the structure, or any appurtenances.

FEEDLOT PENS-
Maintaining a firm, dry feedlot surface is an important factor in maintaining a good environment that promotes good animal health.
Maintain diversions and drainageways so they direct clean water runoff away from the feedlot pens and holding areas. Stormwater runoff from the feedlot pens should be directed to storage or treatment areas.
Manure shall be contained in the feedlot pens until it can be transferred to a storage facility or applied to the fields for utilization of nutrients and organics. Manure accumulations created for bedding mounds shall be managed such that manure does not create a potential pollution hazard.
Take care to maintain the compacted layer when removing excess manure from the feedlot pens.

DIKES AND BERMS-
Periodically check elevations of earthfills and restore to grade and shape, if necessary. All settlement or cracks in the dike should be investigated to determine the cause and immediately repaired.
Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization,

and application of herbicides when necessary. Fertilize the established stand with at least 200 pounds of 21-0-0 per acre or equivalent annually or as needed to maintain a uniform vigorous stand. Avoid excess travel and uncontrolled grazing on any portion of the dike system that will harm or destroy vegetative cover. Periodic mowing or controlled grazing may also be needed to control height.
Maintain installed fences to prevent unauthorized human access or uncontrolled grazing of dike surfaces. Livestock can be used to control vegetation height, providing grazing is controlled to short periods of time when damage to the dike surface and vegetation will not result.
Check all erosion control sections for accelerated weathering and displacement of materials. Replace to original shape and grade if necessary.
Immediately repair any vandalism, vehicular, or livestock damage to the dike or other appurtenance.
Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity.

ANIMAL ACCESS LANES AND WALKWAYS-
Remove debris and excess manure from access lanes, walkways, and drainage areas. Good vegetative cover should be maintained on all areas adjacent to access lanes and walkways.

FENCES-
Do not allow livestock access to open water courses and drainageways. Provide off stream watering facilities where possible and limit access to designated watering areas.
Inspect fences periodically and repair or replace broken or decayed posts and tighten sagging wire as needed. Broken wire can be spliced or replaced. Replace broken or missing insulators on electric fences as needed and repair or replace inoperative electric fence controllers.
Insure gates and other appurtenances are in good working order. Replace or repair components as needed.

CULVERTS-
Culverts should be inspected at least once annually. Inspect culverts after large rainfall events to insure no damage has been done to the culvert that would prevent it from functioning as intended. Remove any debris that may affect the culverts capacity. Any damage to the culvert and surrounding area should be repaired as soon as possible.

HEAVY USE AREAS-
Periodically inspect concrete and asphalt slabs and curbs and repair or replace broken sections as needed. Prevent manure from building up next to the curbs or over topping them.
Do not allow livestock access to open water courses and drainageways. Provide off stream watering facilities where possible and limit access to designated watering areas.
Inspect fences periodically and repair or replace broken or decayed posts and tighten sagging wire as needed. Broken wire can be spliced or replaced. Replace broken or missing insulators on electric fences as needed and repair or replace inoperative electric fence controllers.
Insure gates and other appurtenances are in good working order. Replace or repair components as needed.

IRRIGATION SYSTEMS-
Apply irrigation water and wastewater in accordance with Irrigation Water Management guidance in Section3.
Maintain sprinkler irrigation systems in accordance with the manufacturer’s

recommendations to help ensure trouble free operation. Prevent livestock access to equipment during operation.
Clean plugged nozzles and replace if worn or defective.
Promptly repair all leaks by replacing valves, fittings, gaskets, worn or damaged parts.
Prompt repair or replacement of damaged or worn components is necessary. Check to make sure all application components i.e. water control structures, gates, valves, ditches, etc. are functional and are in good operating condition.
Maintain screening and filtering facilities.
Maintain vigorous vegetative growth where applicable.

LIVESTOCK STREAM CROSSING-
Periodically remove accumulated manure from crossing and apply to manure utilization areas or place in the solids storage area.
Maintain crossing, appurtenances and associated fence and make repairs as necessary.
Periodically grade and reshape crossing to maintain original dimensions.
Add surface materials as necessary to prevent erosion and rutting from animal traffic.

LIVESTOCK WATERING FACILITIES-
Check all above ground connections, valves, gates, rodent guards, inlets and outlets to make sure they are functioning properly. Check troughs and tanks for leaks or cracks and repair or replace immediately, if necessary.
Make certain the area adjacent to the trough is well protected with gravel, paving, or good cover. Be sure that the outlet pipe has a free outlet and is not causing any serious erosion problems. Check periodically to see if debris has fallen into the trough or tank which may restrict inflow or planned functions of the outflow system.
Clean the entire system periodically and remove moss, algae growth, and/or sludge. Chemicals such as copper sulfate and chlorine can be used to prevent moss and algae growth. Local rules and regulations are to be followed when using chemicals to make sure they are safe for animals.
Where necessary maintain coverings and insulation to prevent damage by freezing.
Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.
Immediately repair any vandalism, vehicular or livestock damage.

PIPELINES-
Flush pipelines used for wastewater applications with clean water following an application, or as needed, to prevent particle buildup.
Drain the pipeline and components in areas that are subject to freezing. If parts of the pipeline cannot be drained, a non-toxic antifreeze solution may be added.
Check to make sure all valves and air vents are set at the proper operating condition so they can provide protection to the pipeline.
Inspect pipelines for signs of failure. Inspect risers and valves periodically for leaks or worn gaskets.
Repair or replace pipeline, risers and valves as needed.
Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.
Annually inspect underground pipelines for proper operation. Check fields for signs of positive pressure (blow holes) or negative pressure (sink holes) in underground pipelines. Repair or replace damaged or broken pipelines as needed maintaining designed depth of cover.
For free draining underground pipelines, keep outlets free of vegetation and sediment. Correct and prevent erosion at outlets by installing riprap or other measures. Repair or replace damaged or broken rodent guards as needed.
Avoid travel over underground pipelines with heavy equipment when the soil is saturated except at crossings designed for this purpose.

PRODUCTION AREA

Avoid any subsoiling operation that may disturb the underground pipeline.
Eradicate or otherwise remove all rodents and/or burrowing animals that have or can potentially damage any part of the system. Immediately repair any damage caused by their activity.
Immediately repair any damage due to vandalism, vehicular or livestock.

POND-
The farm pond is a source of water for livestock, fish and wildlife, recreation, fire control, and irrigation and will require periodic maintenance to provide satisfactory performance over the life of the structure.
Periodically inspect the spillways and control gates for proper functioning for their ability to maintain the water level to design elevations and repair as necessary. Immediately remove any blockage or obstructions in spillways. Inspect and repair immediately any components needed for the safe operation of the pond.
Maintain vigorous growth of vegetative coverings on all earthen embankments and appurtenances. This includes reseeding, fertilization, and application of herbicides when necessary. Fertilize the established stand with at least 200 lbs of 21- 0-0 per acre or equivalent annually or as needed to maintain a uniform vigorous stand. Periodic mowing may also be needed to control height. Remove any woody brush, trees and undesirable vegetation species from the embankment and reservoir area.
If fences are installed, they shall be maintained to prevent unauthorized human or livestock entry.
Immediately repair any vandalism, vehicular, or livestock damage to any earthfills, spillways, outlets or other appurtenance.
Remove any debris that may accumulate at the pond and immediately upstream or downstream from the reservoir area.
Make sure all structure drains are functional and soil is not being transported through the drainage system. The screens and/or rodent guards on structural drains shall also be maintained and kept in place during the life of the structure.
Eradicate or otherwise remove all rodents or burrowing animals and repair any damage caused by their activity.

PUMPS-
Operate and maintain pumps in accordance with good judgment and manufacture’s manuals and recommendations.
Drain liquid manure from pumps during cold weather to prevent freezing. If parts of the system cannot be drained, a non-toxic antifreeze solution may be added.
Inspect pumps periodically and remove debris wrapped around shafts and impellers. Maintain foot valves and check valves for proper operation.
For proper operation of electric motors and controls, maintain lubrication for all bearings, keep electric panel free from obstructions and debris. Maintain electrical safety devices, assure all electrical contacts are tight, and lock main electrical switch to “OFF” position during non-use season. Maintain adequate shade and ventilation for pump motors.
For proper operation of pumps, maintain lubrication for all bearings and pump shafts, assure belts are adjusted properly, maintain safety covering devices on open shafts and belt drives, check to make sure all safety valves and devices are set at proper operating conditions so they may provide protection to the pump and power unit. For centrifugal pumps, periodically measure tolerance between pump impeller and pump casing (i.e. wearing) and replace wear ring as needed to help restore new pump operating characteristics.
Use portable pressure gauge (preferably a liquid filled gauge) to monitor pump performance.
Operate and maintain agitators in accordance with the manufacture’s manual and recommendations.
Inspect all plumbing annually as a minimum.

Replace, tighten, or repair broken or loose connections and lines as needed.

ROOF GUTTERS AND DOWNSPOUTS-
Periodically check gutters, downspouts and all above ground pipelines, trash guards, pumps, structures, and appurtenances for proper operation. Repair or replace if needed.
Periodically remove debris from gutters, downspouts and outlet facilities.
Protect downspouts from damage by livestock and equipment. Repair or replace damaged components as needed.
Keep gutters, downspouts, pumps, conveyance pipelines and ditches and appurtenances in good operating condition with O & M performed as per site specific recommendations for each component.

SOLID/LIQUID SEPARATION FACILITY-
Inspect the solid/liquid separation facility daily to ensure the facility is operating properly and there has been no damage to structural components. Clean screens and outlets if they have become clogged or their capacity is not adequate for proper operation of the facility.
Inspect the capacity of settling basins daily to ensure adequate capacity is available for separated solids.
During daily inspections if it is determined that the maximum capacity of the settling basin has been reached, divert flows to another basin and let excess liquids drain from the basin before removing solids. Once the excess liquids have drained from the basin, remove all accumulated solids from the basin and store them in a designated solids storage area or haul them to the application area for utilization. When removing solids from earthen basins take care not to disturb the earthen liner.
Prevent any spillage or leakage onto roadways when transferring solids from the solid/liquid separation facility to the solids storage area and to utilization areas.

UNDERGROUND OUTLET(S)-
Check all above ground connections, valves, gates, trash racks, rodent guards, inlets and outlets to make sure they are functioning properly.
Maintain design depth of cover on all pipelines and structures.
Avoid operation of tillage and subsoiling equipment that could damage any component of the system.
Remove all foreign debris that hinders system operation.
Limit traffic over pipeline to designated sections that were designed for traffic loads.
Maintain vigorous growth of vegetative coverings. This includes reseeding, fertilization and application of herbicides when necessary. Periodic mowing may also be needed to control growth.
Eradicate of otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

VEGETATED TREATMENT AREAS (VTA)-
Do not apply during rainfall events that are expected to result in saturated soils or surface runoff.
Maintain the setback buffer distances described in Section 3 and shown on the Setback Map when making applications of liquids or solids containing manure.
Control undesired weed species, especially state-listed noxious weeds, and other pests that could inhibit proper functioning of the VTA.
Take soil tests annually in the fall to insure soil nutrient concentrations are within acceptable limits. Follow guidance given in Oregon State University Extension publication EM 8832, “Post-harvest Soil Nitrate Testing for Manured Cropping Systems West of the Cascade Mountain Range”, for testing soils and determining acceptable soil nutrient concentrations.

PRODUCTION AREA

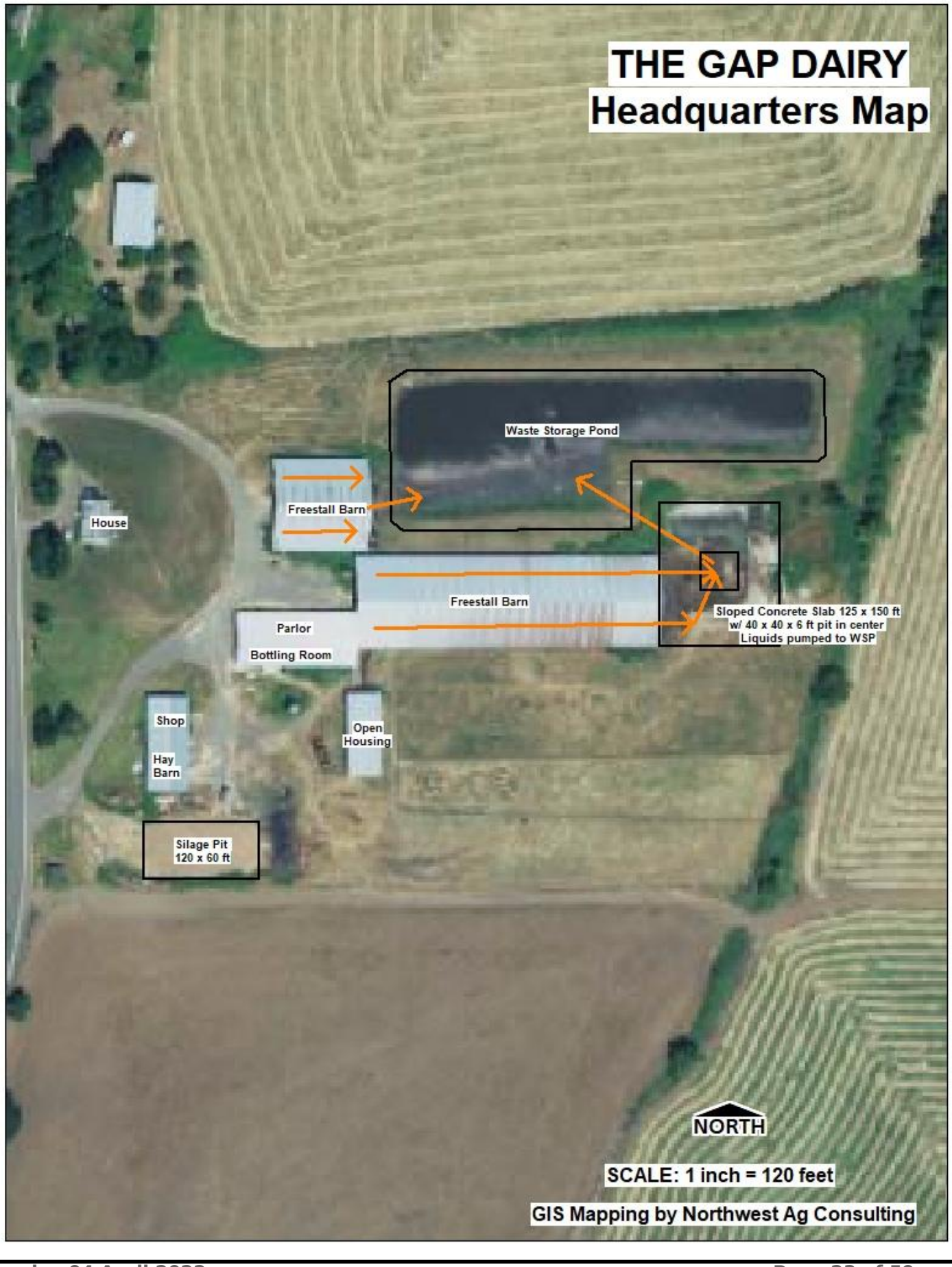
Inspect and repair treatment areas after storm events to fill in gullies, remove flow disrupting sediment accumulation, re-seed disturbed areas, and take other measures to prevent concentrated flow.
Apply supplemental nutrients and soil amendments as needed to maintain the desired species composition and stand density of herbaceous vegetation.
Maintain or restore the treatment area as necessary by periodically grading when deposition jeopardizes its function, and then reestablishing to herbaceous vegetation.
Routinely de-thatch and/or aerate treatment areas used for treating runoff from livestock holding areas in order to promote infiltration.
Conduct maintenance activities only when the surface layer of the VTA is dry enough to prohibit compaction.

WELL(S)-
Protect the area immediately surrounding the well from being damaged by agriculture machinery, vehicles, or livestock.
All fences, railings, and/or warning signs shall be maintained to provide warning and/or prevent unauthorized human or livestock entry.
Do not allow any foreign debris to accumulate and maintain soil and vegetative covering in the immediate vicinity of the well.
Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.
Check metal surfaces for rust and other damage especially sections in contact with earthfill and with other materials. Repair or replace damaged section and apply paint as a protective covering.
Keep all surface water from entering or accumulating at the immediate vicinity of the well site.
Immediately repair any vandalism, vehicular, or livestock damage.

CHEMICAL HANDLING CHECKLIST-
The following measures shall be taken to prevent chemicals from contaminating process water or storm water storage and treatment systems:
1. Make sure all chemicals are stored in proper containers. Expired chemicals and empty containers are to be properly disposed of in accordance with state and federal regulations. Pesticides and associate refuse are to be disposed of in accordance with the FIFRA label.
2. Chemical storage areas are to be self-contained with no drains or other pathways that will allow spilled chemicals to exit the storage area.
3. Chemical storage areas are to be covered to prevent chemical contact with rain or snow.
4. Emergency procedures and equipment are to be in place to contain and clean up chemical spills.
5. Chemical handling and equipment wash areas are to be designed and constructed to prevent contamination of surface waters, waste water, and storm water storage and treatment systems.

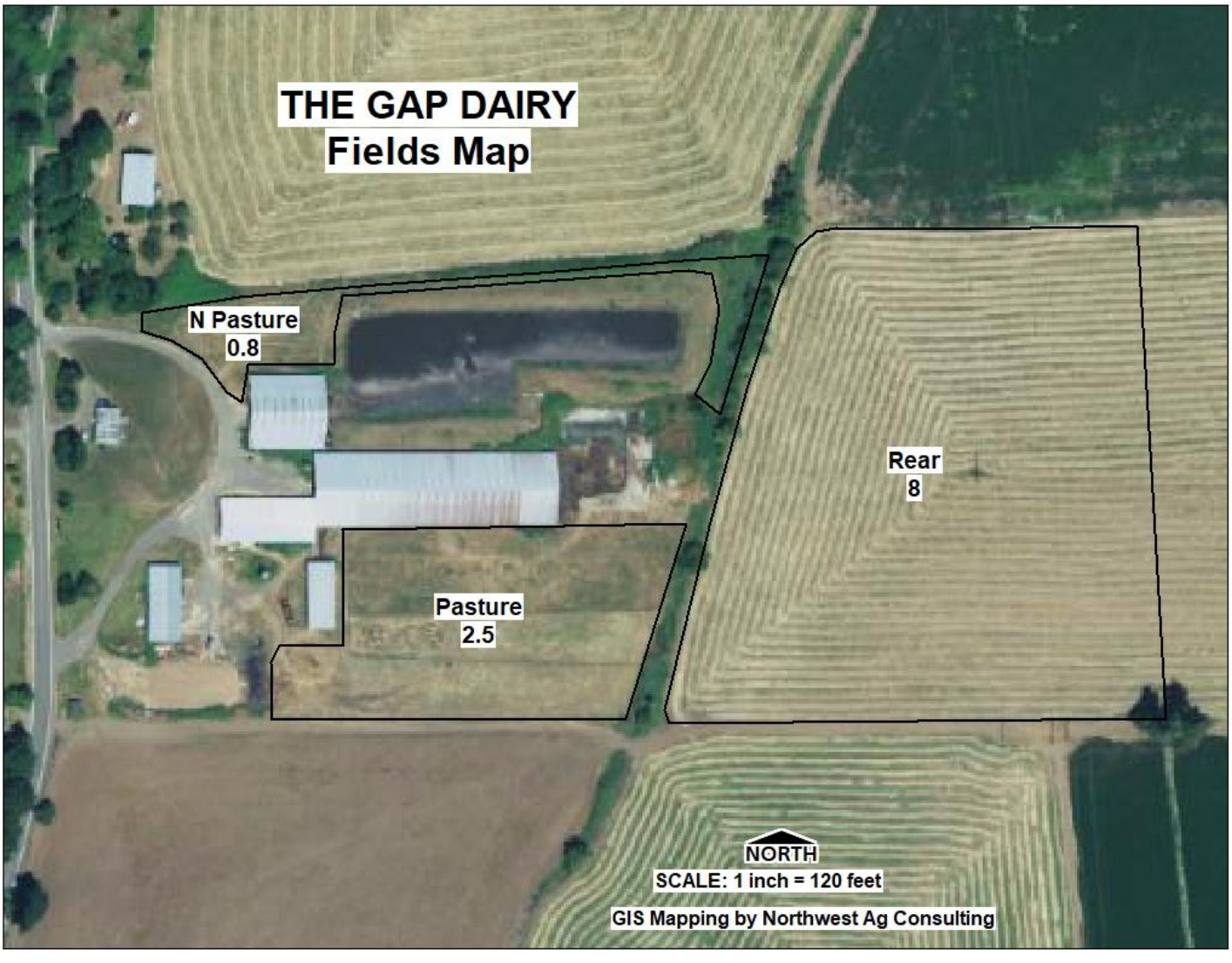
PRODUCTION AREA

Production Area Maps for The Gap



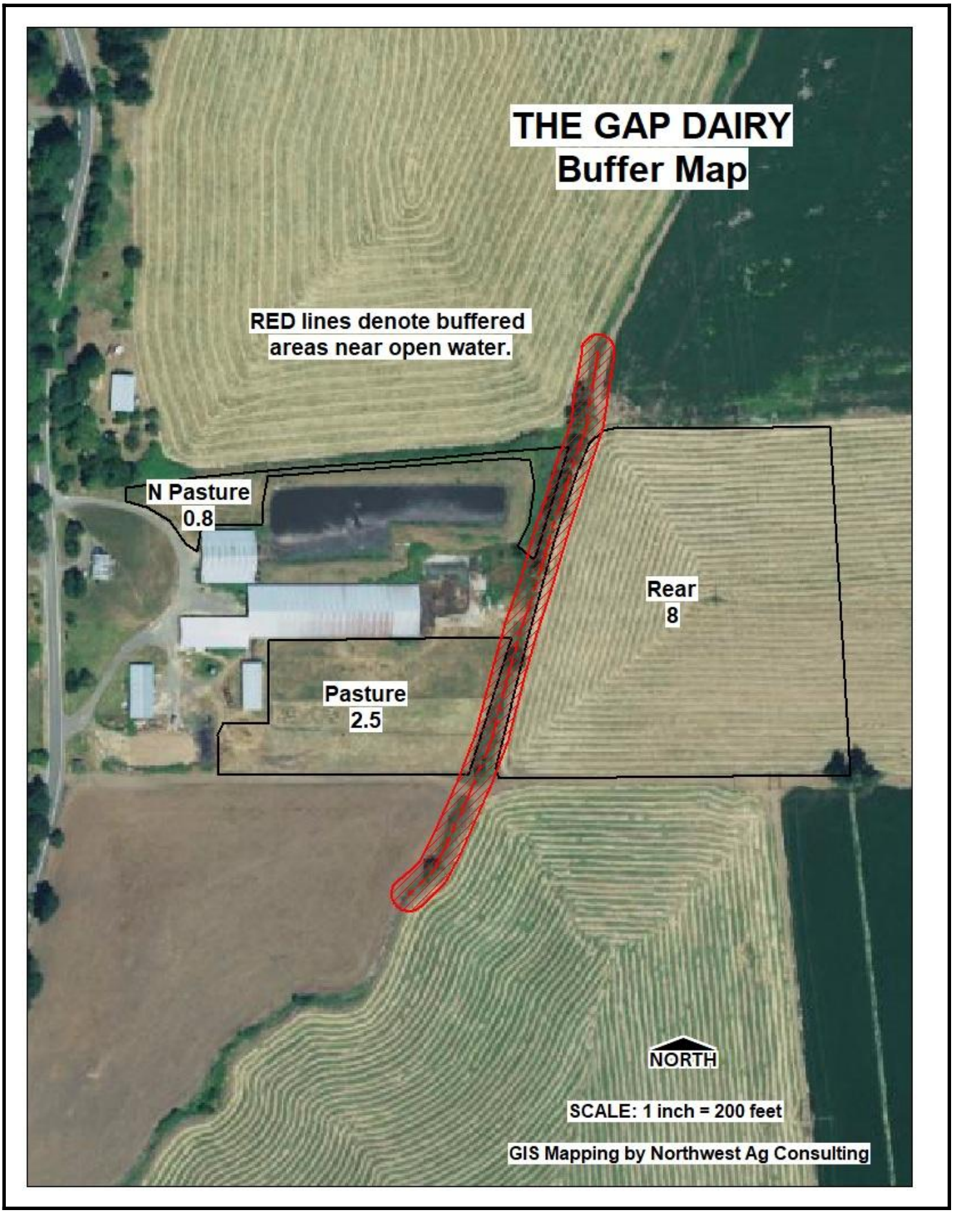
UTILIZATION AREA

Field Maps for The Gap



UTILIZATION AREA

Setback Maps for The Gap



Application Considerations

The manure and irrigation application systems will be calibrated in accordance with guidance in this section to insure the applications of manure, bedding and runoff from the waste storage facilities are in accordance with agronomic rates.

No application of wastewater or solids containing manure is to be made to the field buffer areas shown on the Setback Map in Section 3-2. Applications of wastewater and solids containing manure should be made in accordance with guidance in this section to reduce the risk of contaminated runoff to surface water sources and leaching of contaminants to ground water sources.

The phosphorus runoff rating for each of the farm fields is based on the Oregon Natural Resources Conservation Service Phosphorus Index and is shown in the table in Section 4-3. Wastewater, solids and commercial fertilizer for any field with a LOW runoff rating can be applied on a nitrogen basis. Wastewater, solids and commercial fertilizer for any field with a MEDIUM or HIGH runoff rating must be applied on a phosphorus basis. No applications of manure or commercial fertilizer containing phosphorus are to be made on a field with a ZERO OUT phosphorus runoff rating.

Manure applications may be made at any time of the year provided certain factors have been considered. However, the overriding factor one should use in considering whether or not to apply nutrients to a crop, irrespective of the nutrient source, is the agronomic need of the crop at the time of application. The following guidelines are to be considered once the decision has been made to make a manure application.

Consider using T-Sum 200 to determine when manure applications are to begin as long as you can comply with all other permit and AWMP requirements. Calculations for T-Sum 200 are outlined in OSU Extension Fertilizer Guide for Pastures (OSU FG63, 2000). T-Sum 200 is based on accumulated heat units and is an accurate guide to estimate plant activity. Research has shown that T-Sum 200 is the earliest date when plant roots begin to grow in the spring and thus are receptive to applied nutrients.

T-Sum 200 is determined by monitoring surface air temperature and summing the daily minimum and maximum air temperatures and dividing the sum by two to get the average daily air temperature then converting that to centigrade (F degrees minus 32 times 0.556). Manure applications may begin once 200 heat units have been accumulated. However, one must still apply manure at agronomic rates based on the estimated growth potential of the crop and anticipated climatic events.

Based on crop nutrient uptake patterns, manure applications should stop when the crop is done growing for the year and before the first significant rainfall event that is expected to result in saturated soils or surface runoff.

Fields that are subsurface (TILE) drained require additional precautions when manure is applied. Any pre-application tillage should leave as much residue as possible on the soil surface. Water control structures installed in subsurface drainage systems should be managed to prevent discharge of manure and wastewater during periods of application.

Be aware of the location of sensitive areas, concerns of neighbors or concerns of the public, which require special application procedures. To reduce odor problems, apply

wastewater and solids containing manure in mid-morning when temperatures are warming and air is rising rather than in the afternoon or evening when air is cooling and settling. Avoid applications during periods of fog.

Calibrate application equipment to insure uniform distribution and accurate application rates in accordance with guidance given in the Considerations for Manure Applications and with guidance on the calibration of application equipment.

Maintain setbacks for manure application from any surface waters. The management goal is not to allow manure to enter surface waters at any time. The following table shows **minimum setback requirements** for manure applications:

Manure Type	Application Equipment	Month and Setback Distance in Feet [a, b, d]											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Liquid	Big gun	100	100	100	35	35	35	35	35	35	100	100	100
Liquid	Spreader Bar	100	100	35	35	35/15[c]	15	15	15	35	100	100	100
Liquid	Tank Wagon	100	100	35	35	35/15[c]	15	15	15	35	100	100	100
Liquid	Tanker Truck	100	100	35	35	35/15[c]	15	15	15	35	100	100	100
Solid	Spreader	100	100	35	35	35/15[c]	15	15	15	35	100	100	100

Note:

a. Setbacks are the distance between open waterways and manure application area.
b. Setback requirements will generally increase for manures which are applied aerially (such as a traveling big gun) versus manures applied lower to the ground (such as a splash bar) due to potential for drift from wind or splashing.
c. This is a floating date and should be evaluated based on current weather conditions and forecast information.
d. Fifteen (15) feet is the suggested setback distance during summer months, however larger and/or smaller distances may be set depending on conversations with the ODA.

Record applications, transfers or exports of nutrients (manure and fertilizer) and maintain them for at least 5 years. The CAFO Recordkeeping Calendar or other acceptable record keeping systems can be used to record this information.

CONSIDERATIONS FOR DRY SEASON MANURE APPLICATIONS:

Apply wastewater and solids containing manure at agronomic rates using the following guidelines:
-Consider using T-Sum 200 as a guideline to begin making manure applications.
-Do not apply to soils immediately before or during rainfall events that are expected to result in saturated soils or surface runoff.
-Apply to land being prepared for crops. Till manure into soil within 3 days of application if possible or apply to actively growing crops such as grass, clover or alfalfa after cutting.
-Maintain the setback buffer distances described in this section and shown on the Setback Map when making applications of liquids or solids containing manure.
-Record applications, transfers or exports of nutrients (manure and fertilizer) and maintain them for at least 5 years. The CAFO Recordkeeping Calendar or other acceptable record keeping systems can be used to record this information.

CONSIDERATIONS FOR WET SEASON MANURE APPLICATIONS:

Only apply manure during this time period if the following guidelines CAN be met. Call the ODA CAFO Program at (503) 986-4700 for guidance if a manure application is needed and the following guidelines CANNOT be met:

- Apply manure only to actively growing crops such as grass, clover or alfalfa.
- Minimize application rates by using the maximum travel rates for the application equipment.
- Maintain the setback buffer distances described in this section and shown on the Setback Map when making applications of liquids or solids containing manure.
- Do not apply to soils immediately before or during rainfall events that are expected to result in saturated soils or surface runoff.
- Do not apply to saturated or flooded soils. It is recommended that application(s) be limited to soils (areas) where the flooding frequency class rating is None, Very Rare or Rare.
- Do not apply to slopes greater than 5%. See the Soil Map in Section 4-1 for the location of soil map units with slopes greater than 5%.

Applications of wastewater or solids containing manure to frozen soils should be avoided. Do the following if an application of wastewater or solids containing manure is to be made to frozen soils:
- Apply only enough wastewater or solids containing manure to address storage limitations until suitable soil conditions for application are available.
- Minimize applications to 5 wet tons per acre or less of solids containing manure and 6,788 gallons (0.25 inches) per acre or less of wastewater.
- Apply to alternating strips to reduce the risk of contaminated runoff reaching surface water sources.
- Apply to fields of established hay, pasture or fields containing at least 90% cover and are the furthest from open water sources.
- Do not apply wastewater or solids containing manure within 200 feet of surface water sources, drainageways, wells, or inlets to subsurface drainage systems.
- Runoff control systems such as earthen dikes must be in place where applications will be made to fields with slopes greater than 5%.

Record applications, transfers or exports of nutrients (manure and fertilizer) and maintain them for at least 5 years. The CAFO Recordkeeping Calendar or other acceptable record keeping systems can be used to record this information.

Do not apply manure or commercial fertilizer to fields receiving applications unless the nutrients applied in the manure are less than the annual application of nutrients planned in the nutrient budget for the fields.

HOW TO CALIBRATE APPLICATION EQUIPMENT

Calibration of application equipment is a critical part of nutrient management. Calibration should be completed at least annually to insure manure and fertilizer will be uniformly applied. There are two basic approaches for calibrating a manure spreader – the load area and the weight area methods. The load area method is more accurate and can be used for both liquid and solid manure. The weight area method works only with solid or semi-solid manure.

Irrigation System Calibration

Place 3-5 buckets throughout the irrigation spray pattern and collect samples while operating the pump at a given rpm and pressure (for a traveling gun record the travel speed also). At the end of the planned sample period measure the amount of liquid collected in inches (average the samples). The following chart shows how many gallons per acre applied per inch of liquid applied:

Inches Liquid Manure Applied	Gallons per Acre
0.20	5,431
0.30	8,146
0.40	10,862
0.50	13,577
0.75	20,366
1.00	27,152
1.25	33,943
1.50	40,731

Soft Hose Injection System with Irrigation Hose:

Alternative 1. Use a flow meter mounted on the injector system and calculate the distance and width to determine amount applied over a measured area. Example the flow meter measures 1,000 gallons over a distance of 600 feet and 10 feet wide.
Formula: Application Rate (7,260 gallons/acre) = (Gallons Applied (1,000 gal) X 43,560 sq. ft/acre) divided by (Distance traveled (600 ft) X Application width (10 ft))

Alternative 2. (Requires a 10-20 gallon graduated measuring container)
Step 1) In the field, measure the flow out of one injector for 5 seconds into the graduated measuring container and record gallons, repeat three (3) times and average the results.
Step 2) Multiply the average amount collected from one injector by the number of injectors (equals amount applied for the whole system for 5 seconds).
Step 3) Multiply the results of Step 2 times 12 to get gallons per minute.
Step 4) Place the injector in the soil at the planned depth and operating speed and record the distance traveled in 1 minute (average 3 different measurements).
Step 5) Determine the effective application width (number of injectors X injector spacing in feet).
Step 6) Multiply the effective width times the distance traveled in 1 minute (this gives the square feet covered in 1 minute).
Step 7) Divide the result of Step 6 by 43,560 (this gives the acres covered in 1 minute).
Step 8) Divide the results of Step 3 (gallons per minute) by the results of Step 7 (acres covered in 1 minute) - (this gives the gallons applied per acre.

For example:
Step 1) Collect an average of 6 gallons from one injector for 5 seconds.
Step 2) Applicator has 8 injectors (8 injectors X 6 gallons per injector = 48 gallons for 5 seconds)
Step 3) 48 gallons in 5 seconds X 12 = 576 gallons/minute applied
Step 4) Average distance covered in 1 minute was 250 feet
Step 5) Average width of the applicator is 12 feet.
Step 6) 12 feet wide X 250 feet long = 3000 square feet
Step 7) 3000 square feet divided by 43,560 square feet/acre = .0688 acres covered in 1 minute
Step 8) 576 gallons/minute divided by .0688 acres/minute = 8,372 gallons/acre.

Manure Spreader/Tanker Calibration

There are several methods that can be used to calibrate the application rate of a manure spreader. The two best methods are the load-area method and the weight-area method. It is desirable to repeat the calibration procedure 2 to 3 times and average the results to establish a more accurate calibration. Before calibrating a manure spreader, the spreader settings such as splash plates should be adjusted so that the spread is uniform. Most spreaders tend to deposit more manure near the middle than at the edge of the spread pattern. Overlapping can make the overall application more uniform. Calibrating application rates when overlapping is involved requires measuring the width of two spreads and dividing by two to get the effective spread width.

Calibration should take place annually or whenever manure is being applied from a different source or consistency.

Load-Area Method:

The load-area method is the most accurate and can be used for both liquid and solid manure. The load area method is a 3-step process:

Step 1) Determine the amount of manure in the spreader. The most accurate way to determine the amount of manure in a spreader is weighting the spreader when it is empty and again when it is full. For a reliable estimate of spreader capacity, weigh several representative loads (at least five) to determine the average gross weight. Subtract the empty spreader weight. Then, calculate the average net loaded weight.

Step 2) Determine the area of spread using the method at the right. Width measurements near the beginning and end of the spread pattern should be avoided because the spreader may not be operating at full capacity.

Step 3) Calculate the application rate. The application rate is calculated using the formula for either liquid or solid manure.

Formula for Solid Manure Equals Tons/Acre

(Average Loaded Weight (lbs) x 21.81) divided by (Distance Traveled (ft) x Width of Spread (ft))

Formula for Liquid Manure Equals Gal/Acre

(Tank Volume (gal) x 43,560) divided by (Distance Traveled (ft) x Width of Spread (ft))

Weight-Area Method:

The weight-area method can only be used with solid or semi-solid manure. When a scale is not available, the application rate of a box spreader can be determined by collecting manure on a tarp or piece of heavy material. The weight area method is less accurate than the load area method.

This method consists of eight steps:

Step 1) Prepare/cut three 56-inch square tarps or pieces of heavy material (this size equals 1/2,000 of an acre). The pounds of manure collected on 56 inches square equals tons applied per acre.

Step 2) Weigh one of the clean tarps and a large bucket on a platform scale. Record the weight.

Step 3) Anchor the three tarps in the field ahead of the spreader near the beginning, middle, and end of the area that will be spread with one load.

Step 4) Drive over the three tarps at a normal speed to collect a representative manure sample.

Step 5) Fold and place the first tarp into the empty bucket without spilling the manure.

Weigh the bucket, tarp, and manure. Subtract the weight of the clean tarp and bucket recorded in step 2.

Step 6) Repeat the process for each of the two remaining tarps.

Calculate the average weight (pounds) of the manure collected. This value equals tons of manure applied per acre.
Factor for converting pounds to tons and square feet to acres (21.8 = 43,560 sq ft per acre divided by 2,000 lbs/ton).
The factor for converting square feet to acres = 43,560 sq ft per acre.
Step 7) Determining Area of Spread.
The “area of spread” is the length and width of the ground covered with one load of manure. The area of spread is affected by speed and equipment settings. Spreaders discharge manure at varying rates depending on travel and PTO speed, gear box settings, and discharge openings. It is important to adjust the spreader so the pattern is as uniform as possible. Accurately measuring the length and width of this area is essential. To determine width, measure two adjacent spreads and divide by two to find the “effective” spread width. This accounts for overlap, which is often needed for a more uniform application. The length of spread is determined using the following three values:
Desired manure application rate based on soil and manure tests,
Width of the manure spread, and
Manure spreader holding capacity (weight and/or volume).
From these values, calculate the distance or lengths of spread using these formulas:
Formula: Solid Manure Equals Feet/Load
(Average Load Weight (lbs) x 21.81) divided by (Spread Width (ft) x App. Rate (tons/ac))
Formula: Liquid Manure Equals Feet/Load
(Tank Volume (gal) x 43,560) divided by (Spread Width (ft) x Desired App. Rate (gal/ac))
Step 8) Spread a load. If the distance traveled does not equal the calculated distance, adjust the speed or equipment settings.

AMOUNT OF MANURE TO APPLY FOR CROPS GROWN

The formulas for determining the total nutrient application rate per unit yield for each crop shown in the table below are as follows:

Total N to apply in pounds = N in pounds per yield unit from the table for the crop grown X Yield Units per Acre X actual percent (%) dry matter (DM) of harvested crop/percent (%) dry matter (DM) from table

Total P_2O_5 to apply in pounds = P in pounds per yield unit from the table for the crop grown X Yield Units per Acre X 2.291 P_2O_5/P X actual percent (%) dry matter (DM) of harvested crop/percent (%) dry matter (DM) from table

Total K_2O to apply in pounds = K in pounds per yield unit from the table for the crop grown X Yield Units per Acre X 1.205 K_2O/K X actual percent (%) dry matter (DM) of harvested crop/percent (%) dry matter (DM) from table

Example- for a field with 5 tons per acre of grass/legume hay harvested at 90% dry matter:

Total N to apply in pounds per acre = (33.92 lb N / ton) X (5 tons / acre) X (90%DM / 100% DM) = 153 lbs N / acre

UTILIZATION AREA

The following tables show the crops that may be grown on this farm:

FRUIT OR VEGETABLES				**Nutrient Removal (lb/yield unit)**		
	Yield Unit	**lb/Unit**	**% DM**	**N**	**P**	**K**
Beans, dry edible	cwt	100	100	3.13	0.45	0.85
Blueberries	ton	2000	100	13.93	1.30	11.57
Caneberries	ton	2000	100	11.43	7.42	11.43
Corn, Sweet	ton	2000	100	20.67	5.60	13.66
Grapes	ton	2000	100	11.39	1.07	20.43
Mixed Vegetables & Fruit	ton	2000	100	8.33	2.08	10.20
Onions	cwt	100	100	0.18	0.04	0.13
Orchard, Fruit	ton	2000	100	13.00	2.00	16.00
Pea, edible	ton	2000	100	73.60	8.00	18.00
Potatoes	ton	2000	100	30.0	5.45	47.27
Squash	ton	2000	100	21.33	6.80	11.40

GRAIN, SEED OR OIL CROPS				**Nutrient Removal (lb/yield unit)**		
	Yield Unit	**lb/Unit**	**% DM**	**N**	**P**	**K**
Barley	bushels	48	100	0.87	0.16	0.21
Beets, sugar	ton	2000	100	4.00	0.60	2.78
Bluegrass, Seed	cwt	100	100	2.88	0.43	1.98
Canola	ton	2000	100	70.00	12.00	18.00
Corn, grain shelled	bushels	56	100	0.90	0.16	0.22
Crimson Clover seed	lb	1	100	0.05	0.01	0.02
Fescue Seed, Straw Removed	cwt	100	100	1.97	0.20	2.00
Fescue, seed (Fine or Tall)	lb	1	100	1.47	0.31	1.67
Oats, grain	bushels	32	100	0.62	0.11	0.16
Orchardgrass seed	lb	1	100	0.016	0.002	0.004
Peppermint for Oil	ton	2000	100	4.20	1.80	2.80
Peppermint for Oil, Leaves & Stems Removed	ton	2000	100	87.23	36.80	57.80
Pumpkins	ton	2000	100	4.00	1.40	6.60
Rapeseed	bushels	50	100	1.38	0.30	0.30
Red Clover seed	cwt	100	100	4.55	1.00	2.00
Ryegrass seed	cwt	100	100	1.67	0.27	1.42
Ryegrass Seed, Straw Removed	ton	2000	100	30.00	18.80	37.60
Ryegrass, Perennial seed	lb	1	100	0.02	0.002	0.004
Wheat, Soft White for grain	bushels	60	100	1.00	0.24	0.21
Wheat, Soft White, Straw Removed	ton	2000	100	43.40	8.90	20.90
Wheat, Hard Red for grain	bushels	60	100	1.60	0.37	0.31
Wheat, Hard Red, Straw Removed	ton	2000	100	53.36	10.96	23.76

UTILIZATION AREA

HAY AND PASTURE CROPS				Nutrient Removal (lb/yield unit)		
	Yield Unit	lb/Unit	% DM	N	P	K
Alfalfa, Hay	ton	2000	100	54.40	6.83	35.70
Alfalfa, Seed	cwt	100	100	6.12	0.70	2.34
Alta Fescue Hay/Pasture	ton	2000	100	32.98	6.88	37.60
Grass Legume Hay/Pasture	ton	2000	100	33.92	5.30	7.56
Meadow Fescue Hay/Pasture	ton	2000	100	41.56	8.70	47.43
Oats Hay/Pasture	ton	2000	100	26.01	10.20	14.79
Orchardgrass Hay/Pasture	ton	2000	100	53.21	8.58	18.62
Perennial Grass Hay/Pasture	ton	2000	100	58.00	8.00	40.00
Reed Canary Grass	ton	2000	100	27.00	3.57	41.57
Ryegrass Hay	ton	2000	100	33.41	5.44	28.39
Ryegrass, Perennial Pasture	ton	2000	100	58.00	8.00	48.00
Sorghum-Sudan Haylage	ton	2000	100	54.40	6.40	58.00
Tall Fescue Hay/Pasture	ton	2000	100	39.40	4.00	40.00
Vetch Hay	ton	2000	100	51.93	7.20	44.76

SILAGE AND HAYLAGE CROPS				Nutrient Removal (lb/yield unit)		
	Yield Unit	lb/Unit	% DM	N	P	K
Alfalfa/Grass Haylage	ton	2000	100	15.60	1.02	6.84
Corn for Silage	ton	2000	100	25.00	4.00	20.00
Crimson Clover forage	ton	2000	100	40.00	4.48	33.28
Field Pea, Forage	ton	2000	100	73.60	8.00	18.00
Mustard, White	ton	2000	100	38.55	0.0	0.0
Oat haylage	ton	2000	100	26.0	10.2	14.8
Oats & Peas/ Green Beans	ton	2000	100	32.03	5.58	18.65
Perennial Grass Haylage	ton	2000	100	15.00	2.40	12.78
Red Clover forage	ton	2000	100	40.00	4.41	32.98
Ryegrass Haylage	ton	2000	100	15.00	2.40	12.78
Sorghum-Sudan Haylage	ton	2000	100	16.32	1.92	17.40
Triticale Haylage	ton	2000	100	49.00	6.80	11.40
Vetch Haylage	ton	2000	100	59.67	6.57	50.00
Wheat Haylage	ton	2000	100	41.30	5.00	57.30
Wheatgrass Hay/Pasture	ton	2000	100	49.59	6.21	68.76

OTHER CROPS				Nutrient Removal (lb/yield unit)		
	Yield Unit	lb/Unit	% DM	N	P	K
Filberts	ton	2000	100	41.70	7.30	39.29
Hops, Cones	bale	200	100	9.00	0.96	5.00
Natural Area (Trees & Grass)	ton	2000	100	10.52	1.56	9.20
Nursery Stock	ton	2000	100	8.33	2.08	10.20
Poplars, Pulpwood	ton	2000	100	0.30	0.09	0.12
Hemp/Cannabis	ton	2000	100	31.09	3.37	36.23

Note: Nutrient uptake values are taken from the NRCS National Agricultural Waste Management Field Handbook and updated with more current information from the Extension Service when available. When nutrient uptake values are not available from NRCS or Extension references, then nutrient uptake data from the NRCS Plant Database or other approved data sources is used.

Nutrient Applications

Nutrient Applications Report

The Gap

Turner

North Pasture

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
08/01/2021	Solids Stack	Solids Spreader	100	11.5 Ton/Ac	290	72	302
				North Pasture Totals:	290	72	302

Pasture

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
08/01/2021	Solids Stack	Solids Spreader	100	11.5 Ton/Ac	290	72	302
				Pasture Totals:	290	72	302

Rear

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
08/01/2021	Solids Stack	Solids Spreader	100	11.5 Ton/Ac	290	72	302
				Rear Totals:	290	72	302

Sampling Guidance

Manure and Soil Sampling Frequency

For large concentrated animal feeding operations, sample liquids and solids containing manure during applications in early spring annually and have each sample analyzed for Total Nitrogen (TKN), Ammonium Nitrogen (NH_4-N), Phosphorus (P_2O_5) and Potassium (K_2O) plus percent moisture. Ask the lab to report results in pounds per ton for the solids containing manure and in pounds per thousand gallons for liquids containing manure. Analyses of solids and liquids containing manure should be performed by a laboratory that meets the requirements and performance standards of the Manure Testing Laboratory Certification Program (MTLCP), https://www.mda.state.mn.us/licensing/licensetypes/mapprogram.aspx.

For small and medium animal feeding operations, if no samples of liquids and solids containing manure have been taken, take a sample of liquids and solids during applications in early spring once a year for three consecutive years to develop a cumulative manure analysis history as a basis for nutrient allocation to the fields. If there is a sampling history of liquids and solids containing manure, take a sample of liquids and solids during applications in early spring once every 5 years or whenever a significant change in animal numbers or in the manure handling system occurs. Have each sample analyzed for Total Nitrogen (TKN), Ammonium Nitrogen (NH_4-N), Phosphorus (P_2O_5) and Potassium (K_2O) plus percent moisture. Ask the lab to report results in pounds per ton for the solids containing manure and in pounds per thousand gallons for liquids containing manure. Analyses of solids and liquids containing manure should be performed by a laboratory that meets the requirements and performance standards of the Manure Testing Laboratory Certification Program (MTLCP), https://www.mda.state.mn.us/licensing/licensetypes/mapprogram.aspx.

Large CAFO's are required to test a minimum of 20 percent of their fields annually which would result in all of the fields being tested once every 5 years. Small and Medium CAFO's are only required to test all of their fields once every 5 years. However, from a management standpoint, more frequent soil testing offers good information on the nutrient status of your soils.

Collect soil samples from 20 percent of the fields receiving solids or liquids containing manure **annually** in the fall after harvest or before rains begin(typically September 15-October 15) in accordance with **Pacific Northwest (PNW) Extension publication 570-E, "Monitoring Soil Nutrients Using a Management Unit Approach",** https://catalog.extension.oregonstate.edu/pnw570. Have the soil samples analyzed for Total Nitrogen (TKN) and Phosphorus (P) and ask the lab to report results in parts per million (ppm). Soil test analyses should be performed by laboratories that meet the requirements and performance standards of the North American Proficiency Testing Program (NAPT) Proficiency Assessment Program (PAP); http://www.naptprogram.org/pap/.

How to Sample Liquid Manure

Obtain a composite following one of the procedures listed below and thoroughly mix. Using a plunger, an up-and-down action works well for mixing liquid manure in a five-gallon bucket. Fill a one-quart plastic bottle not more than three-quarters full with the composite sample. Store sample in freezer if not delivered to the lab immediately.

Procedure 1. Sampling from storage- Agitate storage facility thoroughly before sampling. Collect at least five samples from the storage facility or during loading using a five-gallon bucket. Place a sub sample of the composite sample in a one-quart plastic container. Sampling a liquid manure storage facility without proper agitation (2-4 hrs. minimum) is not recommended due to nutrient stratification, which occurs in liquid systems. If manure is sampled from a lagoon that was not properly agitated, typically the nitrogen and potassium will be more concentrated in the top liquid, while the phosphorus will be more concentrated in the bottom solids.

Procedure 2. Sampling during application- Place buckets around field to catch manure from spreader or irrigation equipment. Combine and mix samples into one composite sub sample in a one-quart plastic container.

How to Sample Solid Manure

Collect a composite sample by following one of the procedures listed below. A method for mixing a composite sample is to pile the manure and then shovel from the outside to the inside of the pile until well mixed. Fill a one-gallon plastic heavy-duty zip lock bag approximately one-half full with the composite sample, squeeze out excess air, close and seal. Store sample in freezer if not delivered to the laboratory immediately.

Procedure 1. Sampling while loading - Recommended method for sampling from a stack or bedded pack. Take at least ten samples while loading several spreader loads and combine to form one composite sample. Thoroughly mix the composite sample and take an approximately one pound sub sample using a one-gallon plastic bag. Sampling directly from a stack or bedded pack is not recommended.

Procedure 2. Sampling during spreading - Spread a tarp in field and catch the manure from one pass. Sample from several locations and create a composite sample. Thoroughly mix the composite sample together and take a one-pound sub sample using a one-gallon plastic bag.

Procedure 3. Sampling daily haul - Place a five-gallon bucket under the barn cleaner 4-5 times while loading a spreader. Thoroughly mix the composite sample together and take a one-pound sub sample using a one-gallon plastic bag. Repeat sampling 2-3 times over a period of time and test separately to determine variability.

Procedure 4. Sampling poultry in-house - Collect 8-10 samples from throughout the house to the depth the litter will be removed. Samples near feeders and waterers may not be indicative of the entire house and sub samples taken near here should be proportionate to their space occupied in the whole house. Mix the samples well in a five-gallon pail and take a one-pound sub sample, place it in a one-gallon zip lock bag.

Procedure 5. Sampling stockpiled litter - Take ten sub samples from different locations around the pile at least 18 inches below the surface. Mix in a five-gallon pail and place a one-pound composite sample in a gallon zip lock bag.

Sample Identification and Delivery

Identify the sample container with information regarding the farm, animal species and date. This information should also be included on the sample information sheet along with application method, which is important in determining first year availability of nitrogen.

Keep all manure samples frozen until shipped or delivered to a laboratory. Ship early in the week (Mon.-Wed.) and avoid holidays and weekends.

How to Sample Soils

Current soil tests must be used in the development and editing of nutrient management plans. A current soil test is one that is no older than 5 years that is used to represent the nutrient status of the entire field. Soil analysis must be performed by laboratories successfully meeting the requirements and performance standards of the North American Proficiency Testing Program-Performance Assessment Program (NAPT-PAP). Results of these analysis will be used to determine application rates for manure, litter, and process wastewater. Guidance for soil sampling can be found in the **Pacific Northwest (PNW) Extension publication 570-E, "Monitoring Soil Nutrients Using a Management Unit Approach"**, https://catalog.extension.oregonstate.edu/pnw570. **Oregon State University Extension publication EC1478, "Soil Test Interpretation Guide",** https://catalog.extension.oregonstate.edu/ec1478 provides guidance on how to determine soil nutrient concentrations and how to adjust soil pH to improve nutrient availability.

Field Area. A composite soil sample should represent a uniform field area. Each area should have similar crop and fertility history. Soil characteristics (color, slope, texture, drainage) should be similar. Exclude small areas within a field that are obviously different. The field area represented by a single composite sample should represent no more than 40 irrigated acres or 100 dry land acres.

Sampling Depth. Laboratory tests are calibrated to specific depths. It is vital to collect samples from appropriate depths. Sampling depth for most soils is the rooting depth in 6-inch intervals. In Oregon, as a minimum, soil samples should be collected from the 0-12" depth. The 0-6" surface soil samples are normally used for conventional tests of organic matter, nitrogen, phosphorus, potassium, pH and salt levels. Additionally, subsurface samples from the 6-24" depth are needed to estimate nitrogen availability for crops grown in dry land areas.

Post Harvest Soil Testing for Evaluating Nutrient Applications. Refer to **Pacific Northwest (PNW) Extension publication 570-E, "Monitoring Soil Nutrients Using a Management Unit Approach"**, https://catalog.extension.oregonstate.edu/pnw570, for guidance on how to evaluate nutrient applications and crop uptake of nutrients.

Manure Tests

Nutrient Analysis Report

The Gap

Turner

Sample Date	Storage Name	Units	Total N	P_2O_5	K_2O	NH_4-N	NO_3-N	Org N	Density Lbs/CF
08/16/2011	Manure Pond	lbs/1000gal	3.9	4.4	6.5	1.5	0.0	2.4	62.0
08/16/2011	Solids Stack	lbs/Ton	25.2	6.3	26.3	3.5	0.0	21.7	32.0

Soil Tests

Soils Testing Report

The Gap

12092 Parrish Gap Road, Turner

North Pasture

Test Date	Lab #	Sample ID	Depth	pH	BpH	SS (ppm)	OM %	Ex Carb	Bray P	Olsen P	K (ppm)	Mg	Ca	Na	NO3-N	NH4-N	S (ppm)	B (ppm)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	Al (ppm)	Cl (ppm)
9/8/2010	S7940		12.0	5.8	6.3				96.0		288.0	2.0 meq	12.8 meq											

Pasture

Test Date	Lab #	Sample ID	Depth	pH	BpH	SS (ppm)	OM %	Ex Carb	Bray P	Olsen P	K (ppm)	Mg	Ca	Na	NO3-N	NH4-N	S (ppm)	B (ppm)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	Al (ppm)	Cl (ppm)
9/8/2010	S7840		12.0	5.8	6.3				96.0		288.0	2.0 meq	12.8 meq											

Rear

Test Date	Lab #	Sample ID	Depth	pH	BpH	SS (ppm)	OM %	Ex Carb	Bray P	Olsen P	K (ppm)	Mg	Ca	Na	NO3-N	NH4-N	S (ppm)	B (ppm)	Zn (ppm)	Mn (ppm)	Cu (ppm)	Fe (ppm)	Al (ppm)	Cl (ppm)
9/8/2010	S7840		12.0	5.8	6.3				96.0		288.0	2.0 meq	12.8 meq											

Soil test analyses should be performed by laboratories that meet the requirements and performance standards of the North American Proficiency Testing Program (NAPT) Proficiency Assessment Program (PAP);
http://www.naptprogram.org/pap/

Nutrient Balances

Nutrient Balances Report

The Gap

Turner

Field	Acres	Crop	Yield	Nutrient Uptake (lbs/ac)			Nutrient Applied (lbs/ac)			Nutrient Balance (lbs/ac)		
				N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
North Pasture	0.8	Grass Hay/Pasture	5 Ton	290	92	241	290	72	302	(-0)	(-19)	61
Pasture	2.5	Grass Hay/Pasture	5 Ton	290	92	241	290	72	302	(-0)	(-19)	61
Rear	8.0	Grass Hay/Pasture	5 Ton	290	92	241	290	72	302	(-0)	(-19)	61

Transferred Nutrients

Transfers Report

The Gap

Turner

Exported from	Date Transferred	Quantity	Analysis Available	Total N lbs	P_2O_5 lbs	K_2O lbs	Exported to
Manure Pond	06/15/2021	650,000 CF	Yes	18,961.8	9,337.76	26,226.56	OFF FARM TBD
Solids Stack	08/01/2021	156,250 CF	Yes	63,000	6,874.73	54,564.32	OFF FARM TBD
	Sub Totals:	806,250 CF		81,961.8	16,212.48	80,790.87	

Imported from	Date Transferred	Quantity	Analysis Available	Total N lbs	P_2O_5 lbs	K_2O lbs	Imported to
No Imports.				0	0	0	
	Sub Totals:	CF		0	0	0	
	Totals:	806,250 CF		81,962	16,212	80,791	

Cropping History

Cropping Report

The Gap

Turner

Planted	Field	Acres	Crop	Yield	Nutrient Uptake (lbs/ac) N	P_2O_5	K_2O
01/01/2021	North Pasture	0.8	Grass Hay/Pasture	5 Ton	58	18	48
	North Pasture Totals:				58	18	48
01/01/2021	Pasture	2.5	Grass Hay/Pasture	5 Ton	58	18	48
	Pasture Totals:				58	18	48
01/01/2021	Rear	8.0	Grass Hay/Pasture	5 Ton	58	18	48
	Rear Totals:				58	18	48

Irrigation Water Management

The application of Irrigation Water Management to the irrigated fields as shown on the Field Map will manage soil moisture to promote the desired crop response, optimize the available water supplies, minimize irrigation induced erosion, decrease non-point source pollution of surface and groundwater sources, manage salts in the crop root zone and manage the crop micro climate.

Permits: Under Oregon law all water is publicly owned, and anyone planning to store or divert surface or groundwater for the purpose of irrigation must obtain a permit or water right from the Oregon Water Resources Department. These permits or water rights must be obtained prior to the use of the water. It is the responsibility of the Farmer to file for the necessary permits or water rights. More information about Oregon water rights can be found at http://www.oregon.gov/owrd/Pages/wr/index.aspx.

The irrigation system used to irrigate crops should be adapted for site conditions (soil, slope, crop grown, climate, water quantity and quality, etc.) and capable of applying water and wastewater to meet the consumptive use of the crop. The following table shows the estimated Available Water Holding Capacity (AWHC) and sprinkler intake rates by soil texture that should be considered in the design of the irrigation system.1/

Symbol	Soil Texture	AWHC Range (in/in)	Sprinkler Intake Rate Range (in/hour)
COS	Coarse Sand	0.01-0.03	1.0+
S	Sand	0.01-0.03	0.5+
FS	Fine Sand	0.05-0.07	0.5+
VFS	Very Fine Sand	0.05-0.07	0.5+
LCOS	Loamy Coarse Sand	0.06-0.08	1.0+
LS	Loamy Sand	0.06-0.08	0.4-1.5
LFS	Loamy Fine Sand	0.09-0.11	0.4-1.5
LVFS	Loamy Very Fine Sand	0.10-0.12	0.3-1.25
COSL	Coarse Sandy Loam	0.10-0.12	0.3-1.25
SL	Sandy Loam	0.11-0.13	0.3-1.25
FSL	Fine Sandy Loam	0.13-0.15	0.3-1.0
VFSL	Very Fine Sandy Loam	0.15-0.17	0.3-1.0
L	Loam	0.16-0.18	0.6-0.7
SIL	Silt Loam	0.19-0.21	0.5-0.7
SI	Silt Loam	0.16-0.18	0.5-0.7
SCL	Sandy Clay Loam	0.14-0.16	0.1-0.5
CL	Clay Loam	0.19-0.21	0.1-0.5
SICL	Silty Clay Loam	0.19-0.21	0.1-0.4
SC	Sandy Clay	0.15-0.17	0.1-0.4
SIC	Silty Clay	0.15-0.17	0.1-0.2
C	Clay	0.14-0.16	0.1-0.2

1/ Values in this table are taken from the Natural Resources Conservation Service National Engineering Handbook, Part 652, Irrigation Guide and are estimates based on soil texture and should only be used where local data is unavailable.

Irrigation water management requires knowledge, skills, and desire to determine when irrigation water should be applied. The main factors influencing IWM are irrigation interval (time between irrigations), irrigation set time (time water is applied), and application rate (rate at which water is applied). These parameters define the timing and duration of irrigation and the amount of water applied. System design and maintenance are also important factors influencing irrigation water management.

UTILIZATION AREA

Guidance given in the irrigation water requirements worksheets was developed based on Oregon State University Extension Miscellaneous 8530, Oregon Crop Water Use and Irrigation Requirements publication. For additional information on irrigation water management contact a professional with the required knowledge and skill. The following average monthly evapotranspiration and precipitation graphs can be used to estimate when to irrigate and how much to apply:

UTILIZATION AREA

Irrigation Water Flows, Volumes, and Relationships

Equation 1 -

$$Q \times T = D \times A$$

wher

Q = flow rate (acre-in/hr or cfs)
T = time (hr)
D = gross depth applied (in)
A = area (acres)

Equation 2 -

$$Q = \frac{453 \times A \times}{F \times H}$$

wher

Q = flow rate (acre-in/hr or cfs)
A = area (acres)
D = gross depth applied (in)
F = irrigation period (days)
H = Hours of operation per

Water Flow

1 cubic foot per second (cfs)
= 448.8 gallons per minute
1 cfs for 1 hour = 0.99 acre-inch
1 cfs for 24 hr = 1.98 acre-ft
1,000 gpm = 2.23 cfs
1,000 gpm for 24 hr = 4.42 ac-ft
1 gpm/acre =0.053 ac-in/ac/day
1 cfs = 40 miner's inches in OR, No CA
1 cfs = 50 miner's inches in ID, WA

1 miner's inch = 11.22 gpm in OR
1 miner's inch = 9 gpm in ID, WA
1 cfs = 28.32 liters/sec
1 cubic meter/sec = 35.3 cfs
1 liter/sec = 15.85 gpm

Q x T = D x where:

Q = cfs, T = hr, D = inches depth; A =

Gpm for 5 ft/s velocity in PVC pipe:

6"	8"	10"	12"	14"
480	800	125	175	215

Water Volumes & Weights:

1 cubic foot = 7.48 gallons
= 62.4 lbs = 28.3 liters
1 acre-foot = 43,560 cubic feet
(1 acre covered 1 ft deep)
12 acre-in = 1 acre-ft = 325,829 gal
1 million gallons = 3.07 acre-ft
1 acre-ft = 1,234 cubic meters
1 cu meter = 1,000 liters = 35.3 cu ft

Pressure and Pressure Head:

1 psi = 2.31 ft of pressure head
1 atmosphere (sea level)
= 14.7 psi = 33.9 ft of head

Lengths and Areas:

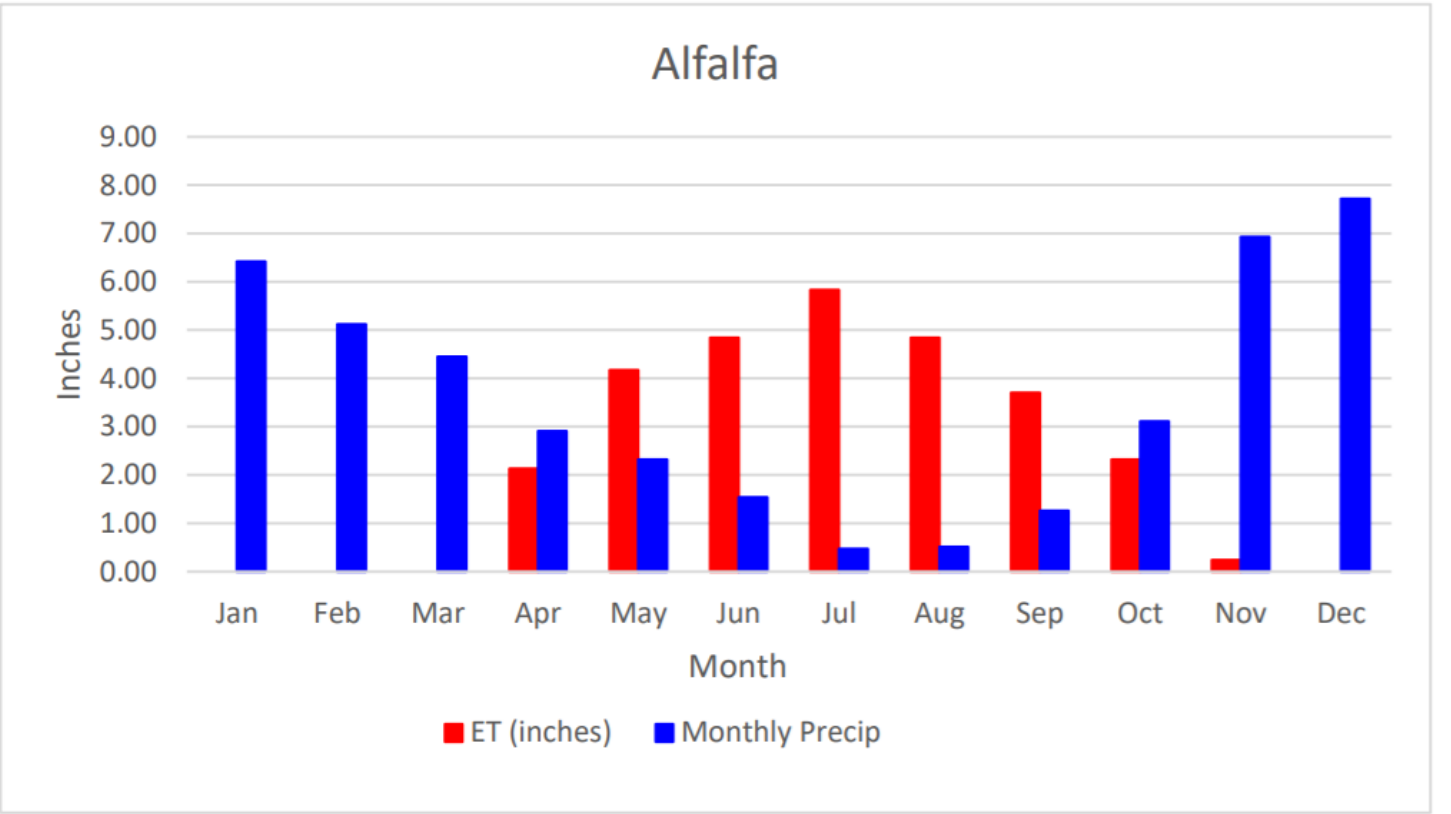
1 mile = 5,280 ft = 1.61 km
1 meter = 3.28 ft = 39.37 inches
1 acre = 43,560 square ft
1 hectare = 2.47 acres

Pump Power Requirement

$$Horsepower = \frac{Pump\ \ Head\ \ in\ \ ft\ \ x\ \ gpm}{39.6 \times \%\ Pump\ \ Efficiency}$$

UTILIZATION AREA

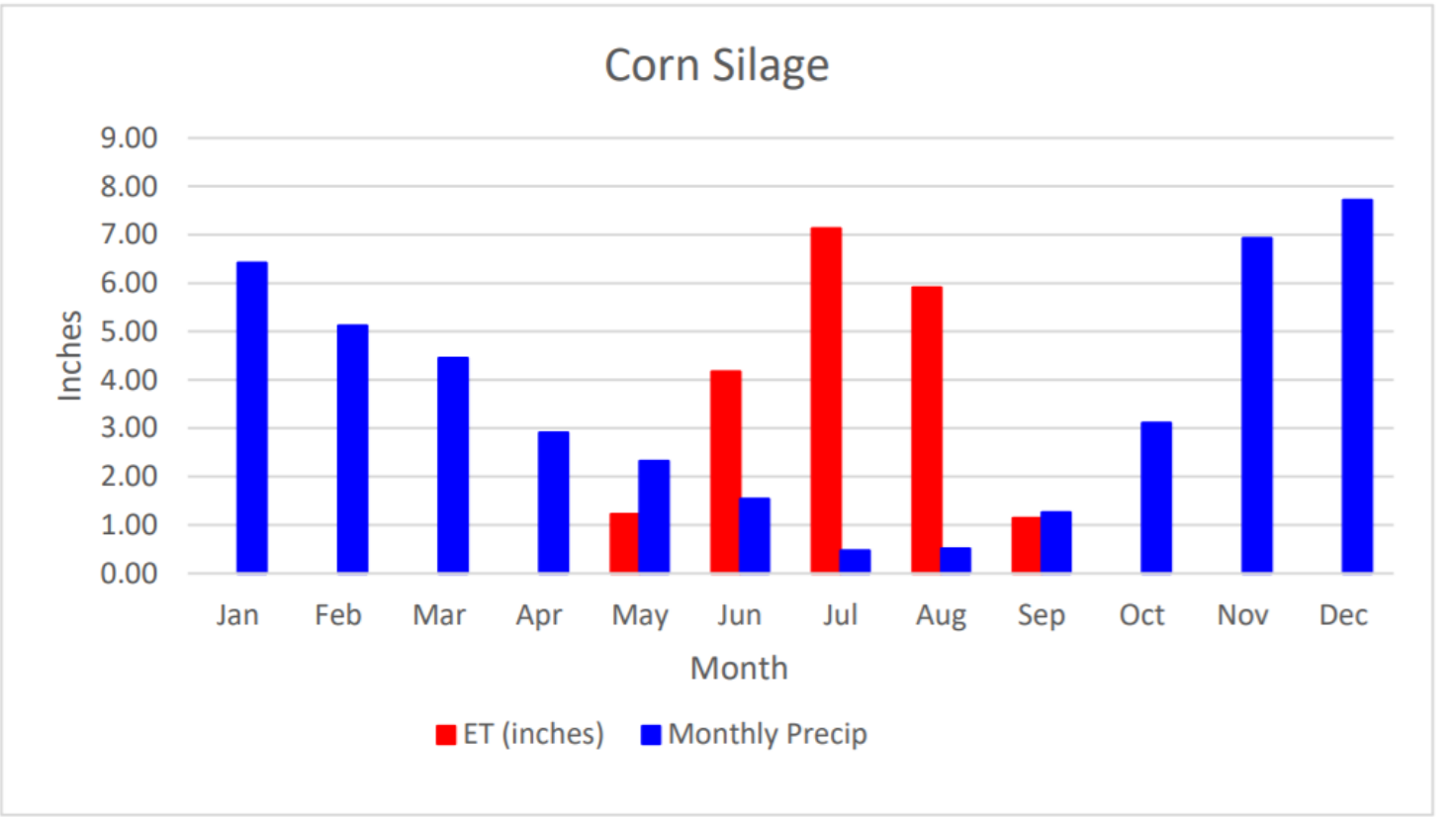
Crop-	Alfalfa	
Region-	Willamette Valley	
Total Seasonal Evapotranspiration-	28.07	Inches
Peak Evapotranspiration Rate-	0.19	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



UTILIZATION AREA

Crop- Corn Silage
Region- Willamette Valley

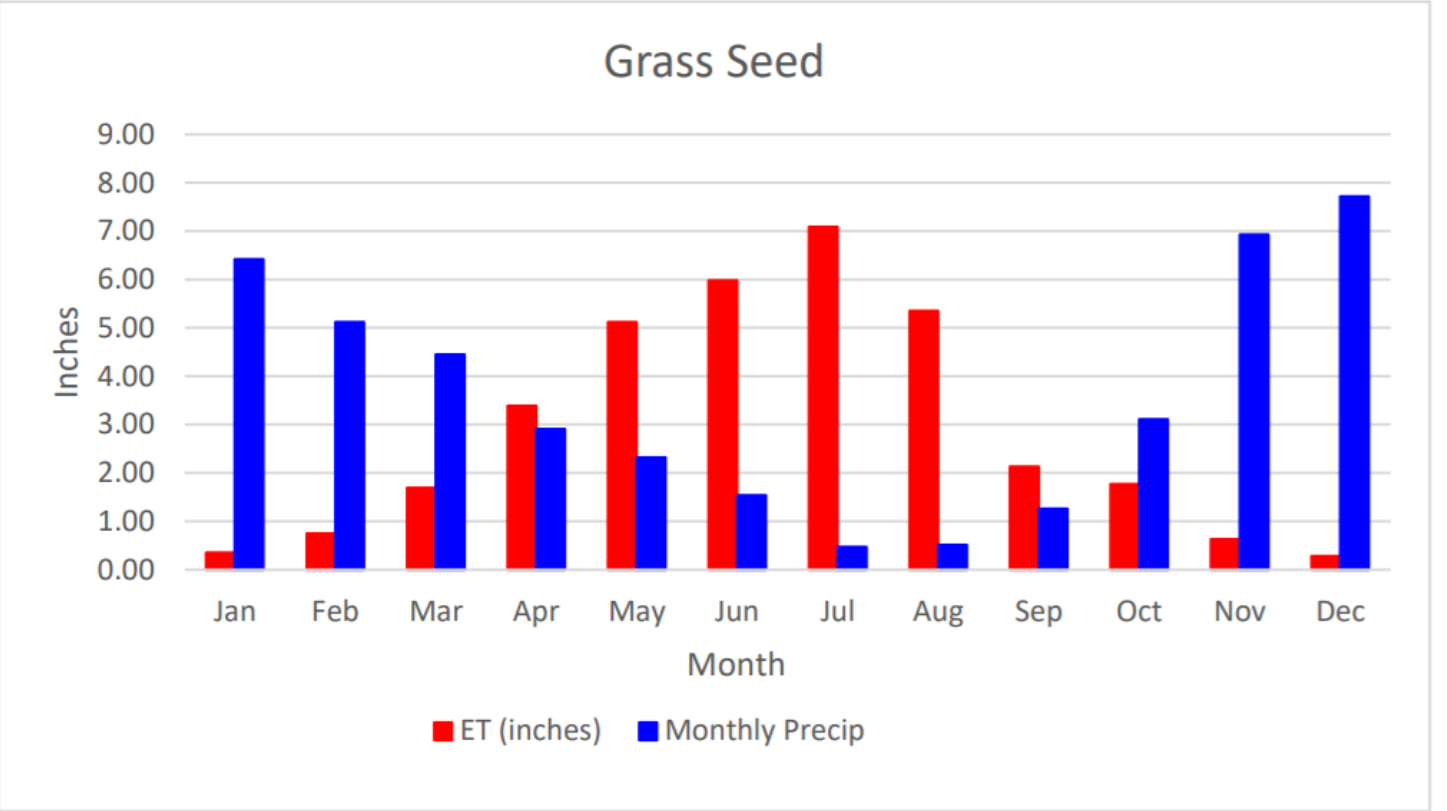
Total Seasonal Evapotranspiration-	19.57	Inches
Peak Evapotranspiration Rate-	0.24	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



UTILIZATION AREA

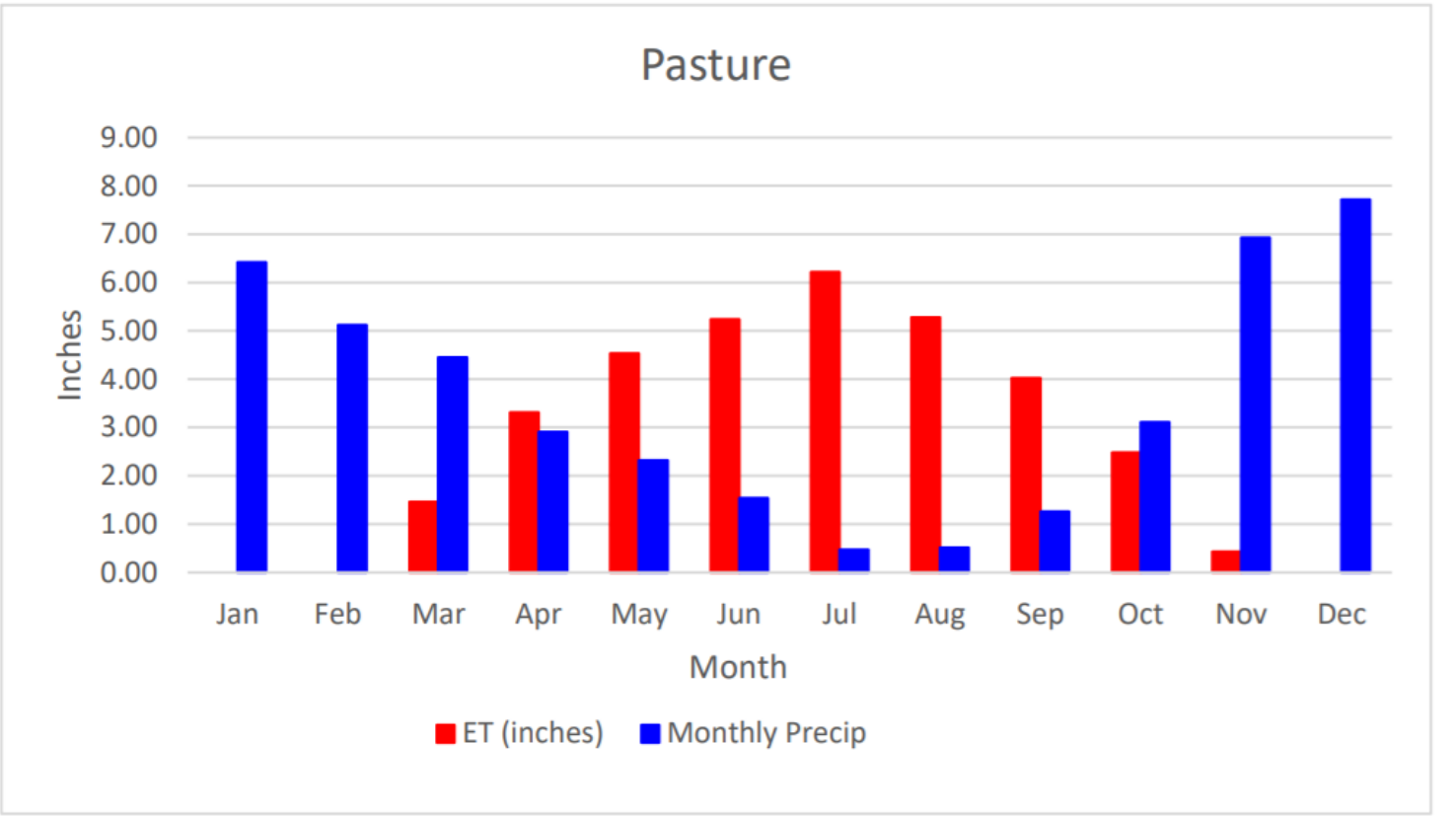
Crop- Grass Seed
Region- Willamette Valley

Total Seasonal Evapotranspiration-	34.53	Inches
Peak Evapotranspiration Rate-	0.24	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



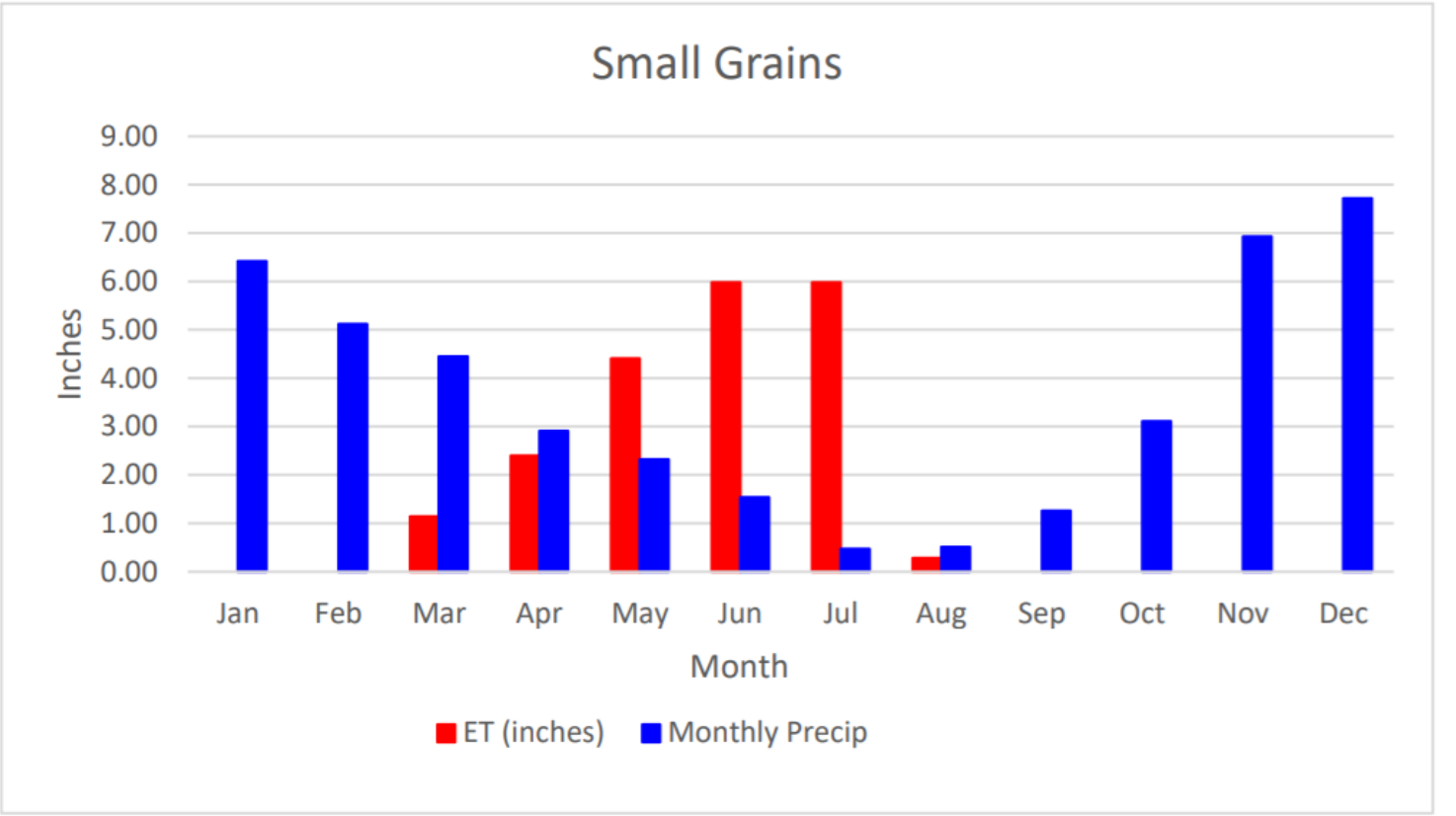
UTILIZATION AREA

Crop-	Pasture	
Region-	Willamette Valley	
Total Seasonal Evapotranspiration-	32.97	Inches
Peak Evapotranspiration Rate-	0.21	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



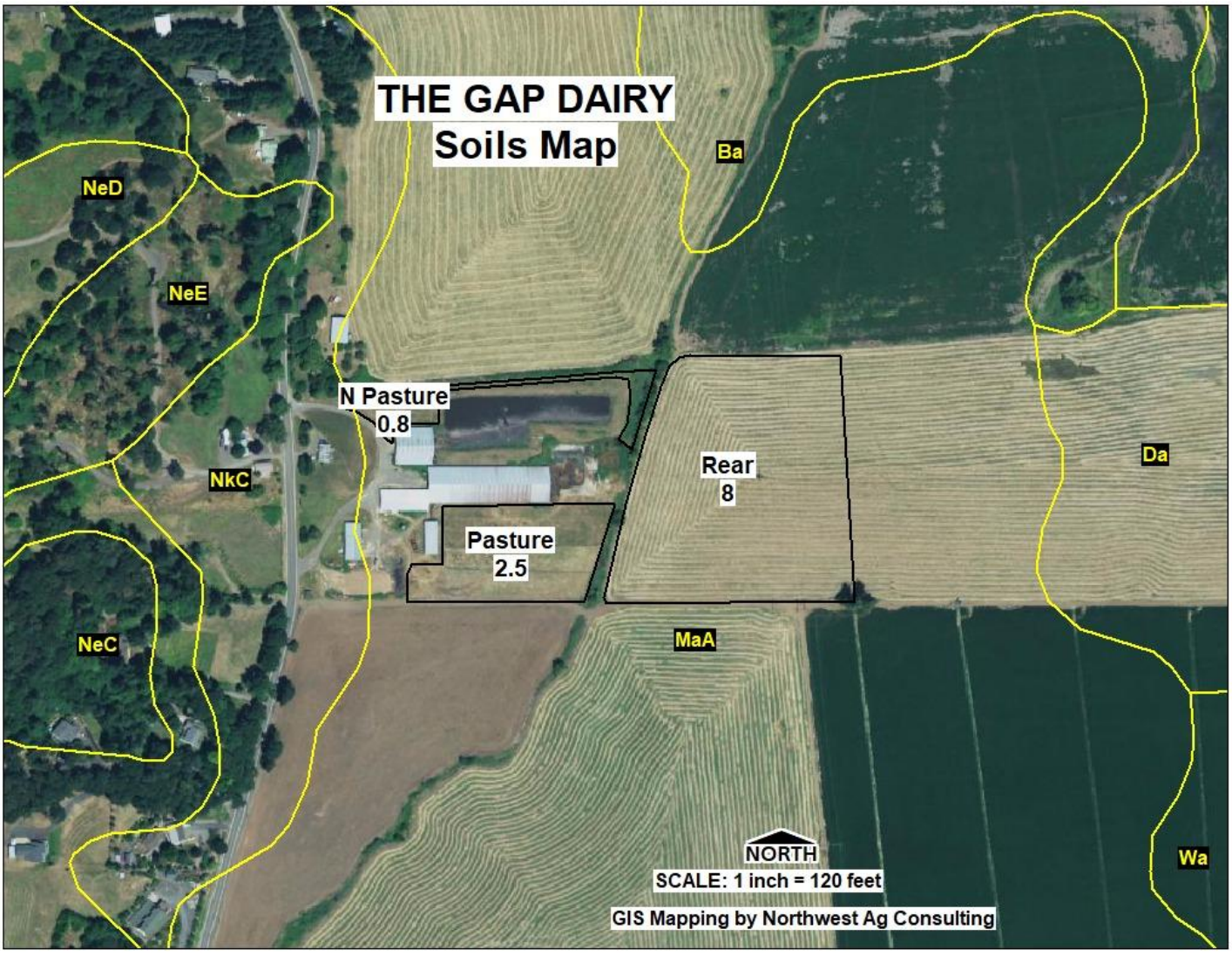
UTILIZATION AREA

Crop-	Small Grains	
Region-	Willamette Valley	
Total Seasonal Evapotranspiration-	20.19	Inches
Peak Evapotranspiration Rate-	0.20	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jun	



SOIL AND RISK

Soil Maps for The Gap



Soil Reports

The Gap Dairy Report—Map Unit Description
Marion County Area, Oregon

Ba—Bashaw clay
Map Unit Setting
National map unit symbol: 24nt
Elevation: 100 to 400 feet
Mean annual precipitation: 40 to 45 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 210 days
Farmland classification: Farmland of statewide importance
Map Unit Composition
Bashaw and similar soils:85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Bashaw
Setting
Landform:Flood plains
Landform position (three-dimensional):Tread
Down-slope shape:Concave, linear
Across-slope shape:Linear
Parent material:Alluvium
Typical profile
H1 - 0 to 14 inches: clay
H2 - 14 to 48 inches: clay
H3 - 48 to 60 inches: clay
Properties and qualities
Slope:0 to 1 percent
Depth to restrictive feature:More than 80 inches
Drainage class:Poorly drained
Capacity of the most limiting layer to transmit water (Ksat):Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table:About 0 to 12 inches
Frequency of flooding:NoneFrequent
Frequency of ponding:Frequent
Available water supply, 0 to 60 inches: Moderate (about 9.0 inches)
Interpretive groups
Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R002XC005OR - High Floodplain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Da—Dayton silt loam
Map Unit Setting
National map unit symbol: 24p4
Elevation: 120 to 350 feet
Mean annual precipitation: 40 to 45 inches
Mean annual air temperature: 52 to 54 degrees F

Frost-free period: 190 to 210 days
Farmland classification: Farmland of statewide importance
Map Unit Composition
Dayton and similar soils:95 percent
Minor components:5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Dayton
Setting
Landform:Terraces
Landform position (three-dimensional):Tread
Down-slope shape:Concave
Across-slope shape:Concave
Parent material:Mixed alluvium with some loess in the upper layers
Typical profile
H1 - 0 to 13 inches: silt loam
H2 - 13 to 46 inches: clay
H3 - 46 to 60 inches: silty clay loam
Properties and qualities
Slope:0 to 3 percent
Depth to restrictive feature:12 to 24 inches to abrupt textural change
Drainage class:Poorly drained
Capacity of the most limiting layer to transmit water (Ksat):Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table:About 0 to 18 inches
Frequency of flooding:None
Frequency of ponding:Frequent
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)
Interpretive groups
Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: R002XC007OR - Valley Swale Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes
Minor Components
Concord
Percent of map unit:5 percent
Landform:Terraces
Landform position (three-dimensional):Tread
Down-slope shape:Concave
Across-slope shape:Concave
Other vegetative classification:Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

Ho—Holcomb silt loam
Map Unit Setting
National map unit symbol: 24pn
Elevation: 120 to 350 feet
Mean annual precipitation: 40 to 45 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 200 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Holcomb and similar soils:85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Holcomb
Setting
Landform:Terraces
Landform position (three-dimensional):Tread
Down-slope shape:Linear
Across-slope shape:Linear
Parent material:Silty and clayey alluvium with some loess in the upper layers
Typical profile
H1 - 0 to 18 inches: silt loam
H2 - 18 to 24 inches: silty clay loam
H3 - 24 to 50 inches: silty clay
H4 - 50 to 60 inches: silt loam
Properties and qualities
Slope:0 to 3 percent
Depth to restrictive feature:15 to 30 inches to abrupt textural change
Drainage class:Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat):Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table:About 12 to 18 inches
Frequency of flooding:None
Frequency of ponding:None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)
Interpretive groups
Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: R002XC007OR - Valley Swale Group
Forage suitability group: Somewhat Poorly Drained (G002XY005OR)
Other vegetative classification: Somewhat Poorly Drained (G002XY005OR)
Hydric soil rating: No

MaA—McAlpin silty clay loam, 0 to 3 percent slopes
Map Unit Setting
National map unit symbol: 24qd
Elevation: 250 to 1,000 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 190 to 210 days
Farmland classification: All areas are prime farmland
Map Unit Composition
Mcalpin and similar soils:95 percent
Minor components:2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Mcalpin
Setting
Landform:Terraces
Landform position (three-dimensional):Tread
Down-slope shape:Linear
Across-slope shape:Linear
Parent material:Mixed alluvium

Typical profile
H1 - 0 to 23 inches: silty clay loam
H2 - 23 to 65 inches: silty clay
Properties and qualities
Slope:0 to 3 percent
Depth to restrictive feature:More than 80 inches
Drainage class:Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat):Moderately high (0.20 to 0.57 in/hr)
Depth to water table:About 24 to 36 inches
Frequency of flooding:None
Frequency of ponding:None
Available water supply, 0 to 60 inches: High (about 10.5 inches)
Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R002XC006OR - Stream Terrace Group
Forage suitability group: Moderately Well Drained < 15% Slopes (G002XY004OR)
Other vegetative classification: Moderately Well Drained < 15% Slopes (G002XY004OR)
Hydric soil rating: No
Minor Components
Waldo
Percent of map unit:2 percent
Landform:Flood plains
Landform position (three-dimensional):Tread
Down-slope shape:Linear
Across-slope shape:Linear
Other vegetative classification:Poorly Drained (G002XY006OR)
Hydric soil rating: Yes

NkC—Nekia stony silty clay loam, 2 to 12 percent slopes
Map Unit Setting
National map unit symbol: 24qz
Elevation: 300 to 1,000 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Farmland of statewide importance
Map Unit Composition
Nekia and similar soils:90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Nekia
Setting
Landform:Hills
Landform position (two-dimensional):Footslope
Landform position (three-dimensional):Base slope
Down-slope shape:Linear
Across-slope shape:Linear
Parent material:Residuum weathered from tuffs and basalt
Typical profile
H1 - 0 to 9 inches: stony silty clay loam
H2 - 9 to 36 inches: clay

H3 - 36 to 46 inches: unweathered bedrock
Properties and qualities
Slope:2 to 12 percent
Depth to restrictive feature:20 to 40 inches to lithic bedrock
Drainage class:Well drained
Capacity of the most limiting layer to transmit water (Ksat):Moderately high (0.20 to 0.57 in/hr)
Depth to water table:More than 80 inches
Frequency of flooding:None
Frequency of ponding:None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)
Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R002XC012OR - Red Hill Group
Forage suitability group: Well drained < 15% Slopes (G002XY002OR)
Other vegetative classification: Well drained < 15% Slopes (G002XY002OR)
Hydric soil rating: No

Wa—Waldo silty clay loam
Map Unit Setting
National map unit symbol: 24rv
Elevation: 250 to 1,000 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 52 to 54 degrees F
Frost-free period: 190 to 210 days
Farmland classification: Farmland of statewide importance
Map Unit Composition
Waldo and similar soils:90 percent
Minor components:5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Waldo
Setting
Landform:Flood plains
Landform position (three-dimensional):Tread
Down-slope shape:Linear
Across-slope shape:Linear
Parent material:Alluvium
Typical profile
H1 - 0 to 10 inches: silty clay loam
H2 - 10 to 60 inches: clay
Properties and qualities
Slope:0 to 3 percent
Depth to restrictive feature:More than 80 inches
Drainage class:Poorly drained
Capacity of the most limiting layer to transmit water (Ksat):Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table:About 0 to 6 inches
Frequency of flooding:OccasionalNone
Frequency of ponding:None
Available water supply, 0 to 60 inches: High (about 10.0 inches)
Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: R002XC005OR - High Floodplain Group
Forage suitability group: Poorly Drained (G002XY006OR)
Other vegetative classification: Poorly Drained (G002XY006OR)
Hydric soil rating: Yes
Minor Components
Aquolls, very poorly drained
Percent of map unit:5 percent
Landform:Flood plains
Hydric soil rating: Yes

Data Source Information
Soil Survey Area: Marion County Area, Oregon Survey Area Data: Version 18, Aug 26, 2021

Phosphorus Index Report

The Gap - 2021

Turner

Field	Acres	Soil	Soil Test Date	Bray P (ppm)	Olsen (ppm)	K (ppm)	pH	TFS	SFS	Score	Rating
Rear	8.0	MaA, McAlpin	09/08/2010	96.0		288.0	5.8	2.0	15.04	17.05	Low
Pasture	2.5	MaA, McAlpin	09/08/2010	96.0		288.0	5.8	2.0	15.04	17.05	Low
North Pasture	0.8	MaA, McAlpin	09/08/2010	96.0		288.0	5.8	2.0	15.04	17.05	Low

PI Interpretations

P-Index Rating	Interpretation for Oregon	Recommended Nutrient Limitation
West PI Score<=25 or East PI Score<=100	The site has a LOW potential for P movement from the site. If farming practices are maintained at current levels, the probability of an adverse impact to surface water resources from P losses from this site are low.Phosphorus can be applied at rates greater than crop requirement	Nitrogen
West PI Score 25.1 to 50 or East PI Score 100.1 to 400	The site has a MEDIUM potential for P movement from the site. The probability for an adverse impact to surface water resources is greater than that from a LOW vulnerability rated site. Some remedial action should be taken to lessen the probability of P movement. Phosphorus can be applied not to exceed the crop requirement rate for phosphorus.	Phosphorus
West PI Score 50.1 to 75 or East PI Score 400.1 to 600	The site has a HIGH potential for P movement from the site. There is a high probability for an adverse impact to surface water resources unless action is taken to reduce the risk of P movement and probable water quality degradation. Phosphorus can be applied not to exceed the crop removal rate of phosphorus if the following requirements are met: A soil phosphorus drawdown strategy has been implemented, and a site assessment for nutrients and soil loss has been conducted to determine if mitigation practices are required to protect water quality.	Phosphorus
West PI Score >75 or East PI Score >600	ZERO OUT- The environmental threshold above which the risk of P loss from a field is too great to warrant the application of phosphorus for plant production.	No Manure

OREGON DEPARTMENT OF AGRICULTURE

CONFINED ANIMAL FEEDING OPERATION ANIMAL WASTE MANAGEMENT PLAN OR NUTRIENT MANAGEMENT PLAN AMENDMENT FORM

Van Dam Dairy (The Gap)
Confined Animal Feeding Operation

John Van Dam
CAFO Operator's Name

12092 Parrish Gap Rd, Turner, OR 97392
Facility Street Address, City, State, Zip

503-910-8796
Phone Number

Submitted to the Oregon Dept. Of Agriculture are the following modifications to Animal Waste Management Plan (AWMP)/Nutrient Management Plan (NMP) #_22015___.

I would like to apply the following modifications to this AWMP/NMP:

Making Ice Cream on site.
No new infrastructure is planned.
Waste will use existing drains and storage system.
Amount of additional waste generated is accounted for in AWMP (540,000 total gallons of process waste water generated).

Operator's Signature

5-15-24
Date

CONCLUSION: _____Approved _____Denied

Inspector's Signature

Official Use:

MA# 1220133

Effective date:_____

Date copy sent to Operator:_____