Nutrient Management Plan

For BCH Cattle LLC

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GENERAL INFORMATION

2020 Operation Information for BCH Cattle LLC

Calendar Year: 2020 **Reporting period:** January 1 through December 31, 2020

Name:	Ben & Chandra Holliday		
Business	BCH Cattle LLC		
Mailing	27542 Indian Creek Rd, John Day, OR, 97845		
Facility	Hwy 26, John Day, OR 97845	**County:**	Grant
Telephone	(541)620-0521	**Cell Phone**	null
E-mail	bchcattle@gmail.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		
Finishing Cattle	800	January	December	2500	2500
			Total Animals -	2,500	2,500

Manure Solids Generated -	296,880 CF
Bedding Generated -	0 CF
Imported Solids -	0 CF
Total Solids Generated -	148,440 CF
Total Solids to Store based on a Volume Reduction Factor of 0.5 -	74,220 CF
Manure Liquids Generated -	0 CF
Rainfall-Evaporation on Storage plus Runoff Generated -	-122,842 CF
Process Water Generated -	0 CF
Imported Liquids -	0 CF
Total Liquids to Store -	-122,842 CF
Liquids Applied to Land -	0 CF
Solids Applied to Land -	159,244 CF
Grazing Manure Applied to Land -	610,672 CF
Liquids Exported -	0 CF
Solids Exported -	0 CF
Acres of Land for Land Application Covered by NMP -	1,362.2 AC
Acres of Land Under Operator Control Used for Manure Applications -	1,362.2 AC

GENERAL INFORMATION

2020 Storage Facilities for BCH Cattle LLC

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)
Feedlot Pens	Feedlot	Solid	365		1,590	1,590	1	1	0	2,524,921	2,528,100
RCB1	Planned Runoff Control Berm	Liquid	155		3,496	46	4	2	1	376,524	160,816
RCB2	Planned Runoff Control Berm	Liquid	96		3,232	34	4	2	1	232,020	109,888
RCB3	L5 Planned Runoff Control Berm	Liquid	114		570	175	4	2	1	277,236	99,750

GENERAL INFORMATION

2020 Storage Period Calculations for BCH Cattle LLC

Solids Storage

Storage Unroofed Surface Area, SF	2528100	Manure Solids, CF/Day =	2,474	Volume Reduction Factor =	0.5
Available Storage, CF =	2524921			Solids Storage Period, Days =	365

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	31	77614	0	0	100	0	0	0
November	30	0	74220	0	100	0	37110	37110
December	31	0	76694	0	100	0	38347	75457
January	31	0	76694	0	100	0	38347	113804
February	28	0	69272	0	100	0	34636	148440
March	31	76694	0	0	100	0	0	148440
April	30	74220	0	0	100	0	0	148440
May	31	76694	0	0	100	0	0	148440
June	30	75111	0	0	100	0	0	148440
July	31	77614	0	0	100	0	0	148440
August	31	77614	0	0	100	0	0	148440
September	30	75111	0	0	100	0	0	148440
Annual	**365**	**610672**	**296880**	**0**	**100**	**0**	**148440**	

Liquids Storage

Climate Station: JOHN DAY

Storage Unroofed Surface Area, SF =	370454	25Yr-24Hr Storm Precip, In =	2	Total 25Yr-24Hr Storm Storage Needed, CF	483,092
Available Liquid Storage, CF =	885780	25Yr-24H4 Storm Runoff, CF =	0	Storage Period without 25yr-24hr Storm =	365
Unroofed Runoff Area, SF =	0	25Yr-24Hr Storm on Unroofed Storages, CF =	483,092	Storage Period with 25yr-24hr Storm =	365

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	31	0.87	1.79	-28401	0	0	0	0	-28401	-28401
November	30	1.41	0.92	118358	0	0	0	0	118358	89956
December	31	1.39	0.62	185991	0	0	0	0	185991	275947
January	31	1.14	0.64	120773	0	0	0	0	120773	396720
February	28	0.79	0.96	-5248	0	0	0	0	-5248	391472
March	31	1.28	1.8	-16053	0	0	0	0	-16053	375419
April	30	1.36	2.28	-28401	0	0	0	0	-28401	347017
May	31	1.74	3.27	-47233	0	0	0	0	-47233	299784
June	30	1.3	4.38	-95083	0	0	0	0	-95083	204701
July	31	0.66	5.26	-142007	0	0	0	0	-142007	62694
August	31	0.85	4.74	-120089	0	0	0	0	-120089	-57395
September	30	0.78	2.9	-65447	0	0	0	0	-65447	-122842
Annual	**365**	**13.57**	**29.56**	**-122842**	**0**	**0**	**0**	**0**	**-122842**	

GENERAL INFORMATION

2020 Manure Nutrient Balance for BCH Cattle LLC

Manure Nutrients in

Nutrient Concentrations:	Nitrogen (Total N)	Phosphorus (P_2O_5)	Potassium (K_2O)	Units
Liquid Manure-	0.00	0.00	0.00	lbs/1000 Gal
Solid Manure-	7.40	10.20	19.80	lbs/Ton

Manure Nutrient

Nutrients Generated:	N Generated (lbs) after Losses	P_2O_5 Generated (lbs) after Losses	K_2O Generated (lbs) after Losses
Liquid Manure-	0 lbs	0 lbs	0 lbs
Solid Manure-	19772 lbs	27254 lbs	52904 lbs
Grazing Manure-	177722 lbs	49764 lbs	78851 lbs
Total-	**197494 lbs**	**77018 lbs**	**131755 lbs**

Exported Nutrients:	N Exported (lbs) after Losses	P_2O_5 Exported (lbs) after Losses	K_2O Exported (lbs) after Losses
Liquid Manure-	0 lbs	0 lbs	0 lbs
Solid Manure-	0 lbs	0 lbs	0 lbs
Total-	**0 lbs**	**0 lbs**	**0 lbs**

Crop Nutrient Removal:	N Utilized (lbs)	P_2O_5 Utilized (lbs)	K_2O Utilized (lbs)
Total-	**241509 lbs**	**76317 lbs**	**200702 lbs**

Net Nutrients:	Nutrients Generated after Losses (lbs)	Nutrients Removed by Crop and Exported after Losses (lbs)	Net Nutrient Balance after Losses (lbs)
Nitrogen (N) -	197494 lbs	241509 lbs	-44014 lbs
Phosphate (P_2O_5) -	77018 lbs	76317 lbs	701 lbs
Potassium (K_2O) -	131755 lbs	200702 lbs	-68947 lbs

System Losses:	Nutrients Generated (lbs)	Nutrients Remaining after Losses (lbs)	Nutrients Lost in System (lbs)
Nitrogen (N) -	262800 lbs	197494 lbs	65306 lbs
Phosphate (P_2O_5) -	73587 lbs	77018 lbs	-3431 lbs
Potassium (K_2O) -	96762 lbs	131755 lbs	-34993 lbs

Note: Total nutrients utilized and generated are computed from reference data taken from Extension Publications or the USDA Natural Resources Conservation Service National Agricultural Waste Management Field Handbook. Nutrients generated after losses are computed from analytical data by taking the total volume of material times the nutrient analysis of the material except for grazing where reference data is used.

GENERAL INFORMATION

Background And Site Information

Animal Feeding Operation: Large CAFO

Type and Size: Beef Stocker Operation- 2,500 animals

Latitude/Longitude: 44.43365/-118.81759 decimal degrees

BCH Cattle LLC feedlot is located off of HWY 26, west of John Day, Oregon in Grant County. This facility is owned by Ben and Chandra Holliday. This is a beef stocker feedlot on 1,382 acres of meadow and native range land. The Production Area Map shows the layout of this facility. The feedlot is in full operation from January through December with a planned maximum capacity of 2,500 head. The cattle are of mixed breeds. Most of the young animals come to the feedlot in the fall at a weight of around 400 pounds. In the spring, they are shipped out at around 1,200 pounds. The average weight during the time in this feedlot is 800 pounds. Up to 2,500 animals will be split up into 4 different herds and pastured on the meadow and native range land. Up to 2,500 head will be in the lots during the winter months.

Animal Mortality Management
Mortalities that occur on this facility are buried. Other approved methods of disposing of animal mortalities may be used if needed.

Manure Collection Methods
Cattle are confined in earthen pens or on irrigated meadow pasture and native range land. Manure is collected in the pens, where it is mounded to dry and used as bedding or as nutrients for growing crops. When the cattle are removed from the facility, the pens are cleaned and the dry manure is applied to the irrigated meadow fields. Some manure is left in the pens, mounded, and packed for bedding in the fall.

Runoff Collection and Containment
Runoff calculations are in the storage calculation worksheet. Runoff from the livestock pens and commodity storage area will be captured in the planned bermed area shown on the Production Area Map. Any overflow from the Holding Area flows onto native range land. The low rainfall and high evaporation (13.57 inch average yearly rainfall, 29.56 inch average yearly evaporation), will cause the captured runoff to evaporate from collection areas and therefore will not require land application.

Manure Storage Facilities and Transfer
All manure generated on this facility is handled in dry solid form. The dry manure is scraped and mounded within feedlots during the confinement period and land applied to the irrigated meadow fields. Rainfall runoff water that does not contain manure is diverted around the livestock pen areas.

Manure Utilization
The dry manure not required for winter bedding is land applied to the irrigated meadow fields. Manure is utilized as a nutrient source and to improve soil tilth by the addition of organic matter.

This facility is situated on 1,382 contiguous acres. The feedlot and commodities storage area consist of 33 acres, the range land areas consist of approximately 380 acres and the irrigated meadows consist of approximately 969 acres.

GENERAL INFORMATION

The soil concentration of phosphorus is very low on the and is low on most of the fields manure is applied to. Applications of manure are planned on a nitrogen basis on all of the irrigated meadow fields. Soil phosphorus concentrations will be monitored using soil tests on the fields where manure is applied to. BCH Cattle LLC tries to maximize the use of organics containing manure to fertilize the irrigated meadow fields and minimized the use of inorganic fertilizers.

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-

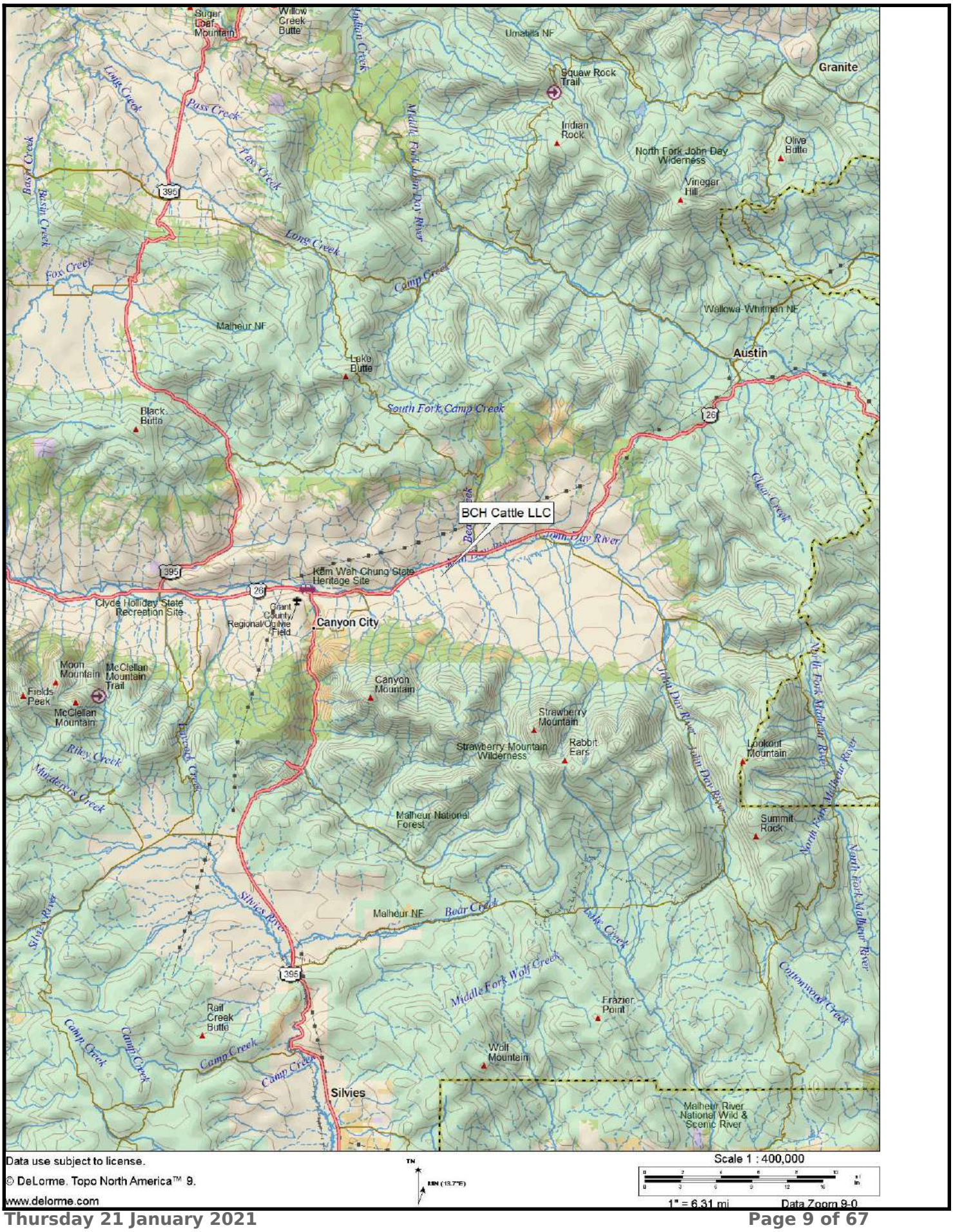
Organization	**Phone Number**
Oregon Department of Agriculture Natural Resources Division TTD 635 Capitol St., N.E. Salem, OR 97301-2532	(503) 986-4699 (503) 986-4762
Oregon Emergency Response (System OERS)	(800) 452-0311

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

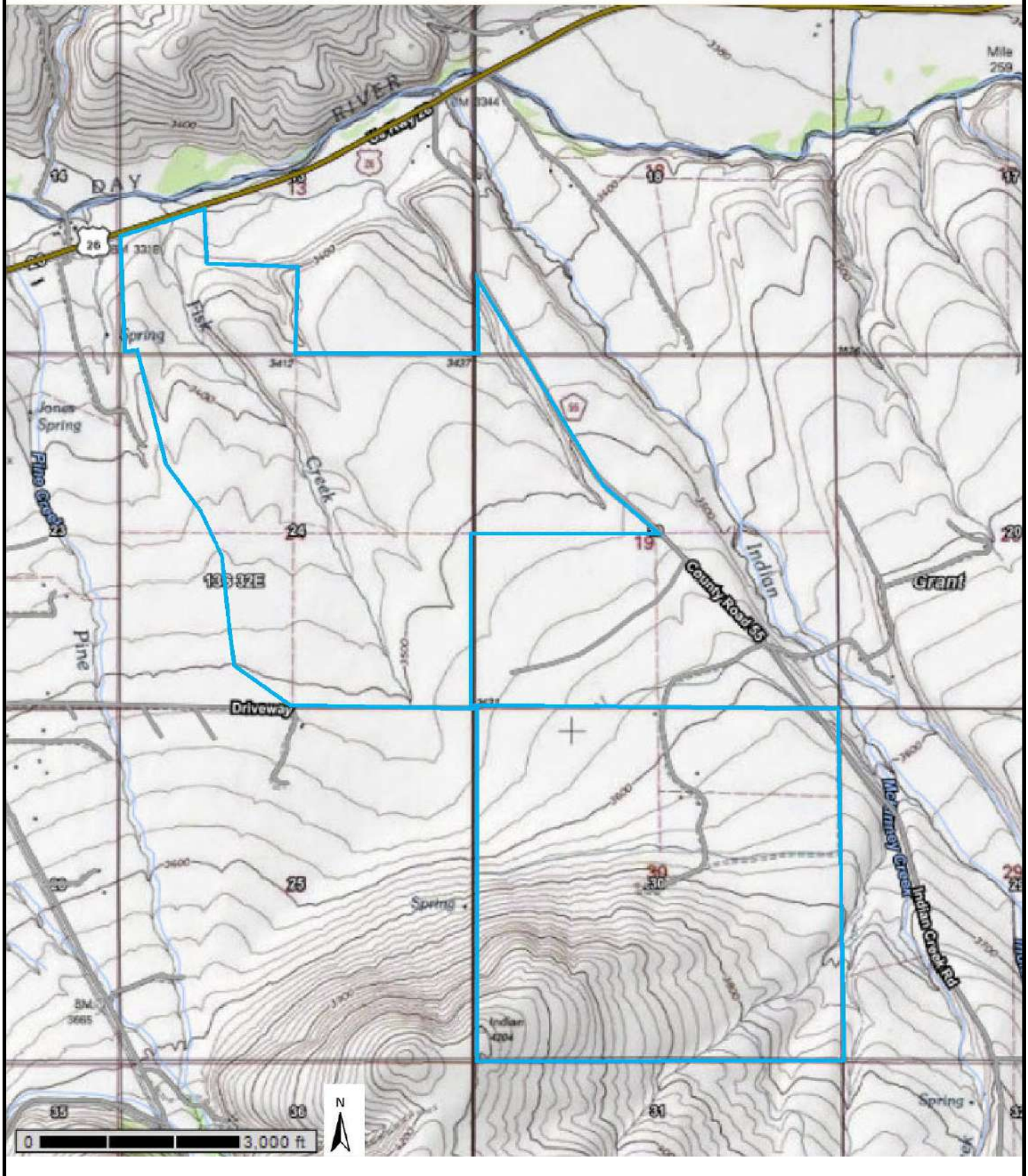
Location Maps for BCH Cattle LLC



GENERAL INFORMATION

Topographical Maps for BCH Cattle LLC

BCH Cattle LLC



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

SOLIDS STORAGE AREAS-
The lot areas shown on the Production Area Map are used to store solids containing manure generated by the livestock when they are confined to the lot areas. The storage capacity and estimated storage period for the solids storage facility are shown on the Summary pages. Emptying of the lot areas 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 lot areas 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 lot areas l and place them back in the lots.
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.

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.

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 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-
Drain the pipelines 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.
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.

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.

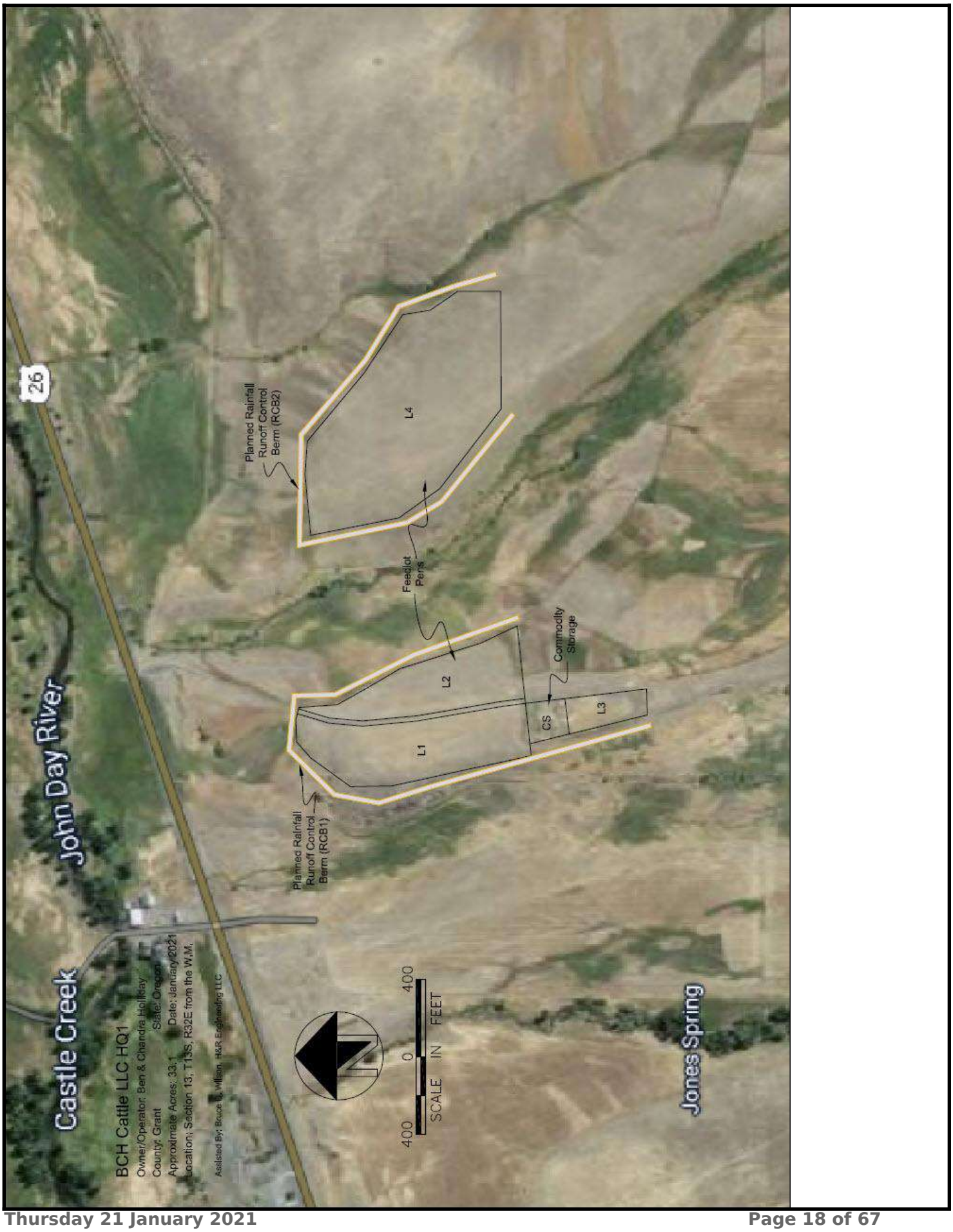
WELL(S)-
Protect the area immediately surrounding the well from being damaged by agriculture machinery, vehicles, or livestock.
All fences, railings, and/or warning signs shall be maintained to provide warning and/or prevent unauthorized human or livestock entry.
Do not allow any foreign debris to accumulate 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

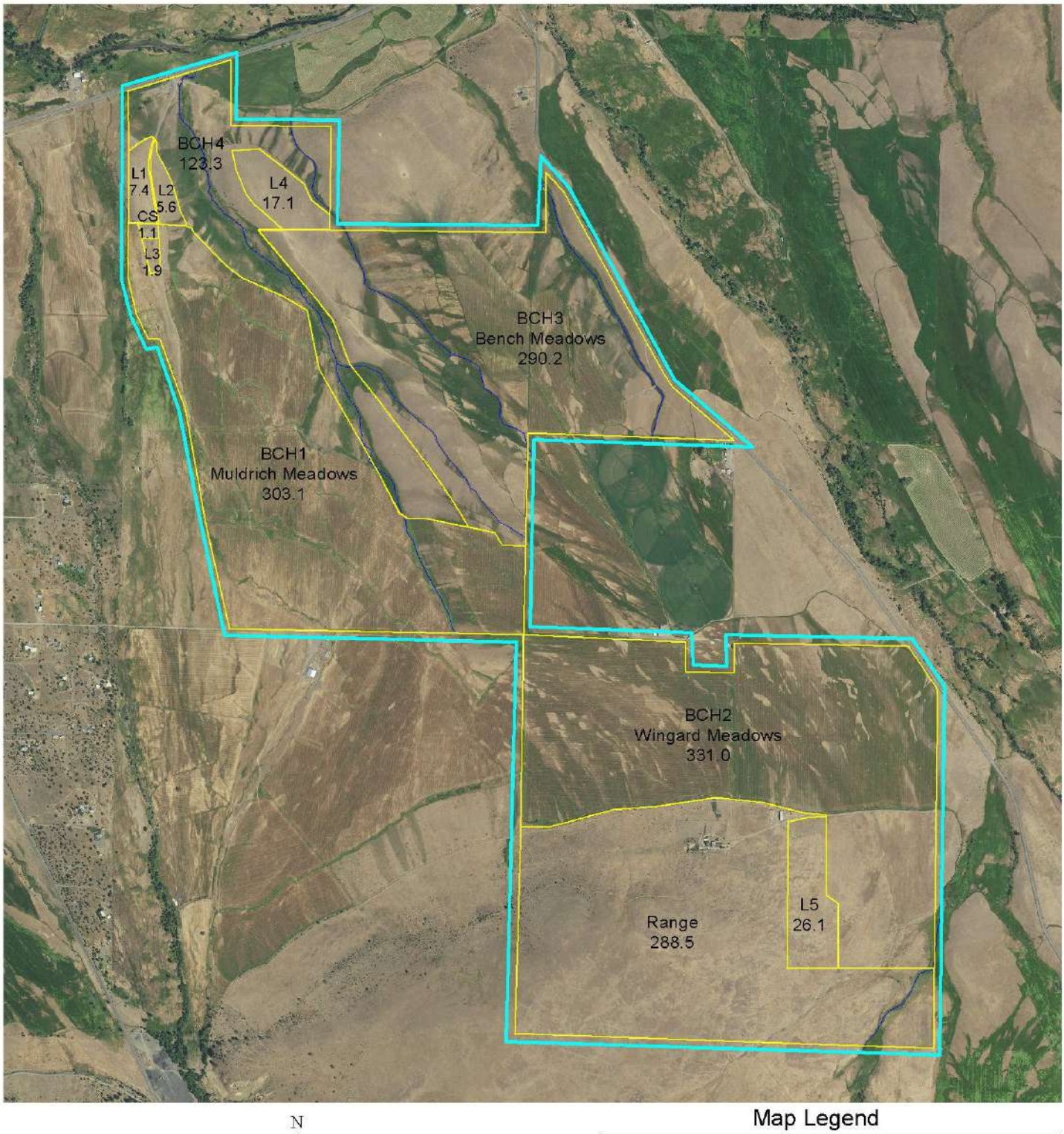
Production Area Maps for BCH Cattle LLC



PRODUCTION AREA

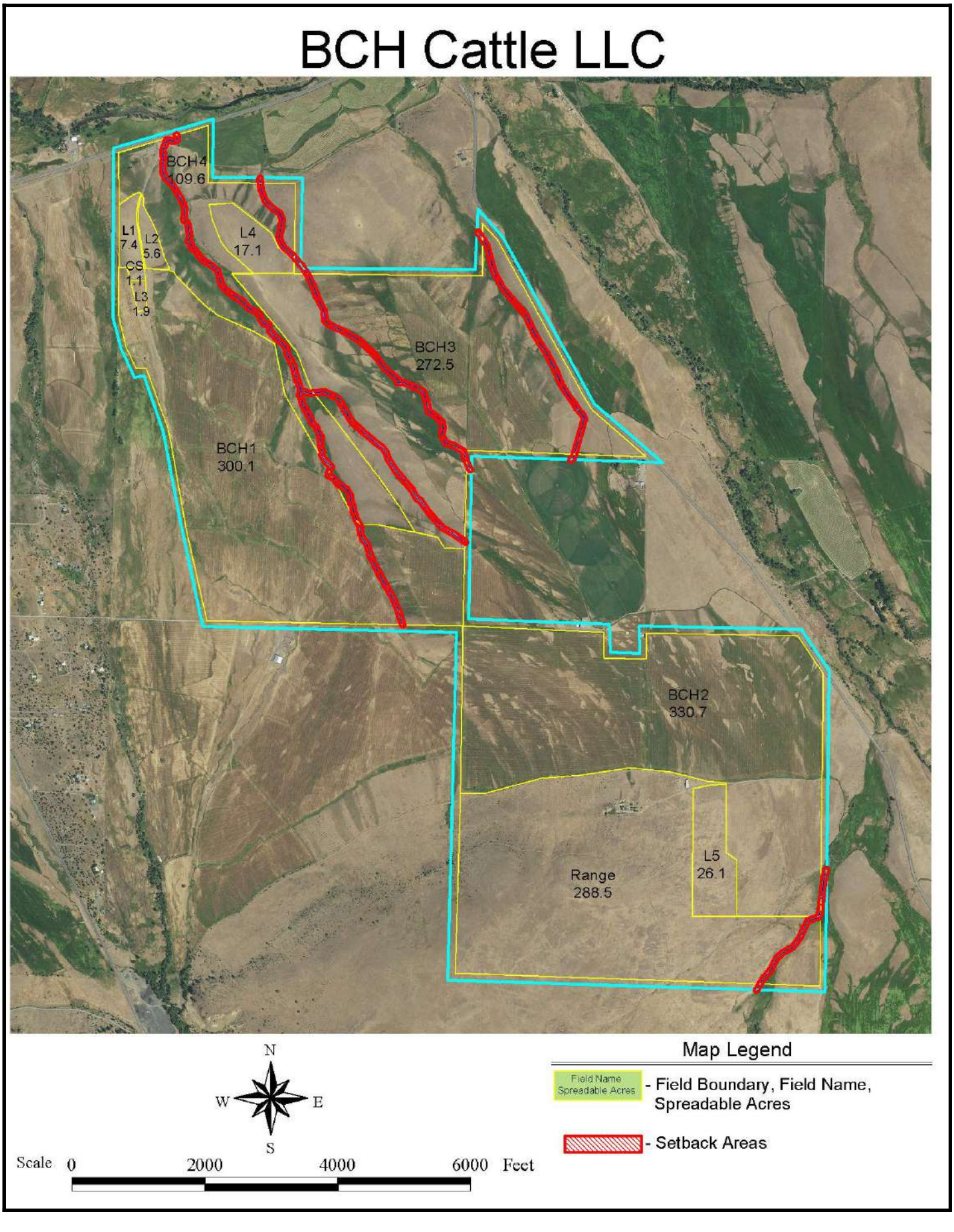
Field Maps for BCH Cattle LLC

BCH Cattle LLC



UTILIZATION AREA

Setback Maps for BCH Cattle LLC



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.

UTILIZATION AREA

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

BCH Cattle LLC

John Day

BCH1

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
03/01/2020	Grazing activity	Finishing Cattle	100	887 CF	20	13	9
04/01/2020	Grazing activity	Finishing Cattle	100	858 CF	20	13	9
05/01/2020	Grazing activity	Finishing Cattle	100	887 CF	20	13	9
06/01/2020	Grazing activity	Finishing Cattle	100	858 CF	20	13	9
07/01/2020	Grazing activity	Finishing Cattle	100	887 CF	20	13	9
08/01/2020	Grazing activity	Finishing Cattle	100	887 CF	20	13	9
09/01/2020	Grazing activity	Finishing Cattle	100	858 CF	20	13	9
10/01/2020	Grazing activity	Finishing Cattle	100	887 CF	20	13	9
10/07/2020	Feedlot Pens	Manure Spreader	100	4 Ton/Ac	30	41	79
				BCH1 Totals:	191	144	151

BCH2

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
03/01/2020	Grazing activity	Finishing Cattle	100	968 CF	20	13	9
04/01/2020	Grazing activity	Finishing Cattle	100	937 CF	20	13	9
05/01/2020	Grazing activity	Finishing Cattle	100	968 CF	20	13	9
06/01/2020	Grazing activity	Finishing Cattle	100	937 CF	20	13	9
07/01/2020	Grazing activity	Finishing Cattle	100	968 CF	20	13	9
08/01/2020	Grazing activity	Finishing Cattle	100	968 CF	20	13	9
09/01/2020	Grazing activity	Finishing Cattle	100	937 CF	20	13	9
10/01/2020	Grazing activity	Finishing Cattle	100	968 CF	20	13	9
				BCH2 Totals:	162	104	72

BCH3

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
03/01/2020	Grazing activity	Finishing Cattle	100	848 CF	20	13	9
04/01/2020	Grazing activity	Finishing Cattle	100	821 CF	20	13	9
05/01/2020	Grazing activity	Finishing Cattle	100	848 CF	20	13	9
06/01/2020	Grazing activity	Finishing Cattle	100	858 CF	21	13	9
07/01/2020	Grazing activity	Finishing Cattle	100	887 CF	21	14	9
08/01/2020	Grazing activity	Finishing Cattle	100	887 CF	21	14	9
09/01/2020	Grazing activity	Finishing Cattle	100	858 CF	21	13	9
10/01/2020	Grazing activity	Finishing Cattle	100	887 CF	21	14	9
10/14/2020	Feedlot Pens	Manure Spreader	100	4 Ton/Ac	30	41	79
				BCH3 Totals:	196	147	153

BCH4

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
03/01/2020	Grazing activity	Finishing Cattle	100	360 CF	20	13	9
04/01/2020	Grazing activity	Finishing Cattle	100	348 CF	20	13	9
05/01/2020	Grazing activity	Finishing Cattle	100	360 CF	20	13	9
06/01/2020	Grazing activity	Finishing Cattle	100	348 CF	20	13	9
07/01/2020	Grazing activity	Finishing Cattle	100	360 CF	20	13	9
08/01/2020	Grazing activity	Finishing Cattle	100	360 CF	20	13	9
09/01/2020	Grazing activity	Finishing Cattle	100	348 CF	20	13	9
10/01/2020	Grazing activity	Finishing Cattle	100	360 CF	20	13	9
10/21/2020	Feedlot Pens	Manure Spreader	100	4 Ton/Ac	30	41	79
				BCH4 Totals:	191	144	151

Range

Date	Source	Equipment Used	% of Field	Amount Applied	N lbs/ac	P_2O_5 lbs/ac	K_2O lbs/ac
03/01/2020	Grazing activity	Finishing Cattle	100	130 CF	3	2	1
04/01/2020	Grazing activity	Finishing Cattle	100	126 CF	3	2	1
05/01/2020	Grazing activity	Finishing Cattle	100	130 CF	3	2	1
06/01/2020	Grazing activity	Finishing Cattle	100	126 CF	3	2	1
07/01/2020	Grazing activity	Finishing Cattle	100	130 CF	3	2	1
08/01/2020	Grazing activity	Finishing Cattle	100	130 CF	3	2	1
09/01/2020	Grazing activity	Finishing Cattle	100	126 CF	3	2	1
10/01/2020	Grazing activity	Finishing Cattle	100	130 CF	3	2	1
				Range Totals:	23	15	10

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

BCH Cattle LLC

John Day

Sample Date	Storage Name	Units	Total N	P_2O_5	K_2O	NH_4-N	NO_3-N	Org N	Density Lbs/CF
09/15/2020	Feedlot Pens	lbs/Ton	7.4	10.2	19.8	3.7	0.0	3.7	36.0

Soil Tests

Soils Testing Report

BCH Cattle LLC

Hwy 26, John Day

BCH1

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)
10/27/2020	377416	#1 Muldrich	12.0	7.3		0.5	3.76			30.0	565.0	20.9 meq	8.4 meq	0.21 meq	2.3 ppm	4.9 ppm	4.0	0.6	1.5	6.0	4.5	142.0		

BCH2

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)
10/27/2020	377417	#2 Winegard	12.0	7.7		0.3	2.06			15.0	176.0	18.5 meq	8.4 meq	0.25 meq	1.6 ppm	3.5 ppm	3.0	0.39	0.4	5.0	4.2	76.0		

BCH3

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)
10/27/2020	377418	#3 Bench Fields	12.0	7.6		0.28	2.12			15.0	392.0	17.3 meq	8.5 meq	0.14 meq	1.3 ppm	13.0 ppm	3.0	0.37	0.6	7.0	4.2	57.0		

BCH4

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)
10/27/2020	377416	#1 Muldrich	12.0	7.3		0.5	3.76			30.0	565.0	20.9 meq	8.4 meq	0.21 meq	2.3 ppm	4.9 ppm	4.0	0.6	1.5	6.0	4.5	142.0		

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

BCH Cattle LLC

John Day

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
BCH1	303.1	Grass Hay/Pasture	3.9 Ton	224	71	186	191	144	151	(-32)	74	(-35)
BCH2	331.0	Grass Hay/Pasture	3.9 Ton	224	71	186	162	104	72	(-62)	33	(-114)
BCH3	290.2	Grass Hay/Pasture	3.9 Ton	224	71	186	196	147	153	(-28)	77	(-33)
BCH4	123.3	Grass Hay/Pasture	3.9 Ton	223	71	186	191	144	151	(-33)	74	(-35)
Range	314.6	Grass Hay/Pasture	0.4 Ton	23	7	19	23	15	10	(-0)	7	(-9)

Transferred Nutrients

Transfers Report

BCH Cattle LLC

John Day

Exported from	Date Transferre	Quantity	Analysis Available	Total N	P_2O_5	K_2O	Exported to
No Exports.							
	Sub Totals:	CF					

Imported from	Date Transferre	Quantity	Analysis Available	Total N	P_2O_5	K_2O	Imported to
No Imports.				0	0	0	
	Sub Totals:	CF		0	0	0	
	Totals:	CF		0	0	0	

Cropping History

Cropping Report

BCH Cattle LLC

John Day

Planted	Field	Acres	Crop	Yield	Nutrient Uptake (lbs/ac) N	P_2O_5	K_2O
01/01/2020	BCH1	303.1	Grass Hay/Pasture	1.5 Ton	58	18	48
	BCH1 Totals:				58	18	48
01/01/2020	BCH2	331.0	Grass Hay/Pasture	1.5 Ton	58	18	48
	BCH2 Totals:				58	18	48
01/01/2020	BCH3	290.2	Grass Hay/Pasture	1.5 Ton	58	18	48
	BCH3 Totals:				58	18	48
01/01/2020	BCH4	123.3	Grass Hay/Pasture	1.5 Ton	58	18	48
	BCH4 Totals:				58	18	48
01/01/2020	Range	314.6	Grass Hay/Pasture	0 Ton	58	18	48
	Range 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:

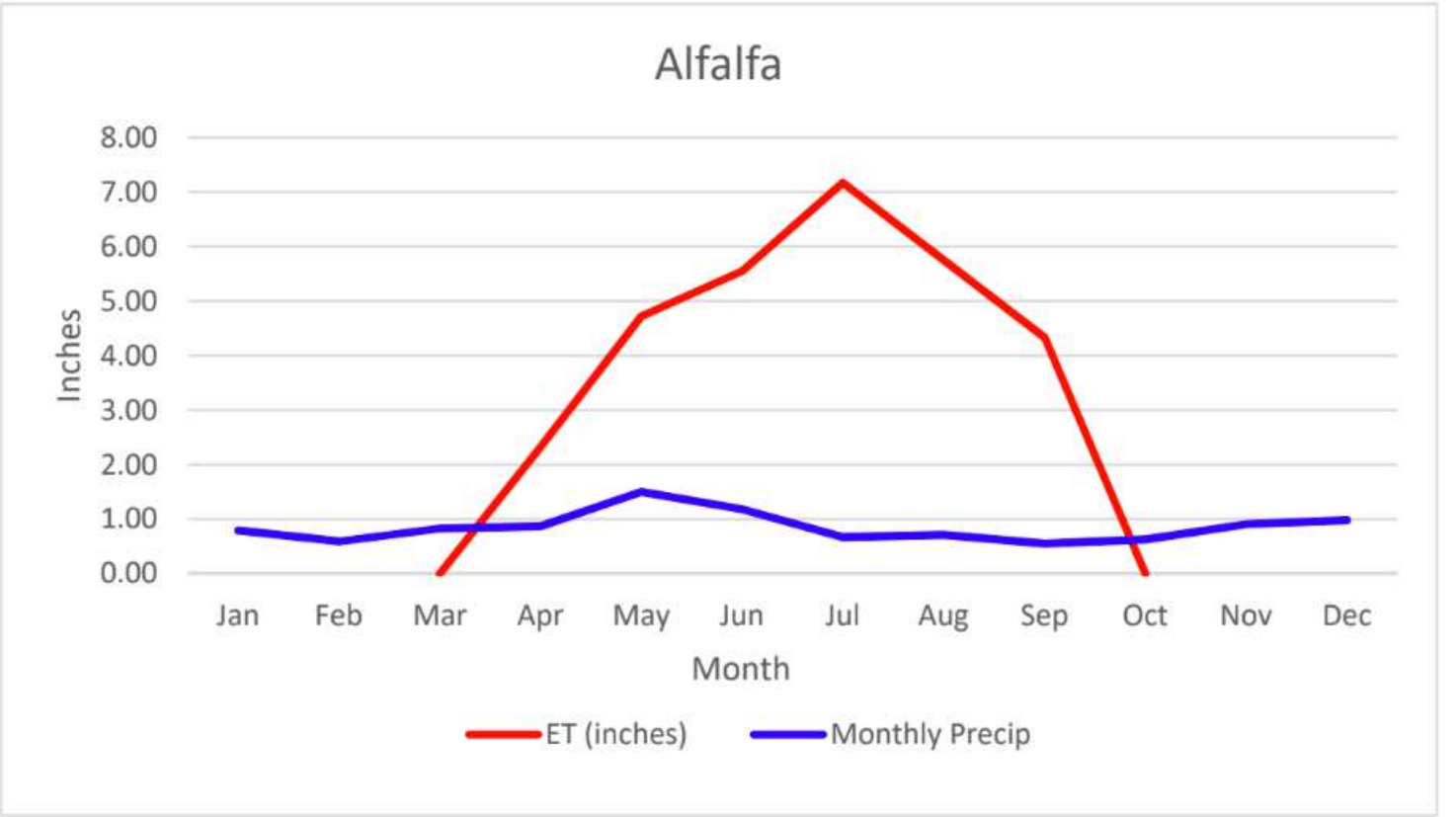
1 mile = 5,280 ft = 1.61 km
1 meter = 3.28 ft = 39.37 inches
1 acre = 43,560 square ft
1 hectare = 2.47 acres

Pump Power Requirement

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

UTILIZATION AREA

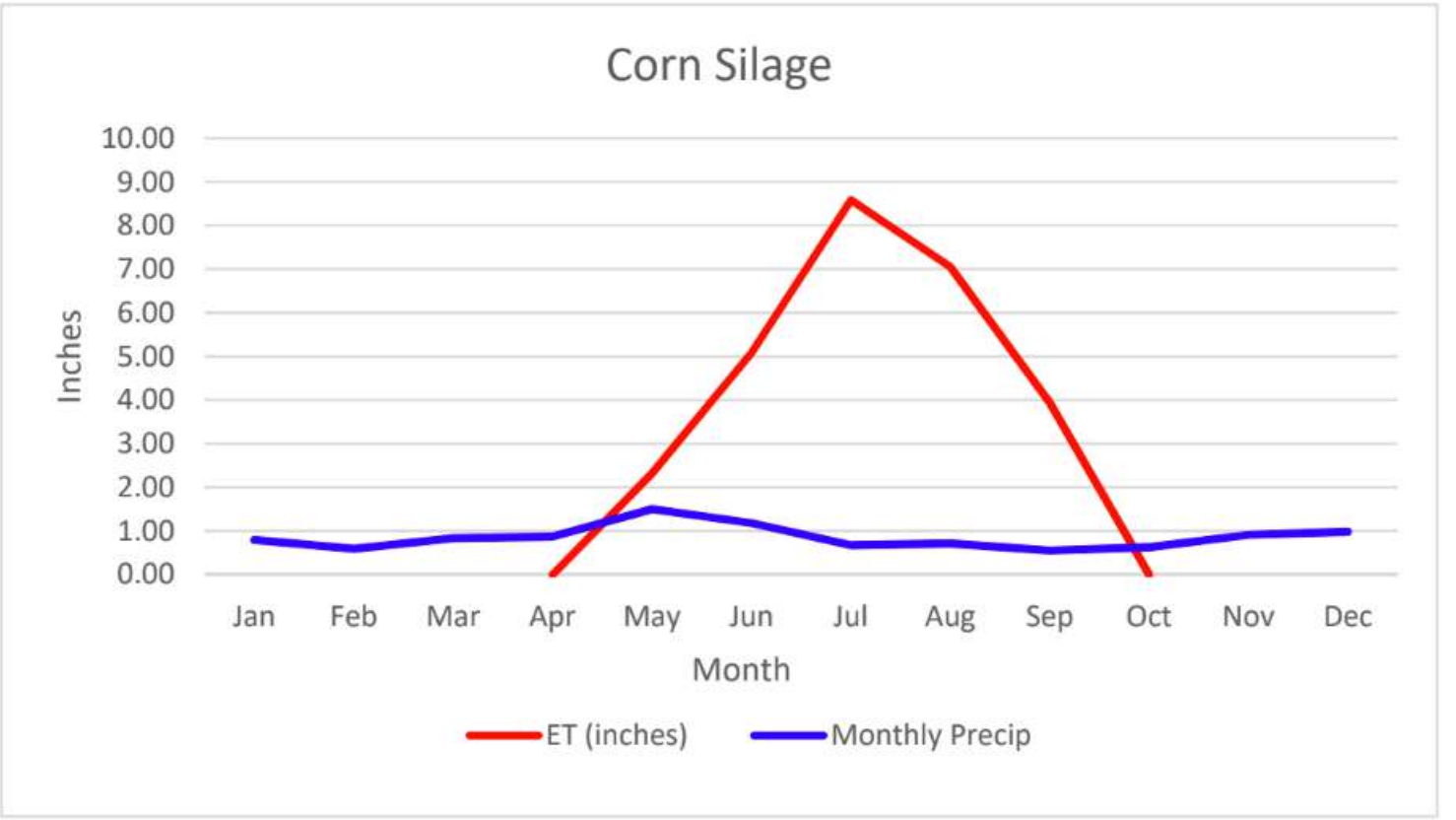
Crop-	Alfalfa	
Region-	Northeast	
Total Seasonal Evapotranspiration-	29.84	Inches
Peak Evapotranspiration Rate-	0.24	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



UTILIZATION AREA

Crop- Corn Silage
Region- Northeast

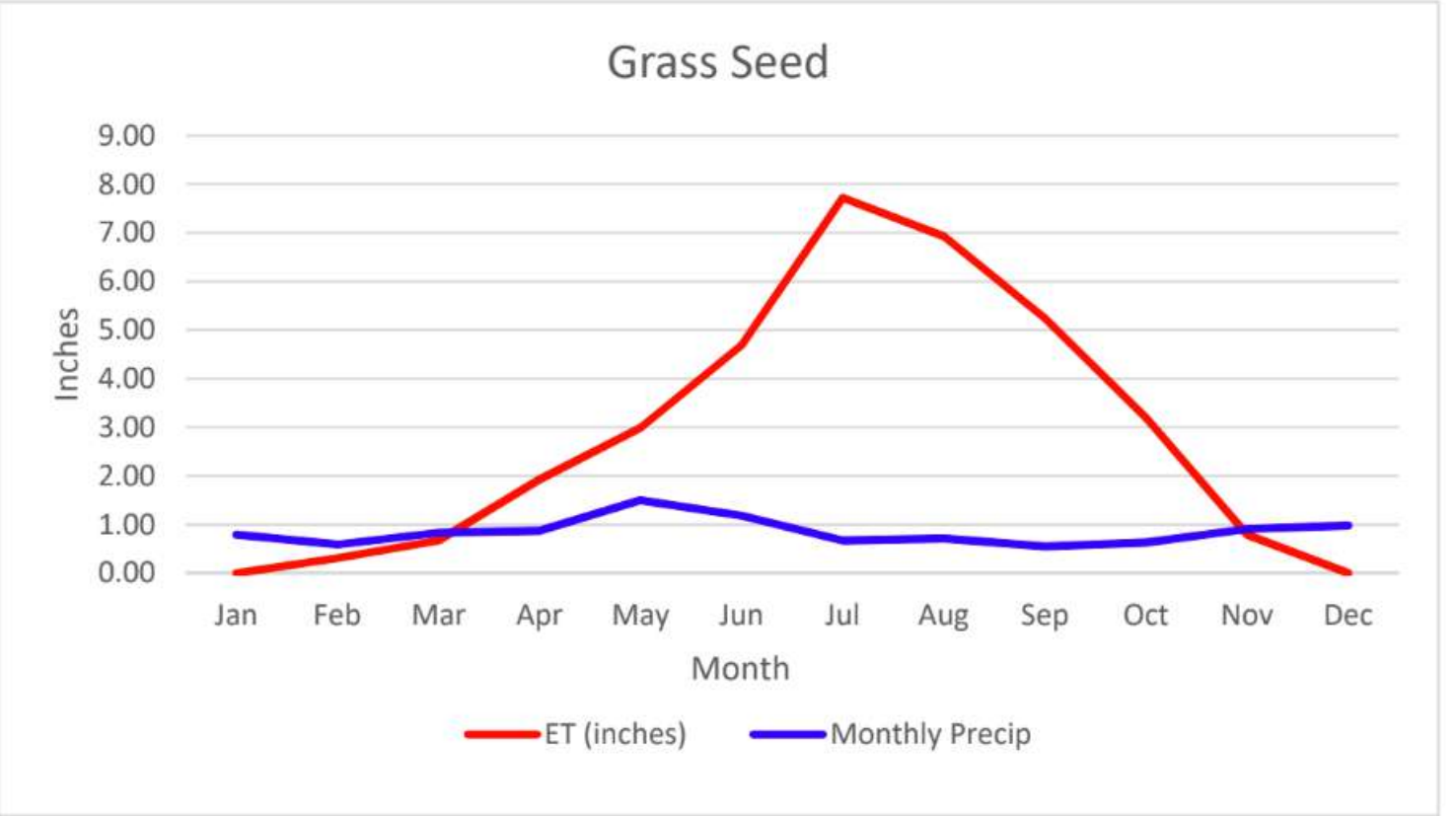
Total Seasonal Evapotranspiration-	26.97	Inches
Peak Evapotranspiration Rate-	0.29	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



UTILIZATION AREA

Crop- Grass Seed
Region- Northeast

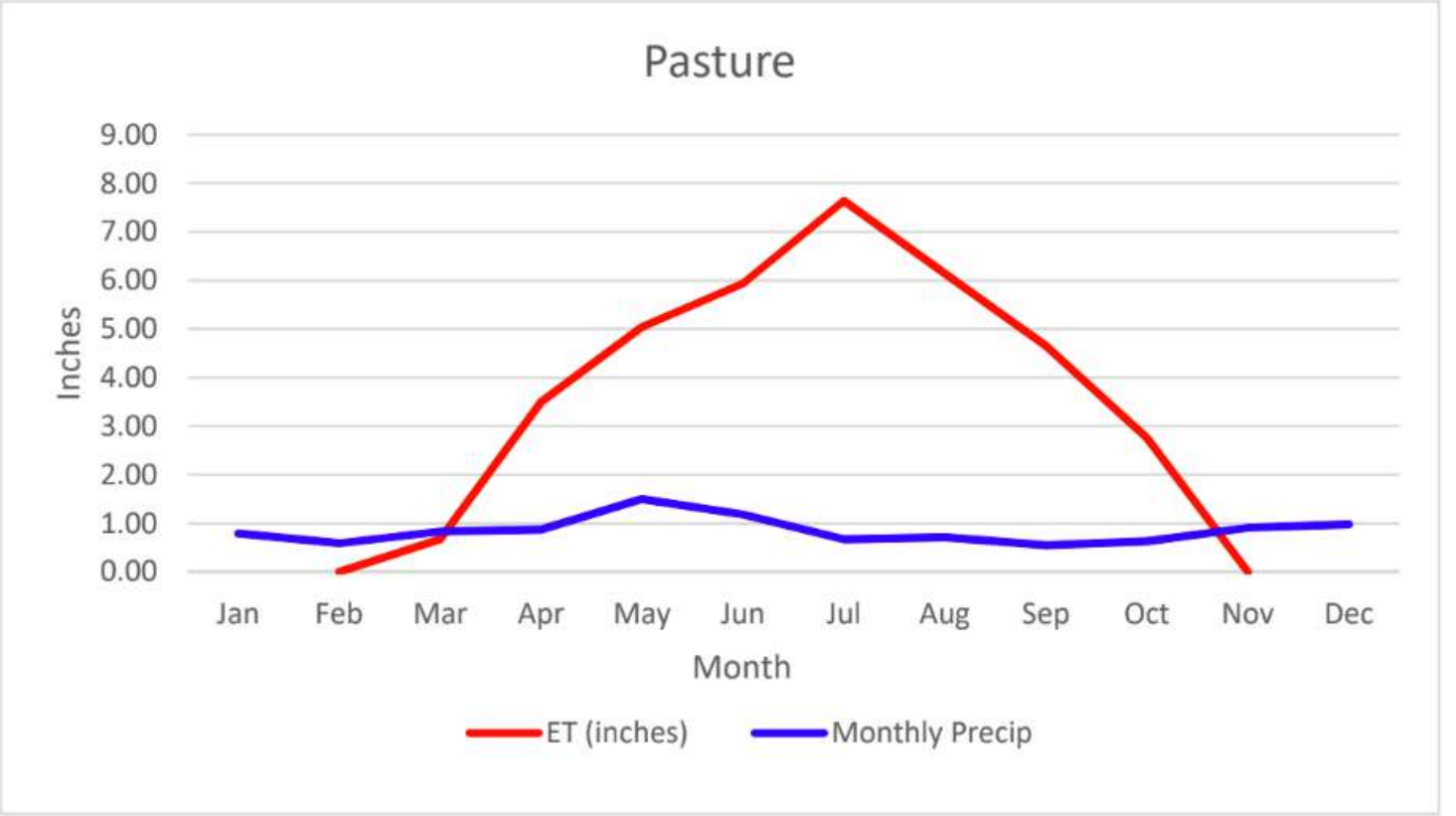
Total Seasonal Evapotranspiration-	34.46	Inches
Peak Evapotranspiration Rate-	0.26	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



UTILIZATION AREA

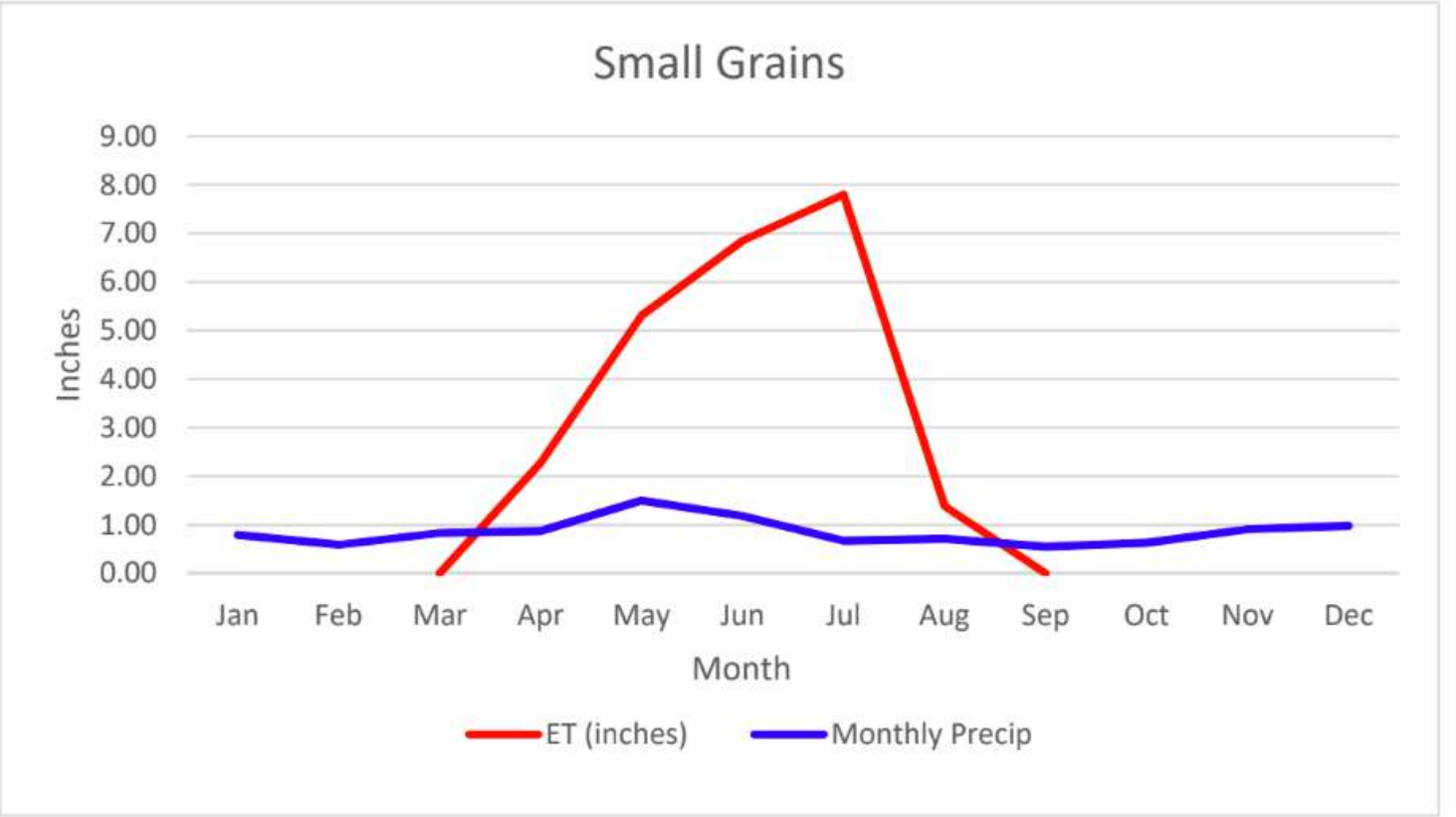
Crop- Pasture
Region- Northeast

Total Seasonal Evapotranspiration-	36.34	Inches
Peak Evapotranspiration Rate-	0.25	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	

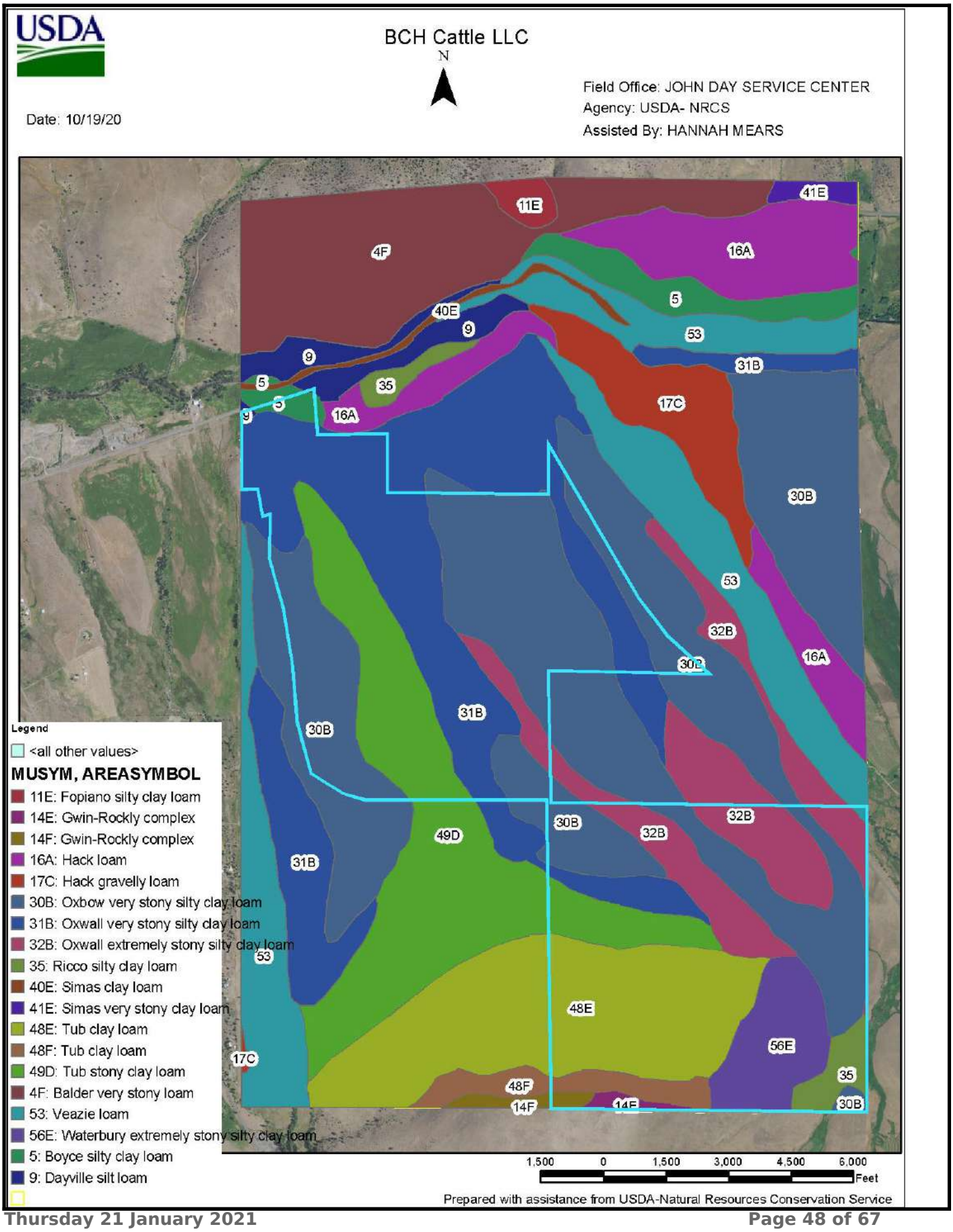


UTILIZATION AREA

Crop-	Small Grains	
Region-	Northeast	
Total Seasonal Evapotranspiration-	23.62	Inches
Peak Evapotranspiration Rate-	0.26	Inches/Day
Maximum Allowed Depletion-	50	%
Critical Moisture Deficit Period-	Jul	



Soil Maps for BCH Cattle LLC



Soil Reports

Map Unit Description (OR)

Grant County, Oregon, Central Part

4F -Balder very stony loam, 15 to 55 percent slopes

Mean annual precipitation: 14 to 18 inches Frost-free period: 90 to 110 days
Mean annual temperature: 45 to 48 degrees F Farmland class: Not prime farmland
Balder and similar soils
Extent: about 85 percent of the unit Soil loss tolerance (T factor): 2
Landform(s): Wind erodibility group (WEG): 8
Slope gradient: 15 to 55 percent Wind erodibility index (WEI): 0
Parent material: Land capability subclass, nonirrigated: 7s

Restrictive feature(s): paralithic bedrock at 10 to 20 inches

Land capability subclass, irrigated:

Seasonal high water table: greater than 60 inches

Drainage class: well drained

Flooding frequency none

Hydric soil class: no

Ponding frequency: none

Hydrologic group: D

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 3 in very stony loam moderate 0.3 to 0.5 in 6.6 to 7.3 .10 .32
H2 --3 to 16 in loam moderate 1.3 to 2.2 in 6.6 to 7.3 .32 .32
H3 --16 to 26 in weathered bedrock ---

Ecological site / plant association: JD SHALLOW SOUTH 12-16 PZ (R010XB047OR)

5 -Boyce silty clay loam

Mean annual precipitation: 12 to 16 inches Frost-free period: 100 to 150 days
Mean annual temperature: 45 to 52 degrees F Farmland class: Prime farmland if irrigated and drained

Boyce and similar soils

Extent: about 85 percent of the unit

Soil loss tolerance (T factor): 4

Landform(s): flood plains

Wind erodibility group (WEG): 6
Slope gradient: 0 to 2 percent Wind erodibility index (WEI): 48
Parent material: Land capability subclass, nonirrigated: 3w

Restrictive feature(s): none Land capability subclass, irrigated: 3w

Seasonal high water table: approximately 9 inches Drainage class: poorly drained

Flooding frequency occasional Hydric soil class: yes
Ponding frequency: none Hydrologic group: B/D

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 28 in silty clay loam moderate 5.3 to 5.9 in 7.4 to 8.4 .37 .37
H2 --28 to 31 in silt loam moderate 0.6 to 0.7 in 7.4 to 8.4 .43 .43
H2 --28 to 31 in loam moderate 0.6 to 0.7 in 7.4 to 8.4 .43 .43
H3 --31 to 42 in loamy sand moderately rapid 0.7 to 0.9 in 7.4 to 7.8 .28 .28
H4 --42 to 60 in very gravelly sand rapid 0.5 to 0.9 in 7.4 to 7.8 .02 .05

Ecological site / plant association: WET MEADOW (R010XY003OR)

9 -Dayville silt loam

Mean annual precipitation: 12 to 16 inches Frost-free period: 100 to 150 days
Mean annual temperature: 48 to 52 degrees F Farmland class: Prime farmland if irrigated

Dayville and similar soils

Extent: about 85 percent of the unit

Soil loss tolerance (T factor): 4

Landform(s):

Wind erodibility group (WEG): 6

Slope gradient: 0 to 2 percent

Wind erodibility index (WEI): 48

Parent material:

Land capability subclass, nonirrigated: 6w

Restrictive feature(s): strongly contrasting textural stratification at

Land capability subclass, irrigated: 3w

Seasonal high water table: approximately 30 inches

Drainage class: somewhat poorly drained

Flooding frequency occasional

Hydric soil class: no

Ponding frequency: none

Hydrologic group: C

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 36 in silt loam moderate 6.8 to 7.5 in 7.9 to 8.4 .43 .43
H2 --36 to 60 in sand and gravel rapid 0.7 to 1.2 in 7.9 to 8.4

Ecological site / plant association: MEADOW (R010XY004OR)

11E -Fopiano silty clay loam, 15 to 40 percent north slopes

Mean annual precipitation: 13 to 16 inches Frost-free period: 20 to 60 days
Mean annual temperature: 43 to 43 degrees F Farmland class: Farmland of statewide importance

Fopiano, north and similar soils

Extent: about 85 percent of the unit

Soil loss tolerance (T factor): 2

Landform(s):

Wind erodibility group (WEG): 7

Slope gradient: 15 to 40 percent

Wind erodibility index (WEI): 38

Parent material:

Land capability subclass, nonirrigated: 6e

Restrictive feature(s): paralithic bedrock at 10 to 20 inches

Land capability subclass, irrigated:

Seasonal high water table: greater than 60 inches

Drainage class: well drained

Flooding frequency none

Hydric soil class: no

Ponding frequency: none

Hydrologic group: D

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 5 in silty clay loam moderately slow 0.8 to 1.0 in 6.6 to 7.3 .28 .43

H2 --5 to 15 in clay slow 1.2 to 1.5 in 6.6 to 7.3 .17 .28
H3 --15 to 19 in weathered bedrock ---

Ecological site / plant association: JD CLAYPAN 12-16 PZ (R010XB080OR)

14E -Gwin-Rockly complex, 3 to 40 percent slopes

Mean annual precipitation: 14 to 20 inches Frost-free period: 90 to 110 days
Mean annual temperature: 45 to 50 degrees F Farmland class: Not prime farmland

Gwin and similar soils

Extent: about 50 percent of the unit

Soil loss tolerance (T factor): 1
Landform(s):

Wind erodibility group (WEG): 7
Slope gradient: 3 to 40 percent

Wind erodibility index (WEI): 38
Parent material: loess mixed with colluvium and residuum

Land capability subclass, nonirrigated: 7s

derived from basalt

Land capability subclass, irrigated:

Restrictive feature(s): lithic bedrock at 10 to 20 inches

Drainage class: well drained

Seasonal high water table: greater than 60 inches

Hydric soil class: no

Flooding frequency none

Hydrologic group: D

Ponding frequency: none

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 3 in very stony silt loam moderate 0.3 to 0.4 in 6.6 to 7.3 .15 .43
H2 --3 to 13 in extremely gravelly clay loam moderately slow 0.7 to 1.1 in 6.6 to 7.3 .10 .37
H2 --3 to 13 in extremely cobbly silty clay loam moderately slow 0.7 to 1.1 in 6.6 to 7.3 .10 .37
H2 --3 to 13 in very cobbly silty clay loam moderately slow 0.7 to 1.1 in 6.6 to 7.3 .10 .37
H3 --13 to 17 in unweathered bedrock ---

Ecological site / plant association: JD SHALLOW SOUTH 12-16 PZ (R010XB047OR)

Rockly and similar soils

Extent: about 30 percent of the unit

Soil loss tolerance (T factor): 1
Landform(s):

Wind erodibility group (WEG): 8
Slope gradient: 3 to 40 percent

Wind erodibility index (WEI): 0
Parent material:

Land capability subclass, nonirrigated: 7s
Restrictive feature(s): lithic bedrock at 5 to 12 inches

Land capability subclass, irrigated:
Seasonal high water table: greater than 60 inches

Drainage class: well drained
Flooding frequency none

Hydric soil class: no
Ponding frequency: none

Hydrologic group: D

Texture Permeability
Available water
capacity pH Kw Kf

Representative soil profile:

H1 --0 to 4 in extremely stony loam moderate 0.2 to 0.4 in 6.1 to 7.3 .10 .32
H2 --4 to 8 in very cobbly clay loam moderately slow 0.2 to 0.4 in 6.1 to 7.3 .10 .37
H2 --4 to 8 in very stony loam moderately slow 0.2 to 0.4 in 6.1 to 7.3 .10 .37
H2 --4 to 8 in very gravelly clay loam moderately slow 0.2 to 0.4 in 6.1 to 7.3 .10 .37
H3 --8 to 12 in unweathered bedrock ---

Ecological site / plant association:

14F -Gwin-Rockly complex, 40 to 70 percent slopes

Mean annual precipitation: 14 to 20 inches Frost-free period: 90 to 110 days
Mean annual temperature: 45 to 48 degrees F Farmland class: Not prime farmland

Gwin and similar soils

Extent: about 40 percent of the unit

Soil loss tolerance (T factor): 1
Landform(s):

Wind erodibility group (WEG): 7
Slope gradient: 40 to 70 percent

Wind erodibility index (WEI): 38
Parent material: loess mixed with colluvium and residuum

Land capability subclass, nonirrigated: 7s

derived from basalt

Land capability subclass, irrigated:

Restrictive feature(s): lithic bedrock at 10 to 20 inches

Drainage class: well drained

Seasonal high water table: greater than 60 inches

Hydric soil class: no

Flooding frequency none

Hydrologic group: D

Ponding frequency: none

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 3 in very stony silt loam moderate 0.3 to 0.4 in 6.6 to 7.3 .15 .43
H2 --3 to 13 in very cobbly silty clay loam moderately slow 0.7 to 1.1 in 6.6 to 7.3 .10 .37
H2 --3 to 13 in extremely cobbly silty clay loam moderately slow 0.7 to 1.1 in 6.6 to 7.3 .10 .37
H2 --3 to 13 in extremely gravelly clay loam moderately slow 0.7 to 1.1 in 6.6 to 7.3 .10 .37
H3 --13 to 17 in unweathered bedrock ---

Ecological site / plant association: JD SHALLOW SOUTH 12-16 PZ (R010XB047OR)

Rockly and similar soils

Extent: about 40 percent of the unit

Soil loss tolerance (T factor): 1
Landform(s):

Wind erodibility group (WEG): 8
Slope gradient: 40 to 70 percent

Wind erodibility index (WEI): 0
Parent material:

Land capability subclass, nonirrigated: 7s
Restrictive feature(s): lithic bedrock at 5 to 12 inches

Land capability subclass, irrigated:
Seasonal high water table: greater than 60 inches

Drainage class: well drained
Flooding frequency none

Hydric soil class: no
Ponding frequency: none

Hydrologic group: D

Texture Permeability
Available water

capacity pH Kw Kf

Representative soil profile:

H1 --0 to 4 in extremely stony loam moderate 0.2 to 0.4 in 6.1 to 7.3 .10 .32
H2 --4 to 8 in very cobbly clay loam moderately slow 0.2 to 0.4 in 6.1 to 7.3 .10 .37
H2 --4 to 8 in very gravelly clay loam moderately slow 0.2 to 0.4 in 6.1 to 7.3 .10 .37
H2 --4 to 8 in very stony loam moderately slow 0.2 to 0.4 in 6.1 to 7.3 .10 .37
H3 --8 to 12 in unweathered bedrock ---

Ecological site / plant association:

16A -Hack loam, 0 to 3 percent slopes

Mean annual precipitation: 12 to 18 inches
Mean annual temperature: 45 to 52 degrees F

Hack and similar soils

Extent: about 85 percent of the unit
Landform(s):
Slope gradient: 0 to 3 percent
Parent material:
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency none
Ponding frequency: none

Representative soil profile:

H1 --0 to 14 in loam
H2 --14 to 60 in gravelly clay loam
H2 --14 to 60 in clay loam
H2 --14 to 60 in loam

Frost-free period: 100 to 150 days
Farmland class: Prime farmland if irrigated

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability subclass, nonirrigated: 2c
Land capability subclass, irrigated: 1
Drainage class: well drained
Hydric soil class: no
Hydrologic group: C

Texture Permeability
Available water
capacity pH Kw Kf

moderate 1.8 to 2.6 in 6.6 to 7.3 .32 .32
moderately slow 7.3 to 9.6 in 6.6 to 8.4 .20 .37
moderately slow 7.3 to 9.6 in 6.6 to 8.4 .20 .37
moderately slow 7.3 to 9.6 in 6.6 to 8.4 .20 .37

Ecological site / plant association: GRAVELLY FAN 12-16 PZ (R010XY125OR)

17C -Hack gravelly loam, 3 to 15 percent slopes

Mean annual precipitation: 12 to 18 inches
Mean annual temperature: 45 to 52 degrees F

Hack and similar soils

Extent: about 85 percent of the unit
Landform(s):
Slope gradient: 3 to 15 percent
Parent material:
Restrictive feature(s): none
Seasonal high water table: greater than 60 inches
Flooding frequency none
Ponding frequency: none

Representative soil profile:

H1 --0 to 14 in gravelly loam
H2 --14 to 60 in clay loam
H2 --14 to 60 in loam
H2 --14 to 60 in gravelly clay loam

Frost-free period: 100 to 150 days
Farmland class: Farmland of statewide importance

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 7
Wind erodibility index (WEI): 38
Land capability subclass, nonirrigated: 4e
Land capability subclass, irrigated: 4e
Drainage class: well drained
Hydric soil class: no
Hydrologic group: C

Texture Permeability
Available water
capacity pH Kw Kf

moderate 1.8 to 2.6 in 6.6 to 7.3 .17 .32
moderately slow 7.3 to 9.6 in 6.6 to 8.4 .20 .37
moderately slow 7.3 to 9.6 in 6.6 to 8.4 .20 .37
moderately slow 7.3 to 9.6 in 6.6 to 8.4 .20 .37

Ecological site / plant association: GRAVELLY FAN 12-16 PZ (R010XY125OR)

30B -Oxbow very stony silty clay loam, 2 to 5 percent slopes

Mean annual precipitation: 14 to 18 inches
Mean annual temperature: 46 to 50 degrees F

Oxbow and similar soils

Extent: about 85 percent of the unit
Landform(s):
Slope gradient: 2 to 5 percent
Parent material:
Restrictive feature(s): duripan at 20 to 40 inches

Seasonal high water table:
Flooding frequency none
Ponding frequency: none

Representative soil profile:

H1 -0 to 12 in
H2 -12 to 27 in
H2 -12 to 27 in
H2 -12 to 27 in
H3 -27 to 37 in

greater than 60 inches

very stony silty clay loam moderately slow 1.8 to 2.4 in 6.1 to 7.3 .15 .37
cobbly clay slow 1.5 to 2.1 in 6.6 to 8.4 .15 .28
gravelly clay slow 1.5 to 2.1 in 6.6 to 8.4 .15 .28
clay slow 1.5 to 2.1 in 6.6 to 8.4 .15 .28
cemented material very slow 0.0 to 0.0 in

Frost-free period: 90 to 140 days
Farmland class: Farmland of statewide importance

Soil loss tolerance (T factor): 2
Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Land capability subclass, nonirrigated: 6s
Land capability subclass, irrigated: 4s
Drainage class: well drained
Hydric soil class: no
Hydrologic group: D

Texture Permeability
Available water
capacity pH Kw Kf

Ecological site / plant association: CLAYEY 14-17 PZ (R009XY015OR)

31B -Oxwall very stony silty clay loam, 2 to 7 percent slopes

Mean annual precipitation: 14 to 18 inches
Mean annual temperature: 46 to 50 degrees F

Oxwall and similar soils

Extent: about 85 percent of the unit
Landform(s):
Slope gradient: 2 to 7 percent
Parent material:
Restrictive feature(s): duripan at 10 to 20 inches

Seasonal high water table:
Flooding frequency none
Ponding frequency: none

Representative soil profile:

H1 -0 to 2 in
H2 -2 to 8 in
H3 -8 to 13 in
H3 -8 to 13 in
H4 -13 to 23 in

greater than 60 inches

very stony silty clay loam moderately slow 0.2 to 0.3 in 6.1 to 6.5 .15 .43
gravelly silty clay loam moderately slow 0.8 to 1.0 in 6.1 to 6.5 .24 .43
clay slow 0.4 to 0.7 in 6.6 to 7.3 .15 .24
gravelly clay slow 0.4 to 0.7 in 6.6 to 7.3 .15 .24
cemented material very slow 0.0 to 0.0 in

Frost-free period: 90 to 140 days
Farmland class: Farmland of statewide importance

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Land capability subclass, nonirrigated: 6s
Land capability subclass, irrigated:
Drainage class: well drained
Hydric soil class: no
Hydrologic group: D

Texture Permeability
Available water
capacity pH Kw Kf

Ecological site / plant association: SHALLOW CLAYEY 14-17 PZ (R009XY020OR)

32B -Oxwall extremely stony silty clay loam, 2 to 7 percent slopes

Mean annual precipitation: 14 to 18 inches
Mean annual temperature: 46 to 50 degrees F

Oxwall and similar soils

Extent: about 85 percent of the unit
Landform(s):
Slope gradient: 2 to 7 percent
Parent material:
Restrictive feature(s): duripan at 10 to 20 inches

Seasonal high water table:
Flooding frequency none
Ponding frequency: none

Representative soil profile:

H1 -0 to 2 in
H2 -2 to 8 in
H3 -8 to 13 in
H3 -8 to 13 in
H4 -13 to 23 in

greater than 60 inches

extremely stony silty clay loam moderately slow 0.1 to 0.2 in 6.1 to 6.5 .10 .43
gravelly silty clay loam moderately slow 0.8 to 1.0 in 6.1 to 6.5 .24 .43
clay slow 0.4 to 0.7 in 6.6 to 7.3 .15 .24
gravelly clay slow 0.4 to 0.7 in 6.6 to 7.3 .15 .24
cemented material very slow 0.0 to 0.0 in

Frost-free period: 90 to 140 days
Farmland class: Not prime farmland

Soil loss tolerance (T factor): 1

Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Land capability subclass, nonirrigated: 7s
Land capability subclass, irrigated:
Drainage class: well drained
Hydric soil class: no
Hydrologic group: D

Texture Permeability
Available water
capacity pH Kw Kf

Ecological site / plant association: SHALLOW CLAYEY 14-17 PZ (R009XY020OR)

35 -Ricco silty clay loam

Mean annual precipitation: 12 to 16 inches
Mean annual temperature: 45 to 52 degrees F

Ricco and similar soils

Extent: about 85 percent of the unit

Landform(s): flood plains
Slope gradient: 0 to 3 percent
Parent material:
Restrictive feature(s): none
Seasonal high water table: approximately 9 inches
Flooding frequency occasional
Ponding frequency: none

Representative soil profile:

H1 --0 to 15 in silty clay loam
H2 --15 to 72 in silty clay loam

Frost-free period: 100 to 150 days
Farmland class: Prime farmland if irrigated and drained

Soil loss tolerance (T factor): 5
Wind erodibility group (WEG): 6
Wind erodibility index (WEI): 48
Land capability subclass, nonirrigated: 6w
Land capability subclass, irrigated: 4w
Drainage class: poorly drained
Hydric soil class: yes
Hydrologic group: C/D

Texture Permeability
Available water
capacity pH Kw Kf

moderate 3.6 to 3.9 in 6.1 to 6.5 .37 .37
slow 9.1 to 12.0 in 6.6 to 7.3 .43 .43

Ecological site / plant association: MEADOW (R010XY004OR)

40E -Simas clay loam, 8 to 30 percent south slopes

Mean annual precipitation: 10 to 14 inches Frost-free period: 90 to 150 days

Mean annual temperature: 45 to 50 degrees F Farmland class: Farmland of statewide importance
Simas, south and similar soils
Extent: about 85 percent of the unit Soil loss tolerance (T factor): 3
Landform(s): Wind erodibility group (WEG): 7
Slope gradient: 8 to 30 percent Wind erodibility index (WEI): 38

Parent material: silty and clayey colluvium derived from basalt

Land capability subclass, nonirrigated: 6e

over clayey residuum weathered from acidic

Land capability subclass, irrigated: tuff

Drainage class: well drained

Restrictive feature(s): abrupt textural change at 4 to 12 inches

Hydric soil class: no

Seasonal high water table: greater than 60 inches

Hydrologic group: D

Flooding frequency none
Ponding frequency: none

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 5 in clay loam moderately slow 0.8 to 1.0 in 6.6 to 7.8 .24 .32
H2 --5 to 21 in clay very slow 1.7 to 2.2 in 7.4 to 8.4 .10 .24
H2 --5 to 21 in cobbly clay very slow 1.7 to 2.2 in 7.4 to 8.4 .10 .24
H2 --5 to 21 in gravelly clay very slow 1.7 to 2.2 in 7.4 to 8.4 .10 .24
H3 --21 to 60 in gravelly clay loam very slow 3.5 to 5.1 in 7.9 to 9.0 .10 .28
H3 --21 to 60 in cobbly clay very slow 3.5 to 5.1 in 7.9 to 9.0 .10 .28
H3 --21 to 60 in gravelly clay very slow 3.5 to 5.1 in 7.9 to 9.0 .10 .28

Ecological site / plant association: JD DROUGHTY SOUTH 9-12 PZ (R010XB044OR)

41E -Simas very stony clay loam, 8 to 40 percent, south slopes

Mean annual precipitation: 10 to 14 inches Frost-free period: 90 to 150 days
Mean annual temperature: 45 to 50 degrees F Farmland class: Not prime farmland
Simas, south and similar soils
Extent: about 85 percent of the unit Soil loss tolerance (T factor): 3
Landform(s): Wind erodibility group (WEG): 8
Slope gradient: 8 to 40 percent Wind erodibility index (WEI): 0

Parent material: silty and clayey colluvium derived from basalt

Land capability subclass, nonirrigated: 7s

over clayey residuum weathered from acidic

Land capability subclass, irrigated: tuff

Drainage class: well drained

Restrictive feature(s): abrupt textural change at 4 to 12 inches

Hydric soil class: no

Seasonal high water table: greater than 60 inches

Hydrologic group: D

Flooding frequency none
Ponding frequency: none

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 5 in very stony clay loam moderately slow 0.4 to 0.6 in 6.6 to 7.8 .15 .32
H2 --5 to 21 in cobbly clay very slow 1.7 to 2.2 in 7.4 to 8.4 .10 .24
H2 --5 to 21 in clay very slow 1.7 to 2.2 in 7.4 to 8.4 .10 .24
H2 --5 to 21 in gravelly clay very slow 1.7 to 2.2 in 7.4 to 8.4 .10 .24
H3 --21 to 60 in very cobbly clay loam very slow 3.5 to 5.1 in 7.9 to 9.0 .10 .28
H3 --21 to 60 in cobbly clay very slow 3.5 to 5.1 in 7.9 to 9.0 .10 .28
H3 --21 to 60 in gravelly clay very slow 3.5 to 5.1 in 7.9 to 9.0 .10 .28

Ecological site / plant association: JD DROUGHTY SOUTH 9-12 PZ (R010XB044OR)

48E -Tub clay loam, 20 to 40 percent north slopes

Mean annual precipitation: 11 to 14 inches Frost-free period: 90 to 120 days
Mean annual temperature: 45 to 48 degrees F Farmland class: Farmland of statewide importance

Tub, north and similar soils

Extent: about 85 percent of the unit

Soil loss tolerance (T factor): 5
Landform(s):

Wind erodibility group (WEG): 6
Slope gradient: 20 to 40 percent

Wind erodibility index (WEI): 48
Parent material: silty and clayey colluvium derived from basalt

Land capability subclass, nonirrigated: 6e

over clayey colluvium derived from acidic tuff

Land capability subclass, irrigated:

Restrictive feature(s): none

Drainage class: well drained

Seasonal high water table: greater than 60 inches

Hydric soil class: no

Flooding frequency none

Hydrologic group: C

Ponding frequency: none

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 8 in clay loam moderately slow 1.3 to 1.5 in 6.6 to 7.3 .28 .28
H2 --8 to 23 in gravelly clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H2 --8 to 23 in cobbly clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H2 --8 to 23 in clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H3 --23 to 60 in cobbly loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32
H3 --23 to 60 in silty clay loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32
H3 --23 to 60 in gravelly clay loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32

Ecological site / plant association: JD NORTH 12-16 PZ (R010XB070OR)

48F -Tub clay loam, 40 to 65 percent north slopes

Mean annual precipitation: 11 to 14 inches Frost-free period: 90 to 120 days
Mean annual temperature: 45 to 48 degrees F Farmland class: Not prime farmland

Tub, north and similar soils

Extent: about 85 percent of the unit

Soil loss tolerance (T factor): 5
Landform(s):

Wind erodibility group (WEG): 6
Slope gradient: 40 to 65 percent

Wind erodibility index (WEI): 48
Parent material: silty and clayey colluvium derived from basalt

Land capability subclass, nonirrigated: 7e

over clayey colluvium derived from acidic tuff

Land capability subclass, irrigated:

Restrictive feature(s): none

Drainage class: well drained

Seasonal high water table: greater than 60 inches

Hydric soil class: no

Flooding frequency none

Hydrologic group: C

Ponding frequency: none

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 8 in clay loam moderately slow 1.3 to 1.5 in 6.6 to 7.3 .28 .28
H2 --8 to 23 in gravelly clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H2 --8 to 23 in cobbly clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H2 --8 to 23 in clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H3 --23 to 60 in gravelly clay loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32
H3 --23 to 60 in silty clay loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32
H3 --23 to 60 in cobbly loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32

Ecological site / plant association: JD NORTH 12-16 PZ (R010XB070OR)

49D -Tub stony clay loam, 3 to 20 percent slopes

Mean annual precipitation: 11 to 14 inches Frost-free period: 90 to 120 days
Mean annual temperature: 45 to 48 degrees F Farmland class: Farmland of statewide importance

Tub and similar soils

Extent: about 85 percent of the unit

Soil loss tolerance (T factor): 5
Landform(s):

Wind erodibility group (WEG): 7
Slope gradient: 3 to 20 percent

Wind erodibility index (WEI): 38
Parent material: silty and clayey colluvium derived from basalt

Land capability subclass, nonirrigated: 6e

over clayey colluvium derived from acidic tuff

Land capability subclass, irrigated:

Restrictive feature(s): none

Drainage class: well drained

Seasonal high water table: greater than 60 inches

Hydric soil class: no

Flooding frequency none

Hydrologic group: C

Ponding frequency: none

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 8 in stony clay loam moderately slow 0.9 to 1.2 in 6.6 to 7.3 .15 .28
H2 --8 to 23 in clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H2 --8 to 23 in gravelly clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H2 --8 to 23 in cobbly clay slow 1.6 to 2.1 in 7.4 to 7.8 .10 .20
H3 --23 to 60 in cobbly loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32
H3 --23 to 60 in gravelly clay loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32
H3 --23 to 60 in silty clay loam moderately slow 5.2 to 7.0 in 7.9 to 8.4 .17 .32

Ecological site / plant association: JD CLAYEY 12-16 PZ (R010XB027OR)

53 -Veazie loam
Mean annual precipitation: 12 to 18 inches Frost-free period: 90 to 150 days
Mean annual temperature: 48 to 52 degrees F Farmland class: Prime farmland if irrigated and either protected from flooding or not
frequently flooded during the growing
season

Veazie and similar soils

Extent: about 85 percent of the unit

Soil loss tolerance (T factor): 4

Landform(s):

Wind erodibility group (WEG): 5

Slope gradient: 0 to 3 percent

Wind erodibility index (WEI): 56

Parent material:

Land capability subclass, nonirrigated: 4w

Restrictive feature(s): strongly contrasting textural stratification

Land capability subclass, irrigated: 4w

Seasonal high water table: approximately 60 inches

Drainage class: well drained

Flooding frequency frequent

Hydric soil class: no
Ponding frequency: none

Hydrologic group: B

Representative soil profile:

Texture Permeability
Available water
capacity pH Kw Kf

H1 --0 to 15 in loam moderate 2.4 to 3.1 in 6.1 to 7.3 .37 .37
H2 --15 to 40 in very gravelly loamy sand very rapid 0.8 to 1.3 in 6.6 to 7.3 .02 .05
H2 --15 to 40 in very gravelly sand very rapid 0.8 to 1.3 in 6.6 to 7.3 .02 .05
H2 --15 to 40 in extremely cobbly sand very rapid 0.8 to 1.3 in 6.6 to 7.3 .02 .05

Ecological site / plant association: COTTONWOOD-WILLOW-RIPARIAN (R010XY011OR)

56E -Waterbury extremely stony silty clay loam, 3 to 40 percent slopes

Mean annual precipitation: 13 to 18 inches
Mean annual temperature: 45 to 50 degrees F

Waterbury and similar soils

Extent: about 85 percent of the unit
Landform(s):
Slope gradient: 3 to 40 percent
Parent material:
Restrictive feature(s): lithic bedrock at 12 to 20 inches
Seasonal high water table: greater than 60 inches
Flooding frequency none
Ponding frequency: none

Representative soil profile:

H1 --0 to 4 in extremely stony silty clay loam
H2 --4 to 15 in very cobbly clay
H3 --15 to 19 in unweathered bedrock

Frost-free period: 80 to 110 days
Farmland class: Not prime farmland

Soil loss tolerance (T factor): 1
Wind erodibility group (WEG): 8
Wind erodibility index (WEI): 0
Land capability subclass, nonirrigated: 7s
Land capability subclass, irrigated:
Drainage class: well drained
Hydric soil class: no
Hydrologic group: D

Texture Permeability
Available water
capacity pH Kw Kf

slow 0.4 to 0.7 in 6.6 to 7.3 .15 .43
very slow 0.4 to 1.1 in 6.6 to 7.3 .05 .24

Ecological site / plant association: JD SHALLOW 12-16 PZ (R010XB031OR)

Grant County, Oregon, Central Part
Survey Area Version: Pending
Survey Area Version Date: 03/25/2014

Phosphorus Index Report

BCH Cattle LLC - 2020

John Day

Field	Acres	Soil	Soil Test Date	Bray P (ppm)	Olsen (ppm)	K (ppm)	pH	TFS	SFS	Score	Rating
Range	314.6		-none-					1.5	8.293	N/A	N/A
BCH4	123.3		10/27/2020		30.0	565.0	7.3	2.25	11.88	26.74	Low
BCH3	290.2		10/27/2020		15.0	392.0	7.6	2.25	10.94	24.63	Low
BCH2	331.0		10/27/2020		15.0	176.0	7.7	2.25	10.07	22.66	Low
BCH1	303.1		10/27/2020		30.0	565.0	7.3	2.25	11.88	26.75	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

SUPPLEMENTAL

Oregon Department of Agriculture (ODA)
Confined Animal Feeding Operation (CAFO)
Application to Register (ATR) to the
Oregon CAFO General Permit

Oregon Department of Agriculture
635 Capitol Street N.E.
Salem, OR 97301-2532

Instructions for filling out the ATR are attached.
A $50 application fee is required at the time the ATR is submitted. See Fee Payment Form for instructions.

Section I. CAFO Permit Selection

Please choose which permit you would like your facility to operate under:

- ☐ NPDES General Permit #01-2016 (5-year permit)
- ☑ WPCF General Permit #01-2015 (10-year permit)

Section II. Contact Information

A. Operator

Name: BCH Cattle LLC
Mailing address: 27542 Indian Creek
City, State, Zip code: John Day, OR 97845
Phone number(s): 541-620-0521
Fax number:
E-mail address: bchcattle@gmail.com

Status of operator: P (**P** = Private; **M** = Public other than federal or state; **F** = Federal; **S** = State)

B. Landowner (if different from operator)

☐ Previously permitted ☑ New registration

Name:
Mailing address:
City, State, Zip code:
Phone number(s):
Fax number:
E-mail address:

Status of Landowner: _____ (**P** = Private; **M** = Public other than federal or state; **F** = Federal; **S** = State)

Does an entity or persons, other than the landowner or operator, have management authority or responsibility for the facility identified in Section II of the ATR?

☑ No ☐ Yes Name of entity or person/s_____

Section III. Facility Information

A. Facility

Facility Name: BCH Cattle

Street address: Hwy 24 ← working on getting physical address
(Not PO Box)

City, State, Zip code: John Day, OR 97845

County: Grant

Phone number(s): 541.620.0521

Fax number:

Email: bchcattle@gmail.com

B. Latitude and longitude of production area or entrance to production area:

☐ *Check this box if you want ODA staff to help obtain the information.*

44.43365, -118.81759

C. Closest water body or receiving stream:

☐ *Check this box if you want ODA staff to help obtain the information.*

Fisk Creek

D. Topographical map: A topographical map of your operation must be included with your application. *See page 2 of ATR Instructions for more information.*

E. Diagram: Attach a diagram of your CAFO operation, including the confinement area, all wastewaters and where they go, the storage facilities, and land application area. Also show surface streams, lakes, and waterways in the vicinity of the collection, storage, and application areas. *See page 2 of the ATR Instructions for more information.*

F. Land Use Compatibility Statement: Required for this General Permit. To be completed by your city or county planning office. *See page 2 of ATR Instructions for more information.*

Section IV. Description of Operation

A. Number of animals managed: Give the maximum number of each type of animal that will be held at this facility in open confinement or housed under roof (either partially or totally) in any 12-month period (i.e., the maximum capacity). Attach additional sheets if necessary.

Type of Animal	Number in Open Confinement	Number Housed Under Roof
Mature dairy cows		
Dairy heifers		
Veal calves		
Cattle (not dairy or veal)	2500	
Swine (55 lbs. or over)		
Swine (under 55 lbs.)		
Horses		
Sheep or lamb		
Turkeys		
Chickens (broilers)		
Chickens (layers)		
Ducks		
Goats		
Other: Specify _____		
Total Number of Animals		

B. Estimated manure, litter, and/or wastewater produced and used by the CAFO

a) How much manure, litter, and wastewater are generated annually by the facility? Provide units.

Liquid manure _____ (units)

Solid manure/litter _____ (units)

Wastewater _____ (units)

b) How many acres of land will be used for applying manure, litter, and/or wastewater? _____ acres

c) How much of manure, litter, or wastewater will be transferred annually to other entities/persons?

Liquid manure _____ (units)

Solid manure/litter _____ (units)

Wastewater _____ (units)

Section IV. Description of Operation (continued)

C. Type and Capacity of Waste Storage

Type of Waste Storage	Number of Days of Storage	Capacity (Check appropriate box for units)
Anaerobic lagoon		☐ Gallons ☐ Cubic Feet ☐ Acre Feet
Storage lagoon		☐ Gallons ☐ Cubic Feet ☐ Acre Feet
Evaporation pond		☐ Gallons ☐ Cubic Feet ☐ Acre Feet
Above ground liquid storage tanks		☐ Gallons ☐ Cubic Feet
Below ground liquid storage tanks		☐ Tons ☐ Cubic Feet
Roofed storage shed (Solid manure and/or compost)		☐ Tons ☐ Cubic Feet ☐ Cubic Yards
Concrete pad (Solid manure and/or compost)		☐ Tons ☐ Cubic Feet ☐ Cubic Yards
Impervious soil pad (Solid manure and/or compost)		☐ Tons ☐ Cubic Feet ☐ Cubic Yards
Other: Specify _____		☐ Tons ☐ Cubic Feet ☐ Cubic Yards

Section V. Animal Waste Management Plan (AWMP)

A. Has an Animal Waste Management Plan (AWMP) been developed? ❑ Yes ❑ No

B. Is the facility operating according to the AWMP? ❑ Yes ❑ No

C. If yes, answer the following questions

a) Does it reflect the current number of animals at the facility? ❑ Yes ❑ No

b) Does it reflect the current method of waste management? ❑ Yes ❑ No

c) Is your current plan on file with ODA? ❑ Yes ❑ No

D. Date of the last review or revisions of the AWMP: _____/_____
Month Year

E. If not land applying manure, litter, and/or wastewater, how else will they be used?

_____

_____

_____

_____

Section VI. Certifications

Certification A: Animal Waste Management Plan

I understand that the permit requires the preparation of an Animal Waste Management Plan (AWMP) for the facility described in this ATR. I agree to submit and implement an AWMP in accordance with the requirements and timelines specified in the permit.

Signature (operator or owner)	Print Name	Date
[signature]	Ben Holliday	10-15-2020
cHolliday	Chandra Holliday	10-15-2020

Certification B: True, accurate, and complete information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature (operator or owner)	Print Name	Date
[signature]	Ben Holliday	10-15-2020
cHolliday	Chandra Holliday	10-15-2020

Submission of ATR and fees

Submission of this ATR to the Oregon Department of Agriculture constitutes notice that the parties/party identified in Section II (on page 1) of this form intend/s to be authorized by the Oregon CAFO General Permit for wastewater discharges associated with a CAFO in Oregon. Becoming a permittee obligates a CAFO to comply with the terms and conditions of the permit. The CAFO General Permit is viewable/printable at: http://www.oregon.gov/ODA/programs/NaturalResources/Pages/CAFO.aspx

ODA requires a nonrefundable application fee of $50.00 with the submission of this ATR. Please see Fee Payment Form for additional information. ODA will bill you for the additional Annual Permit Compliance Fee once we determine if permit coverage is necessary ($100.00 for a small confined CAFO; $200.00 for a medium confined CAFO and $300.00 for a large federally-defined CAFO). If you have questions, please call ODA at 503-986-4699 or 503-986-4700.

Please send the completed ATR to: Natural Resources Division, Oregon Department of Agriculture, 635 Capitol Street NE, Salem, Oregon 97301-2532. The application fee must be mailed to a separate address. Please see the Fee Payment Form for payment instructions.

OREGON DEPARTMENT OF AGRICULTURE (ODA)
LAND USE COMPATIBILITY STATEMENT (LUCS)

WHAT IS A LUCS? The LUCS is the process ODA uses to determine that ODA permits and other approvals that affect land use are consistent with the local government comprehensive plan.

WHY IS A LUCS REQUIRED? Oregon law requires that state agency activities related to land use be consistent with local comprehensive plans in accordance with ORS Chapter 195.

WHEN IS A LUCS REQUIRED? A LUCS is required for nearly all ODA permits, some General Permits, and certain approvals for plans or related activities that affect land use. These activities are listed in this form. In cases where a source needs more than one ODA permit or approval, a single LUCS may be used.

A permit modification requires a LUCS when:

- there is a physical expansion on the property or the use of additional land is proposed;
- there is a significant increase in discharges to water;
- there is a relocation of an outfall outside of the source property; or
- emission rate increase as defined in OAR 340-28-110.

A permit renewal requires a LUCS if one has not previously been submitted, or if one of the above four permit modification factors apply.

HOW TO COMPLETE A LUCS:

- The LUCS form is included in the ODA permit application or approval packet.
- Applicant fills out Section 1 of the LUCS and then submits it to the city or county planning office.
- The local planning office determines if the business or facility meets all local planning requirements.
- The local planning office must attach written findings of fact for local reviews or other necessary planning approvals that are required of the applicant.
- The applicant includes the completed LUCS and attachments with the permit application or approval submittal.

WHERE TO GET HELP: Questions on the LUCS are to be directed to ODA, Natural Resources Division, at (503) 986-4700,

SECTION 1 – TO BE FILLED OUT BY APPLICANT

1. Name of applicant: BCN cattle LLC Contact person: Ben Holliday
Telephone: 541-620-0521

Mailing address:
27542 Indian Creek Rd
John Day OR 97845

Location address:

Tax Acct. #40062 Tax Lot # 2201 Township 13 S Range 32 E Section 13
Latitude _____ Longitude _____

2. Describe type of business or facility and the services or products provided:
Stocker cattle operation
Grass production

3. Mark the type of ODA permit being applied for at this time:

Oregon CAFO General Permit X Oregon CAFO Individual Permit _____

4. This application is for a:

new permit X permit renewal _____ permit modification _____ other _____

SECTION 2 – TO BE FILLED OUT BY CITY OR COUNTY PLANNING OFFICIAL

5. The facility proposal is located: inside city limits _____ outside UGB ✓ inside UGB _____

6. Name of city or county that has land use jurisdiction*: Grant County
*jurisdiction means the legal entity that is responsible for land use decisions for the subject of property or land use.

7. The business or facility complies with all applicable local land use requirements: yes X no _____

7a. List all local reviews or approvals that were required of the applicant before the LUCS consistency was determined. (This does not include past requirements that do not relate to the pending ODA permit request).

allowed agricultural use

7b. If no, identify reasons for noncompliance or list requirement(s) that the applicant must comply with before LUCS consistency can be determined.

7c. Is local government currently processing remaining requirements to attain LUCS consistency? yes _____ no _____

8. Planning official reviewer's telephone number: 541-575-1519

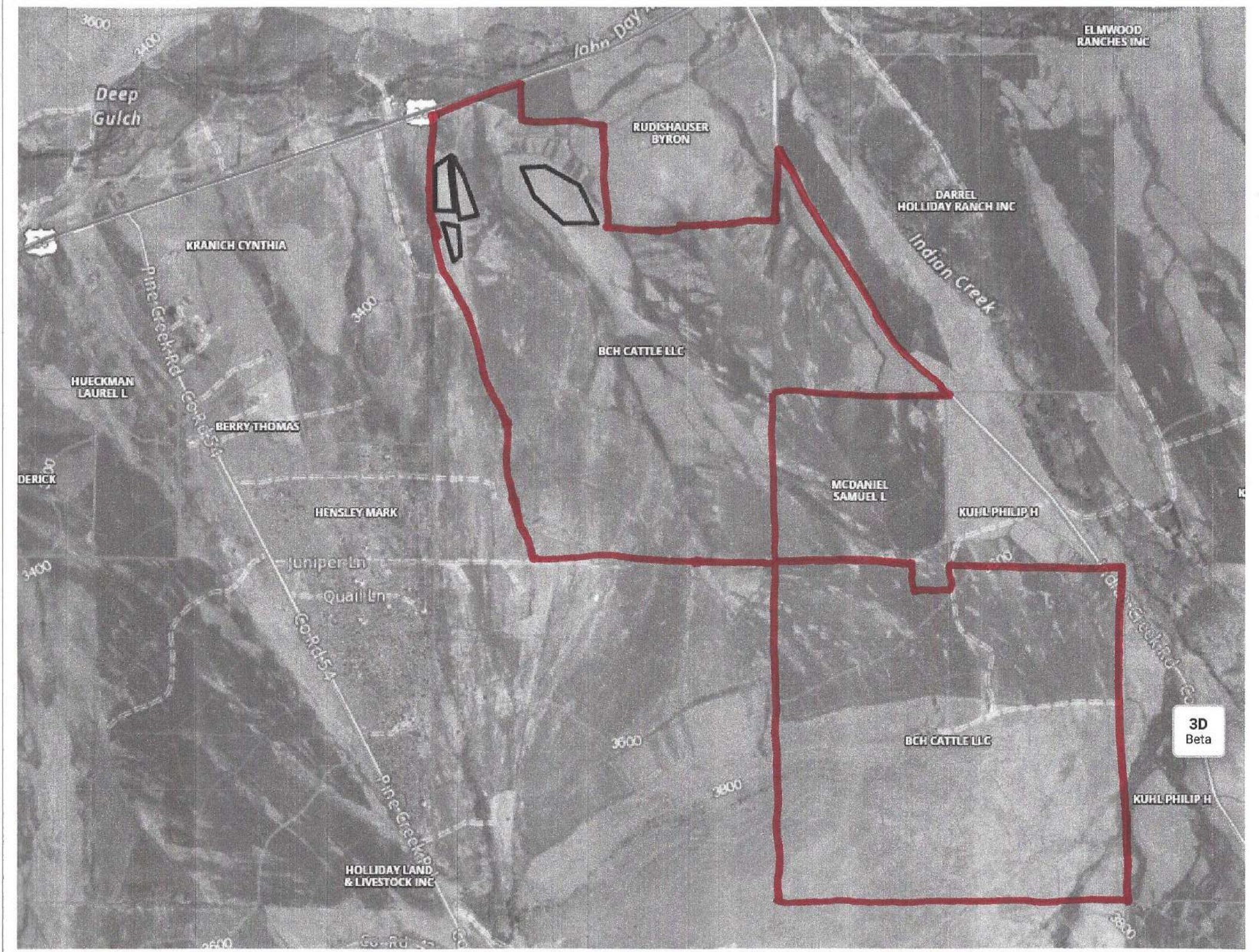
SIGNATURES

Shannon Springer Shannon Springer Title Planning Director Date 10/1/2020
Planning Official Print Planning Official's name

_____ _____ Title _____ Date _____
Planning Official Print Planning Official's name
(depending upon city/county agreement on jurisdiction outside city limits but within UGB)

ATTENTION: A LUCS approval cannot be accepted by ODA until all local requirements have been met. Written findings of fact for all local decisions addressed under 7 through 7b must be attached to the LUCS.

3D
Beta
3400
Fisk Creek
proposed
Lot
3400
Fisk Creek
Proposed
Lot
Proposed
Lot
Commodity
Storage
existing
corral
3400


ELMWOOD RANCHES INC
Deep Gulch
RUDISHAUSER BYRON
DARREL HOLLIDAY RANCH INC
KRANICH CYNTHIA
Indian Creek
Pine Creek Rd
Co Rd 54
BCH CATTLE LLC
HUECKMAN LAUREL L
BERRY THOMAS
DERICK
MCDANIEL SAMUEL L
KUHL PHILIP H
HENSLEY MARK
Juniper Ln
Quail Ln
BCH CATTLE LLC
KUHL PHILIP H
HOLLIDAY LAND & LIVESTOCK INC
3D Beta

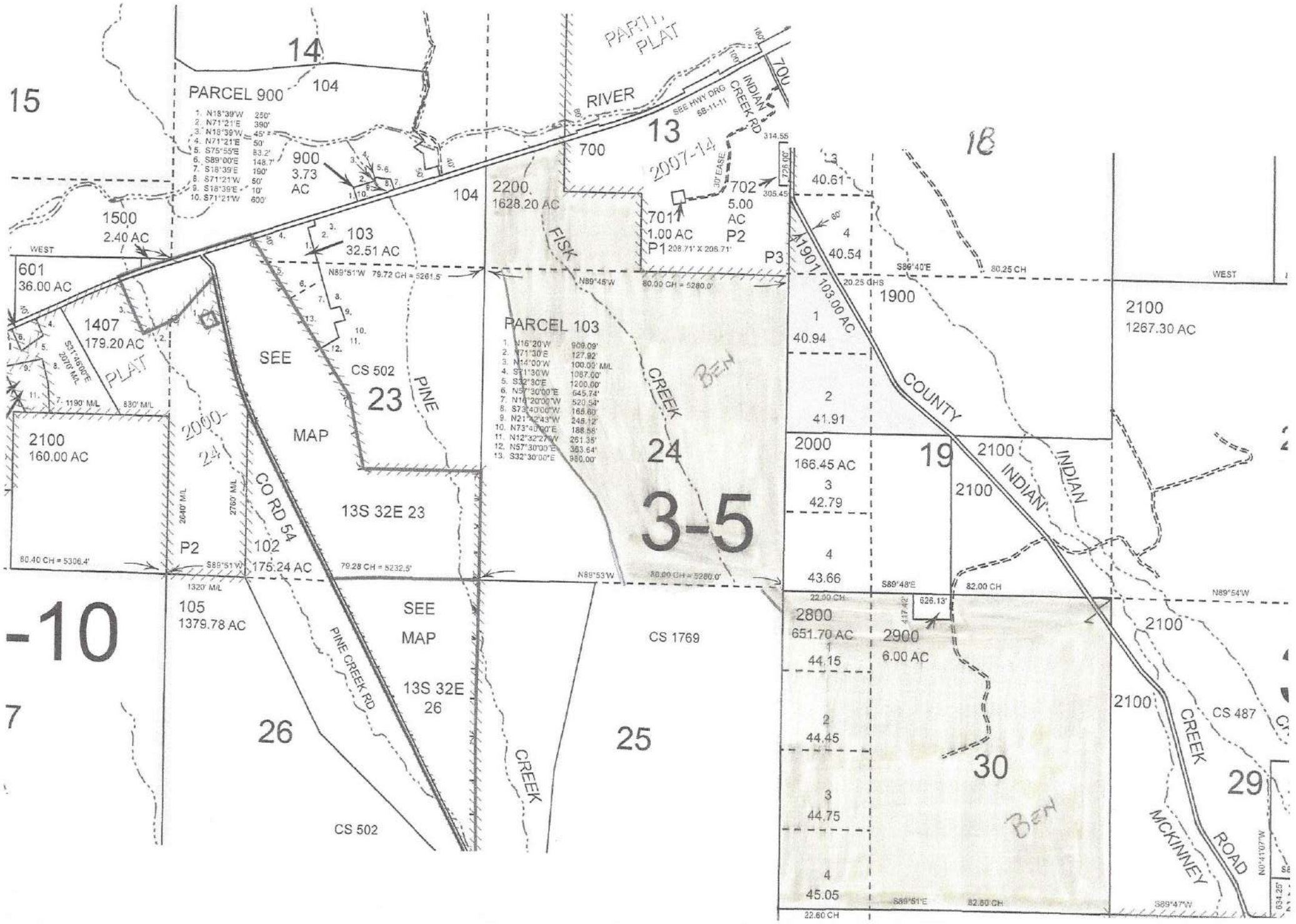

15
14
104
PARCEL 900
1. N18°39'W 250'
2. N71°21'E 390'
3. N18°39'W 45'
4. N71°21'E 50'
5. S75°55'E 83.2'
6. S89°00'E 148.7'
7. S18°39'E 190'
8. S71°21'W 50'
9. S18°39'E 10'
10. S71°21'W 600'
900
3.73
AC
PARTIAL PLAT
RIVER
SEE HWY ORG 58-11-11
INDIAN CREEK RD
700
13
2007-14
30' EASE
702
5.00
AC
P2
701
1.00 AC
P1 208.71' X 208.71'
P3
314.55
305.45
2200
1628.20 AC
104
1500
2.40 AC
WEST
103
32.51 AC
N89°51'W 79.72 CH = 5261.5'
FISK
N89°45'W
80.00 CH = 5280.0'
601
36.00 AC
1407
179.20 AC
PLAT
S71°45'00"E
2070 M/L
1190' M/L
830' M/L
SEE
CS 502
23
PINE
CREEK
BEN
PARCEL 103
1. N16°20'W 909.09'
2. N71°30'E 127.92'
3. N14°00'W 100.00' M/L
4. S71°30'W 1087.00'
5. S32°30'E 1200.00'
6. N57°30'00"E 645.74'
7. N16°20'00"W 520.54'
8. S73°40'00"W 165.60'
9. N21°42'43"W 245.12'
10. N73°40'00"E 188.56'
11. N12°32'27"W 261.35'
12. N57°30'00"E 363.64'
13. S32°30'00"E 980.00'
2100
160.00 AC
2000-24
MAP
24
3-5
2640' M/L
2760' M/L
CO RD 54
13S 32E 23
P2
80.40 CH = 5306.4'
S89°51'W
1320' M/L
102
175.24 AC
79.28 CH = 5232.5'
N89°53'W
80.00 CH = 5280.0'
-10
105
1379.78 AC
SEE
MAP
CS 1769
PINE CREEK RD
13S 32E
26
7
26
25
CS 502
CREEK
18
40.61
4
40.54
S89°40'E
80.25 CH
WEST
A1901
103.00 AC
20.25 CHS
1
40.94
2
41.91
1900
2100
1267.30 AC
COUNTY
INDIAN
2000
166.45 AC
3
42.79
4
43.66
S89°48'E
82.00 CH
19
2100
2100
INDIAN
22.00 CH
626.13'
417.42'
2800
651.70 AC
1
44.15
2
44.45
3
44.75
4
45.05
S89°51'E
82.60 CH
22.60 CH
2900
6.00 AC
30
BEN
N89°54'W
2100
2100
CREEK
MCKINNEY
ROAD
CS 487
29
S89°47'W
N0°41'07"W
634.25'

EXHIBIT A
LEGAL DESCRIPTION

Land in Grant County, Oregon:
T13S, R32E, W.M.
Section 13: All that portion of the W1/2W1/2 lying southerly of Oregon State Highway No. 26 and the SE1/4 SW1/4; SAVE & EXCEPT that portion conveyed to the State of Oregon, by and through its State Highway Commission, by deed dated February 27, 1939, recorded March 3, 1939, in Book 43, Page 156, deed records of Grant County, Oregon.

Section 24: All that portion lying easterly of the following described line. Beginning at the NW corner of said Section 24, thence S89°44'05"E, along the north line of said Section 24, 124.65 feet, to a 5/8" iron pin and the TRUE POINT OF BEGINNING;
Thence S16°00'00"E, 669.79 feet;
Thence N75°20'00"E, 160.00 feet;
Thence S10°20'00"E, 477.50 feet;
Thence S21°10'00"E, 433.60 feet;
Thence S03°40'00"E, 577.60 feet;
Thence S14°10'00"E, 668.00 feet;
Thence S00°20'00"E, 732.00 feet;
Thence S29°00'00"E, 175.00 feet;
Thence S17°30'00"E, 798.70 feet;
Thence S29°10'19"E, 473.52 feet;
Thence S67°34'29"E, 992.23 feet;
Thence S38°00'00"E, 180.83 feet to the south line of said Section 24.

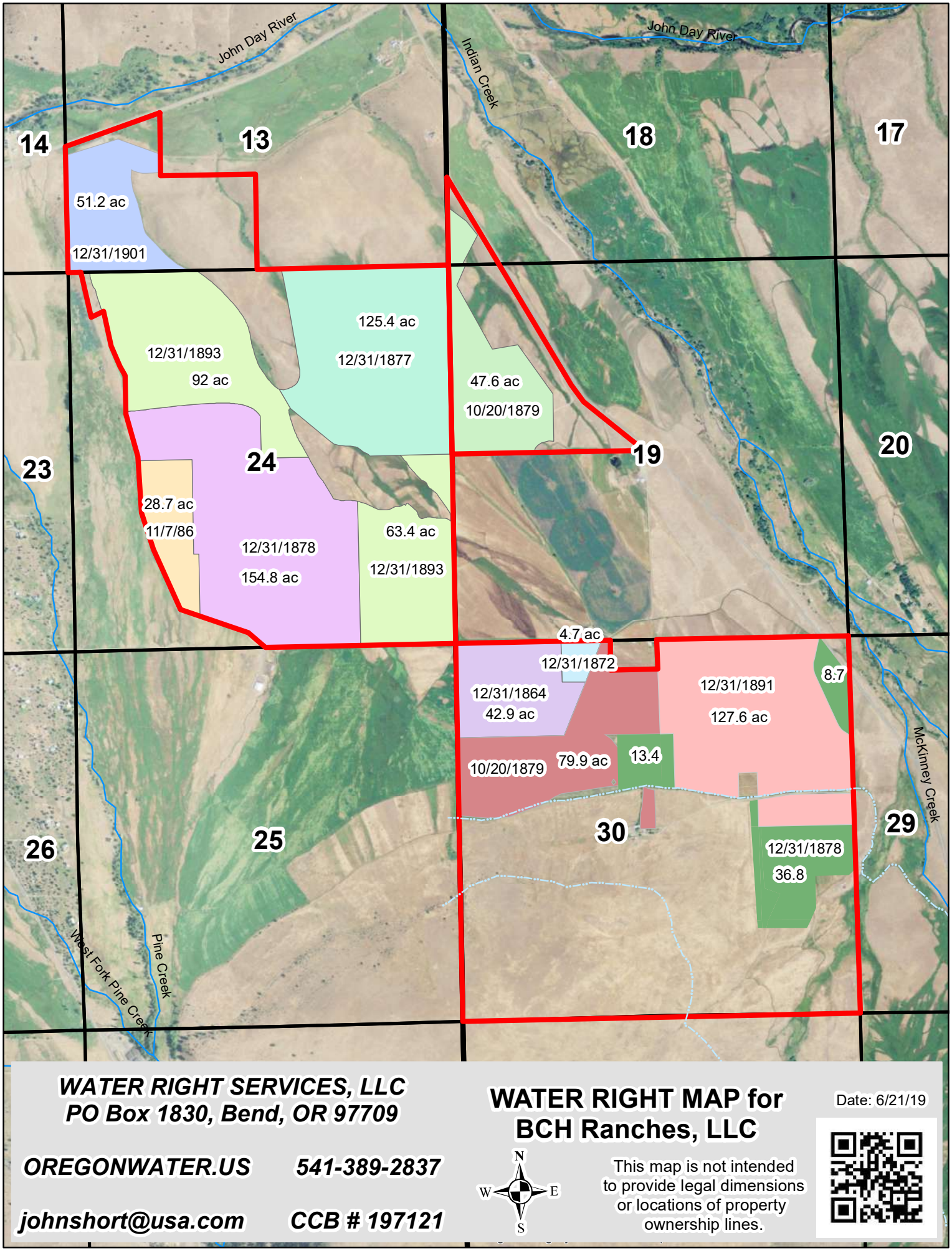
Section 25: Beginning at the NE corner of said Section 25,
Thence Westerly along the north line of said Section 25, 30.00 feet:
Thence Southeasterly to a point on the East line of said Section 25, which is 30.00 feet, Southerly of the NE corner of said Section 25;
Thence Northerly, along the east line of said Section 25, 30.00 feet to the point of beginning.

T13S, R33E, W.M.
Section 18: All that portion of Gov't Lot 4, lying West of the County Road right of way as said right of way is described in the deed recorded May 29, 1959, in Book 81, Page 179, deed records of Grant County, Oregon.

Section 19: All that portion of Gov't Lots 1 & 2 and that portion of the E1/2NW1/4 lying Westerly of the County Road right of way as said right of way is described in the deed recorded May 29, 1959, in Book 81, Page 179, deed records of Grant County, Oregon.

Section 30: Gov't Lots 1, 2, 3 & 4, and the E1/2W1/2 and the E1/2, SAVE AND EXCEPT a tract of land in the NE1/4NW1/4 described as follows: Beginning at the NE corner of the NW1/4 of said Section 30, thence South, 417.42 feet; thence West, 626.13 feet; thence North 417.42 feet; thence East, along the section line, 626.13 feet to the place of beginning.

Renewal Date 6/30/2018



WATER RIGHT SERVICES, LLC
PO Box 1830, Bend, OR 97709

OREGONWATER.US ***541-389-2837***

johnshort@usa.com ***CCB # 197121***

WATER RIGHT MAP for BCH Ranches, LLC

Date: 6/21/19

N
W E
S

This map is not intended to provide legal dimensions or locations of property ownership lines.

OREGON DEPARTMENT OF AGRICULTURE

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

Facility name: BCH Cattle LOT

Facility address: 27542 Indian Creek Rd

John Day OR 97845

Operator's name: BCH Cattle LLC

Mailing address: 27542 Indian Creek Rd

John Day OR 97845

Complete if different than the operator

Legal landowner: _____

Mailing address: _____

_____

RECEIVED
FEB 08 2021
By _____

As the Operator of BCH Cattle LLC, I agree to manage this facility in accordance with Animal Waste Management Plan (AWMP)/Nutrient Management Plan (NMP) # 21004 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
Ben Holliday	2/1/2021	MA# _____
		AWMP# _____
Operator's name (Please print clearly)		Received Date _____
Ben Holliday owner BCH Cattle LLC		Approval Date _____