Animal Waste Management Plan
for
Jenck Farm LLC

c/o Joe Jenck
745 Third Street
Tillamook, OR 97141
503-842-6955

Prepared by:
Tom Thomson
Northwest Ag Consulting
Dallas, OR
(503) 510-3883

received: 01/11/14
AWMP # 14022

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SECTION 5 – REFERENCES

PRODUCTION AREA

Farm contact information: Jenck Farm LLC
c/o Joe Jenck
745 Third Street
Tillamook, OR 97141

Physical Location: Jenck Farm LLC
745 Third Street
Tillamook, OR 97141
503-842-6955

Animal Feeding Operation: Medium Confined CAFO
Type & Size: Dairy – 990 Animals

Latitude/Longitude: N45.45583°, W123.86147°

AWMP Plan Approval
I certify that I have reviewed this AWMP for technical adequacy and that the elements of the documents are technically compatible, reasonable and can be implemented.

Signature: _____ Date: _____
Name: Tom Thomson
Title: Individual TSP Number: TSP-03-1132

Owner/Operator
As the owner/operator of this AWMP, I, as the decision maker, have been involved in the planning process and agree that the items/practices listed in each element of the NMP are needed. I understand that I am responsible for keeping all the necessary records associated with the implementation of this AWMP. It is my intention to implement/accomplish this AWMP in a timely manner as described in the plan.

Signature: _____ Date: _____
Name: Joe Jenck for Jenck Farm LLC

PRODUCTION AREA

BACKGROUND AND SITE INFORMATION

This Animal Waste Management Plan (AWMP) is for 990 animal Holstein milking dairy. There may be has high as 552 lactating cows, 84 dry cows, 230-heifers, and 124 calves. The number of animals may be lower, at times, because of culling rates, economic conditions, forage production, or livestock health. The lactating cows normally will be confined for 212 days and on pasture for 153 days. The dry cows normally will be confined for 197 days and on pasture for 169 days. The heifer confined days will normally vary from 174 to 182 days and the grazing days from 184 to 191 days. The calves normally are confined for 365 days. Weather conditions, excessive forage production in late fall, winter, and early spring, and livestock health are reasons why the confinement days may vary daily during the year. Livestock mortality service is provided by the Tillamook County Creamery Association.

The operation consists of 287.4 acres of hay and pasture land and 11.2 acres containing the barns and milking facilities for Jenck Dairy. Manure is applied to all of the hay and pasture fields. The Norberg and Shively fields are leased for heifer pastures and manure applications. Some of the pastures are within the Stillwell Diking District which is responsible for dike and pumping plant maintenance.

The target yield for the main hay and pasture fields for Jenck Dairy are 25 tons at 30% dry matter per acre per year. The target yield for the Blazer, Shively and Norberg hay and pasture fields are 24 tons at 30% dry matter per acre per year. The pastures are in fair to good condition. Liquid manure will be transported by pump and buried manure mainline and applied with a manure gun traveler to the main hay and pasture fields for Jenck Dairy. A tractor and manure tank wagon is used to transport and apply liquid manure to the Blazer, Shively and Norberg hay and pasture fields. Solid manure is transported and applied by a tractor and manure spreader to all hay and pasture fields. Manure is handled as 30% solids and 70% liquid for the 552 lactating cows. Manure produced from the dry cows, heifers, and calves is handled as 100% solids.

At Jenck HQ milking operation there are 4 liquid waste storage tanks. The four liquid manure storage tanks consist of a 1,500 gallon below ground liquid waste storage tank, a 40' x 15' x 6' below ground tank, a 40' x 8' below ground liquid waste storage tank, and a 100' x 16' above ground liquid waste storage tank. There is a 60' x 10' above ground liquid waste storage tank at the Blazer HQ that is also used to store liquid waste generated at the milking operation. The liquid wastes produced from the milking operation can be stored for 100 days. The 1,500 gallon tank at the Jenck HQ collects silage seepage. The seepage is transported by a pump and waste transfer pipeline to the liquid waste storage tanks at Jenck HQ. The 40' x 100' x 6' solid manure storage facility at the Jenck HQ can store solid manure produced from the milking operation for 68 days.

The solid manure storage facility at Mom's HQ heifer operation is 40' x 48' x 6'. The solid manure storage facility at Mom's HQ will store the solid manure produced by the heifer operation for over 365 days.

PRODUCTION AREA

The solid manure storage facility at the Dry Cow HQ operation is 40' x 100' x 6'. The facility will store the solid manure produced by the Dry Cow HQ operation for 150 days. There are 3 liquid waste storage tanks at the Blazer HQ heifer operation. There is a 2,000 gallon below ground liquid waste storage tank that collects seepage from the solid waste storage facility. The seepage is transferred to the liquid waste storage tanks by a pump and waste transfer pipeline. There is a 40' x 15' x 6' below ground waste storage tank and a 60' x 10' above ground liquid waste storage tank. Liquid manure produce at the Jenck HQ milking operation is hauled over by a tractor and a manure tank wagon and stored in the waste storage tanks at the Blazer HQ heifer operation. The solid manure storage facility at the Blazer HQ heifer operation is 40' x 120' x 6'. This storage facility will store the solid manure produced by the Blazer HQ heifer operation for over 365 days.

Solid and liquid manure produced from the Jenck HQ, Blazer HQ, Mom's HQ and the Dry Cow HQ will be transported by tractor manure spreader and tank wagon and moved to any of the manure storage facilities as needed to store the solid and liquid manure produced from the Jenck Dairy operation. There are 118 days of manure solids storage available at the 4 solid manure storage facilities and 112 days of liquid manure storage available at the 6 liquid manure storage facilities for the Jenck Dairy operation. Liquid or solid manure may be exported from the Jenck Dairy operation. When manure is exported from the operation, records will be kept on the amount and date the manure was exported.

Manure storage days are based on the 30-year annual precipitation as recorded at the KTIL Radio Station in the City of Tillamook. KTIL Radio Station is an official weather station.

PRODUCTION AREA

EMERGENCY RESPONSE PLAN

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

Implement the following first containment steps:

a. Stop all other activities to address the spill.
b. Stop the flow. For example, use skid loader or tractor with blade to contain or divert spill or leak.
c. Call for help and excavator if needed.
d. Complete the clean-up and repair the necessary components.
e. 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:

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

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

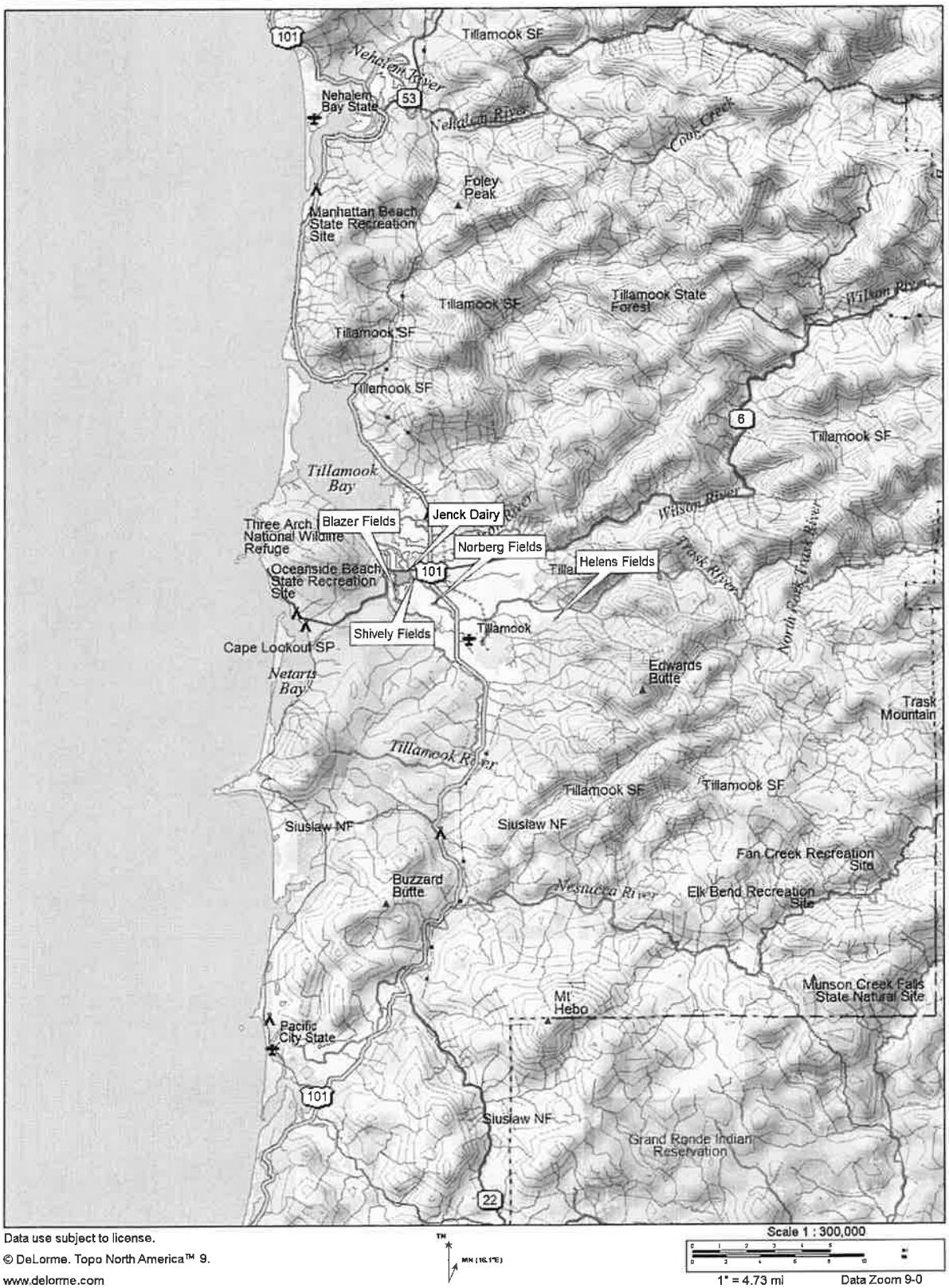
Organization	Phone Number
Oregon Dept. of Agriculture Natural Resources Division 635 Capitol St., N.E. Salem, OR 97301-2532	(503) 986-4700 TTD (503) 986-4762
Oregon Emergency Response (System OERS)	(800) 452-0311
County Environmental Health Department	(503) 842-3943
County Roads Department	(503) 842-3419

Be prepared to provide the following information:

a. Your name and contact information.
b. Farm location (driving directions) and other pertinent information.
c. Description of emergency.
d. Estimate of the amounts, area covered, and distance traveled.
e. Whether manure has reached surface waters or major field drains.
f. Whether there is any obvious damage: employee injury, fish kill, or property damage.
g. Current status of containment efforts.

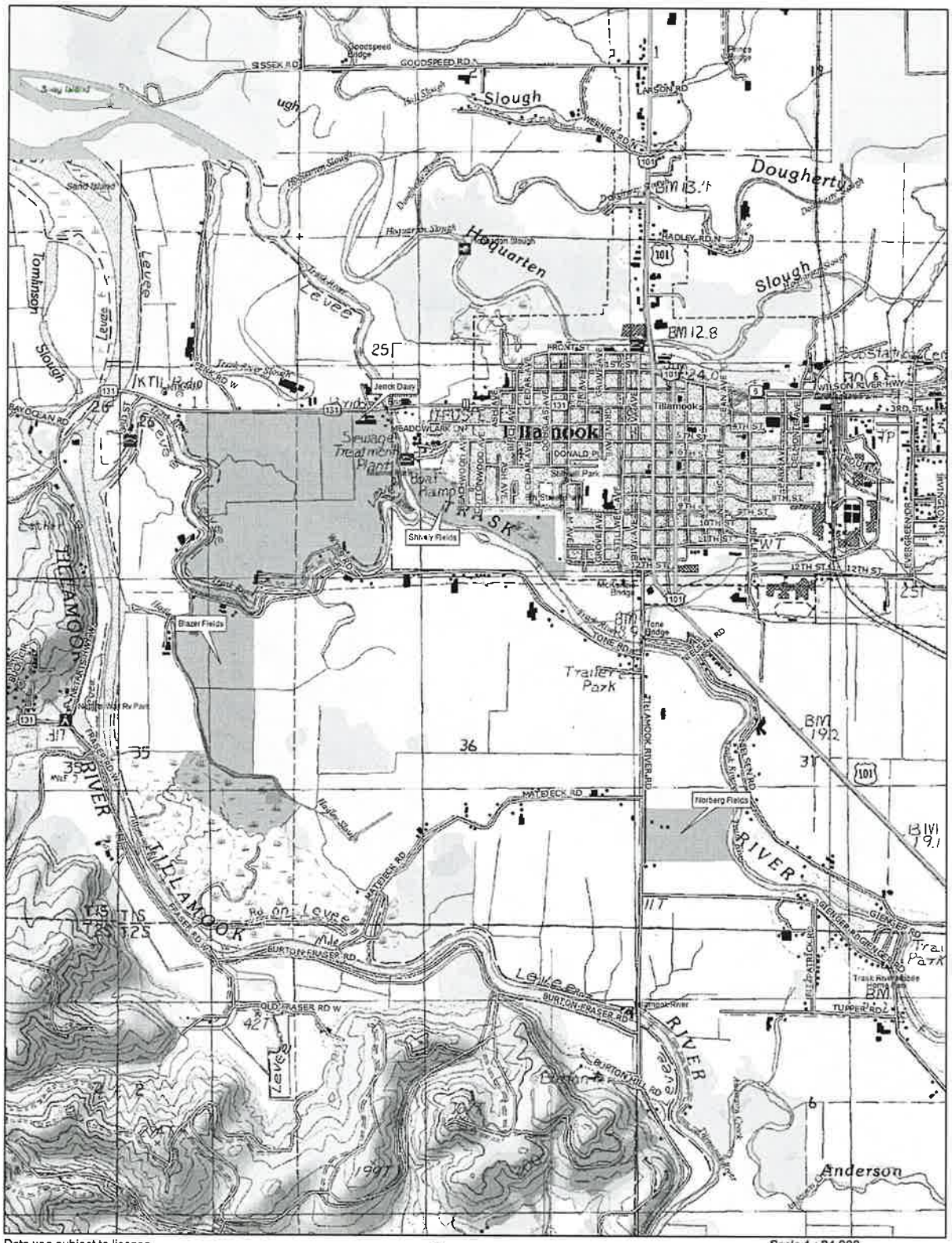
PRODUCTION AREA

LOCATION MAP FOR JENCK FARM LLC

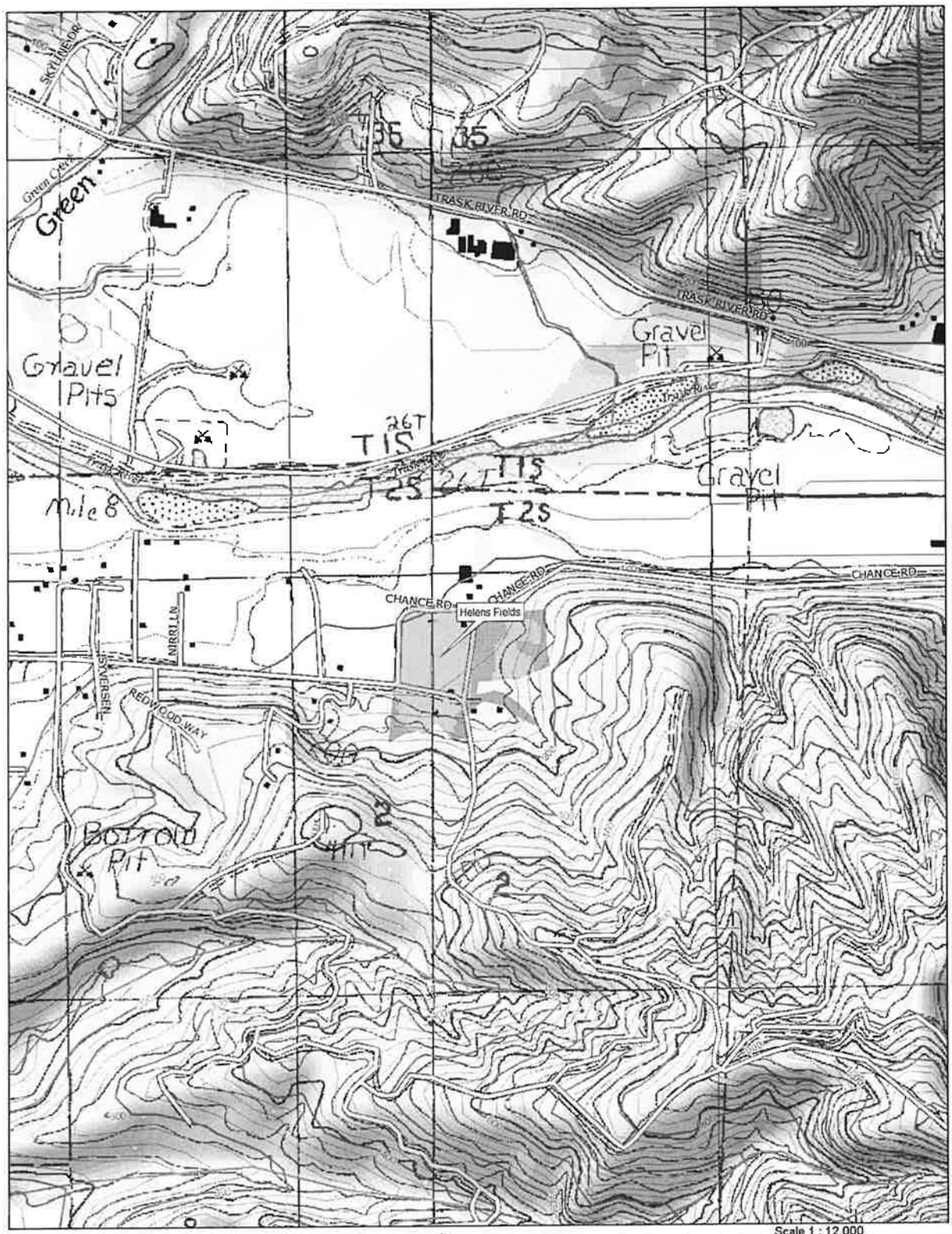


PRODUCTION AREA

TOPOGRAPHY MAP FOR JENCK FARM LLC



PRODUCTION AREA



PRODUCTION AREA

PRODUCTION AREA

ANIMAL NUMBERS

This Animal Waste Management Plan (AWMP) is for 990 animal Holstein milking dairy. There may be has high as 552 lactating cows, 84 dry cows, 230-heifers, and 124 calves. The number of animals may be lower, at times, because of culling rates, economic conditions, forage production, or livestock health. The lactating cows normally will be confined for 212 days and on pasture for 153 days. The dry cows normally will be confined for 197 days and on pasture for 169 days. The heifer confined days will normally vary from 174 to 182 days and the grazing days from 184 to 191 days. The calves normally are confined for 365 days. Weather conditions, excessive forage production in late fall, winter, and early spring, and livestock health are reasons why the confinement days may vary daily during the year.

ANIMAL MORTALITY MANAGEMENT

Currently animal mortalities for the Jenck Farm LLC will be picked up and disposed of by the service provided by Tillamook Creamery Association. Other methods of dealing with mortalities may be employed by Jenck Farm LLC as needed.

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.

COLLECTION OF MANURE, PROCESS WATER AND RUNOFF

Manure, bedding and wasted feed is collected in the barns. The estimated volume of Manure bedding and wasted feed that will be collected annually was generated using the ORAWM workbook located in Section 5.

Leachate and rainfall runoff from the silage and solids storage areas is directed to catch basins that drain to wastewater collection facilities via underground pipelines. The estimated volumes of leachate and rainfall runoff from the silage and solid storage areas that will be collected annually were generated using the ORAWM workbook located in Section 5.

Rainfall runoff from paved and unpaved areas that comes into contact with animal manure is directed to catch basins that drain to the wastewater collection facilities. The estimated volume of rainfall runoff that will be collected annually was generated using the ORAWM workbook located in in Section 5. All rainfall runoff from roofs is collected using gutters and downspouts and directed to drainage ditches using underground pipelines.

PRODUCTION AREA

All process water from the animal feeding operation is directed to catch basins that drain to wastewater collection facilities. The estimated volume of process water that will be collected annually was generated using the ORAWM workbook located in Section 5.

TREATMENT FACILITIES

There are no designed treatment facilities on the farm.

STORAGE FACILITIES

The underground reinforced concrete collection tanks shown on the Production Area Maps starting on page 2-8 are used to collect wastewater containing manure and leachate from silage and solids storage facilities. These facilities are considered collection and temporary storage facilities only and their capacity was not included in the long term storage calculations.

Capacities and estimate volumes to store for the waste storage facilities can be found on the storage worksheet in the ORAWM workbook located in Section 5.

TRANSFER OF MANURE, PROCESS WATER AND RUNOFF

Wastewater, manure, bedding and wasted feed from the housing facilities is directed to the central collection facility where it is pumped to the waste storage tanks for storage shown on the Production Area Maps starting on page 2-8. Solids cleaned from the livestock barns are transferred to the solids storage facilities shown on the Production Area Maps starting on page 2-8.

Wastewater stored in the waste storage tanks is pumped to the hay and pasture land fields using underground pipelines. Traveling big gun irrigation systems and a tractor pulled tank wagon are used to apply the wastewater to the hay and pasture land fields.

Solids stored in the solids storage facilities are hauled to the crop land fields and applied using a solids spreader to be utilized as a source of nutrients

PRODUCTION AREA

OPERATION AND MAINTENANCE CONSIDERATIONS

WASTEWATER STORAGE TANKS-

The wastewater storage tanks shown on the Production Area Maps starting on page 2-8 are used to store wastewater containing manure generated by the Jenck Farm LLC. The storage capacity and estimated storage period for the waste storage tanks are shown on the ORAWM workbook storage worksheet located in Section 5. Emptying of the waste storage tank should begin in the spring and continue through the spring and summer months as weather conditions permit applying wastewater in accordance with the guidance given in Section 3, Utilization Area. To function properly and have the greatest management flexibility, the waste storage tanks must be as empty as possible in the fall before the fall and winter rainy season begins. Any annual buildup of solids in the waste storage tanks must be removed to maintain design capacity and applied to land application areas in accordance with guidance given in Section 3, Utilization Area.

Inspect all tanks weekly to insure structural integrity. If the structural integrity of a tank is compromised, immediately empty the tank to determine the cause and make necessary repairs before putting the tank back into service. Do not allow equipment that exceeds the design limit of the tanks on or within 20 feet of the structure.

Inspect all uncovered tanks on a biweekly basis to insure at least 1 foot of freeboard is being maintained to accommodate excess rainfall such as a 25 year-24hour storm and prevent overtopping of the tank.

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

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

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

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

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

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

PRODUCTION AREA

SOLIDS STORAGE FACILITY-

The solids storage facilities shown on the Production Area Maps starting on page 2-8 are used to store solids containing manure generated by the Jenck Farm LLC. The storage capacity and estimated storage period for the solids storage facilities are shown on the ORAWM workbook storage worksheet located in Section 5. Emptying of the solids storage facilities should begin in the spring and continue through the spring and summer months as weather conditions permit applying solids in accordance with the guidance given in Section 3, Utilization Area. To function properly and have the greatest management flexibility, the solids storage facilities must be as empty as possible in the fall before the fall and winter rainy season begins.

Periodically inspect concrete and asphalt slabs, walls and curbs and repair or replace broken sections as needed. Cleanup any spillage of manure and organics from outside of the solids storage area and place them back in the solids storage facility.

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

BUILDING ROOFS-

Inspect building roofs annually as a minimum. Repair and/or replace all rusted sections and secure loose sections as needed. Immediately replace all broken trusses, rafters, beams, poles as needed. Immediately determining the cause and necessary modification(s) to prevent reoccurring structural failure is essential.

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-

Maintain traveling gun type sprinklers (and hose reel, if used) by oiling and greasing moving parts and the engine 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.

PRODUCTION AREA

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.

Include and maintain a wildlife escape ramp or feature designed to prevent drowning and allow wildlife to escape from the watering facility.

Where necessary maintain coverings and insulation to prevent damage by freezing.

Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

Immediately repair any vandalism, vehicular or livestock damage.

PIPELINES-

Flush pipelines used for liquid waste applications with clean water following waste application, or as needed, to prevent particle buildup.

Drain the pipeline and components in areas that are subject to freezing. If parts of the pipeline cannot be drained, a non-toxic antifreeze solution may be added.

Check to make sure all valves and air vents are set at the proper operating condition so they can provide protection to the pipeline.

Inspect pipelines for signs of failure. Inspect risers and valves periodically for leaks or worn gaskets. Repair or replace pipeline, risers and valves as needed.

Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.

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

PRODUCTION AREA

"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.

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.

PRODUCTION AREA

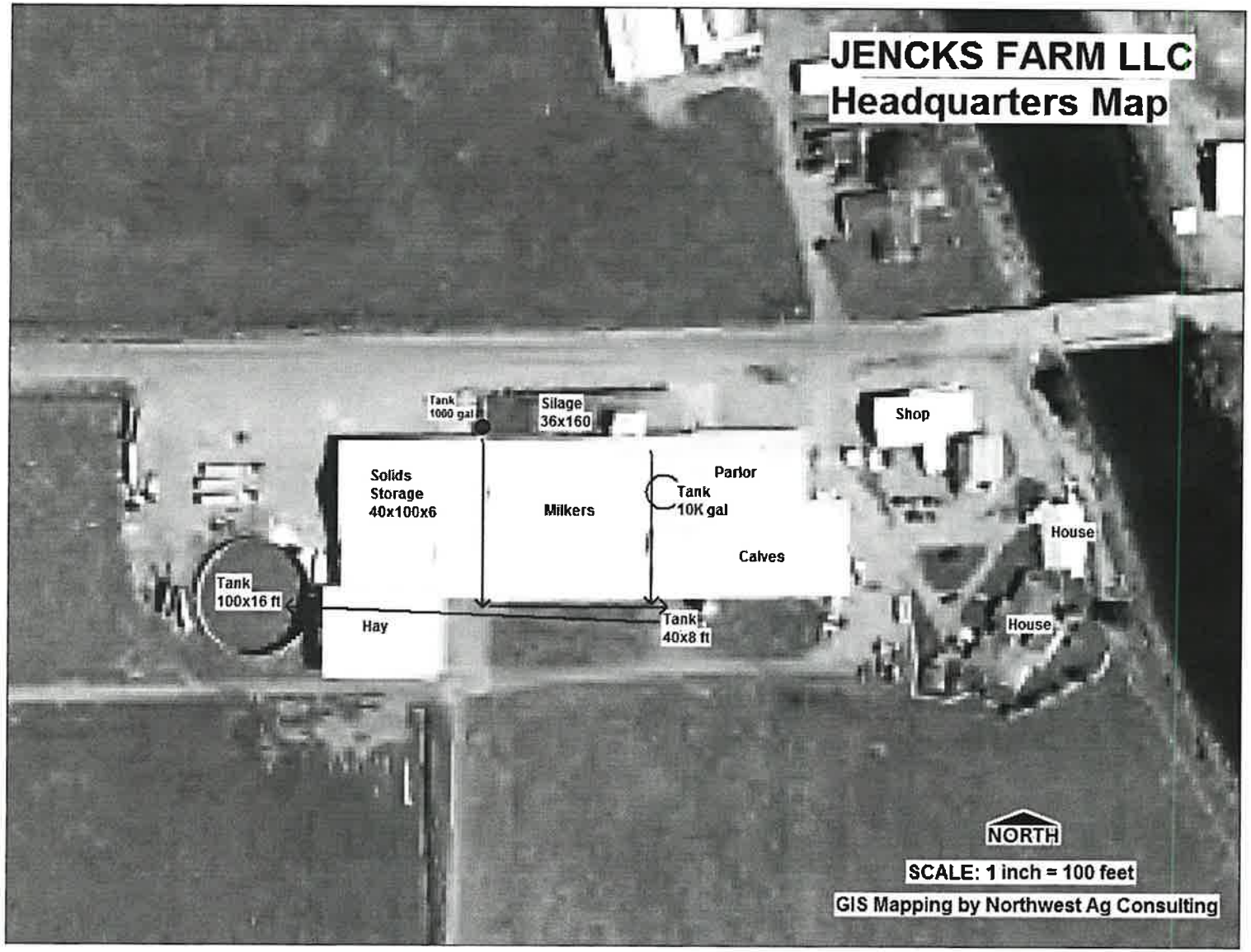
CHEMICAL HANDLING CHECKLIST-

The following measures shall be taken to prevent chemicals from contaminating process water or storm water storage and treatment systems:

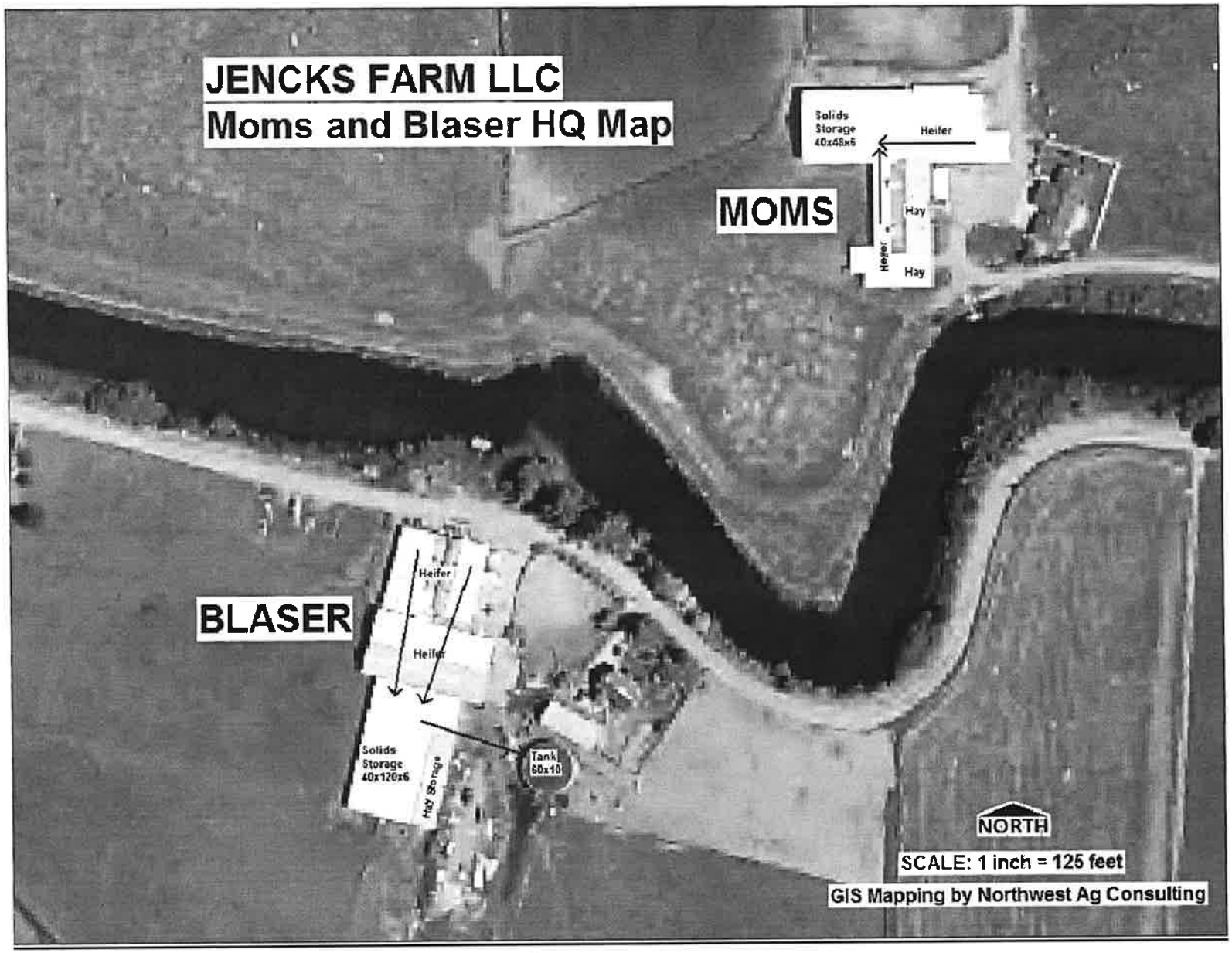
1. Make sure all chemicals are stored in proper containers. Expired chemicals and empty containers are to be properly disposed of in accordance with state and federal regulations. Pesticides and associate refuse are to be disposed of in accordance with the FIFRA label.
2. Chemical storage areas are to 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

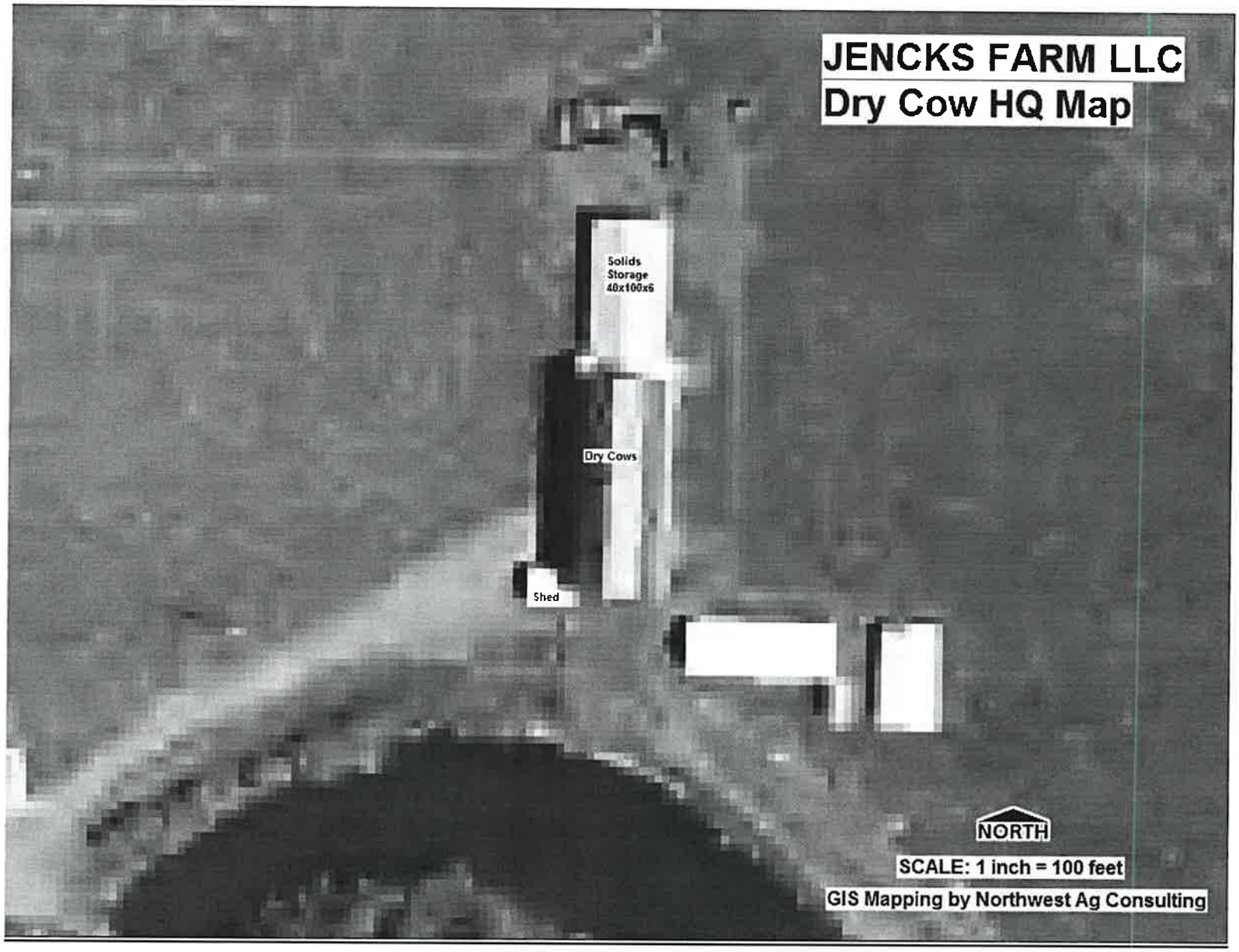
PRODUCTION AREA MAP FOR JENCK FARM LLC



PRODUCTION AREA



PRODUCTION AREA



UTILIZATION AREA

CROPPING SYSTEM

The acres of crop land area available for utilization of the nutrients and organics contained in the wastewater and solids produced from the Jenck Farm LLC is shown on the utilization worksheet in ORAWM located in Section 5. Yield data and nutrient utilization rates for the crops grown are also shown on the inventory worksheet in ORAWM located in Section 5.

Irrigated and nonirrigated crop yield data from the Tillamook County Soil Survey referenced in Section 5 indicates the yield data used in developing this plan is within the range of the given crop yields for well managed fields.

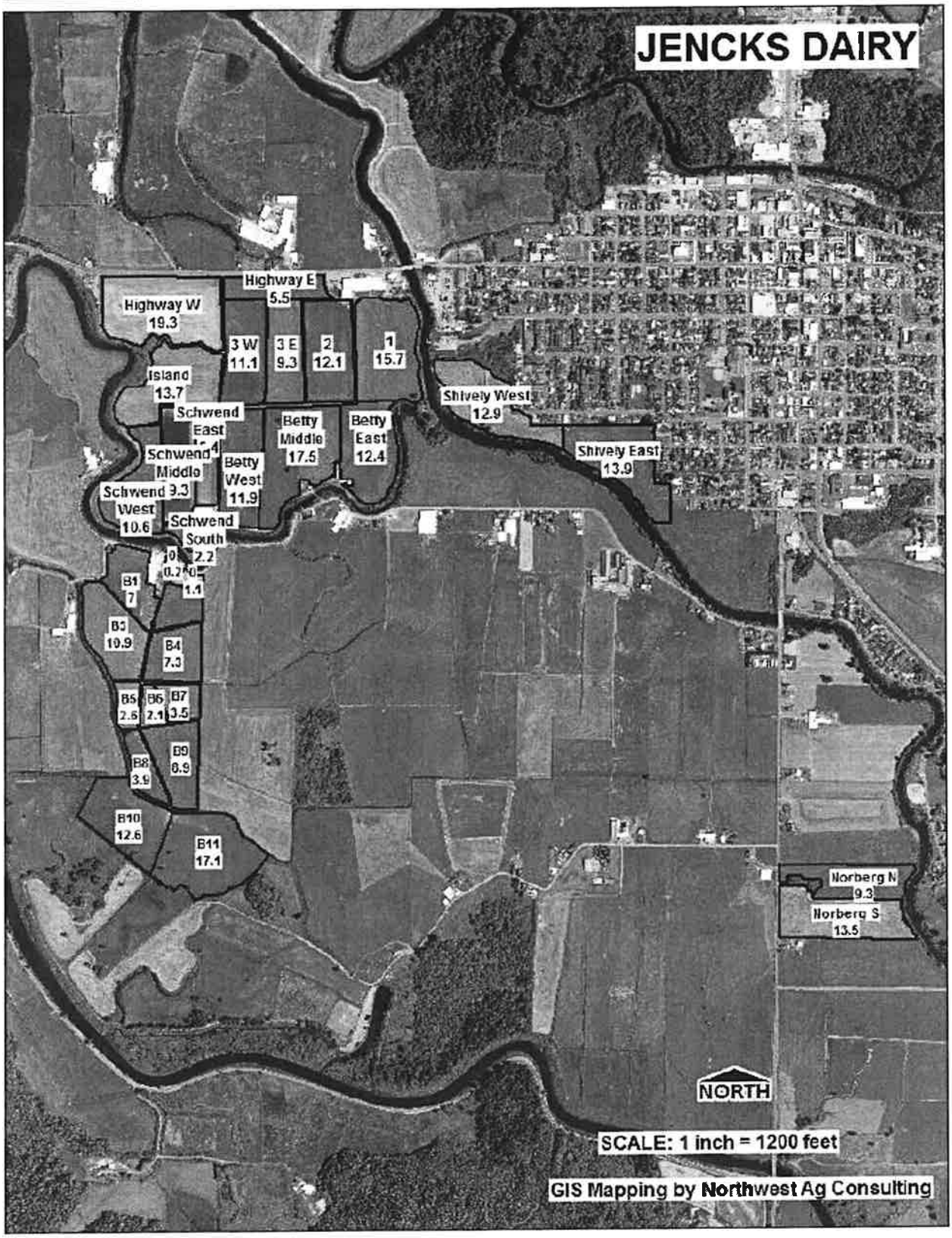
The traveling big gun irrigation systems are used to apply wastewater containing manure and other organics produced from the Jenck Farm LLC. These systems use single large sprinkler nozzles usually mounted on a cart with wheels that is attached to a high density polyethylene pipeline that is rolled up on a large reel that provides a constant travel speed for the sprinkler. These systems apply water depending on the nozzle size, operating pressure and travel used and have an efficiency of 65 to 75 percent. Traveling big gun sprinkler systems must be well managed to prevent excess percolation, surface runoff, wind drift and evaporation losses.

UTILIZATION AREA

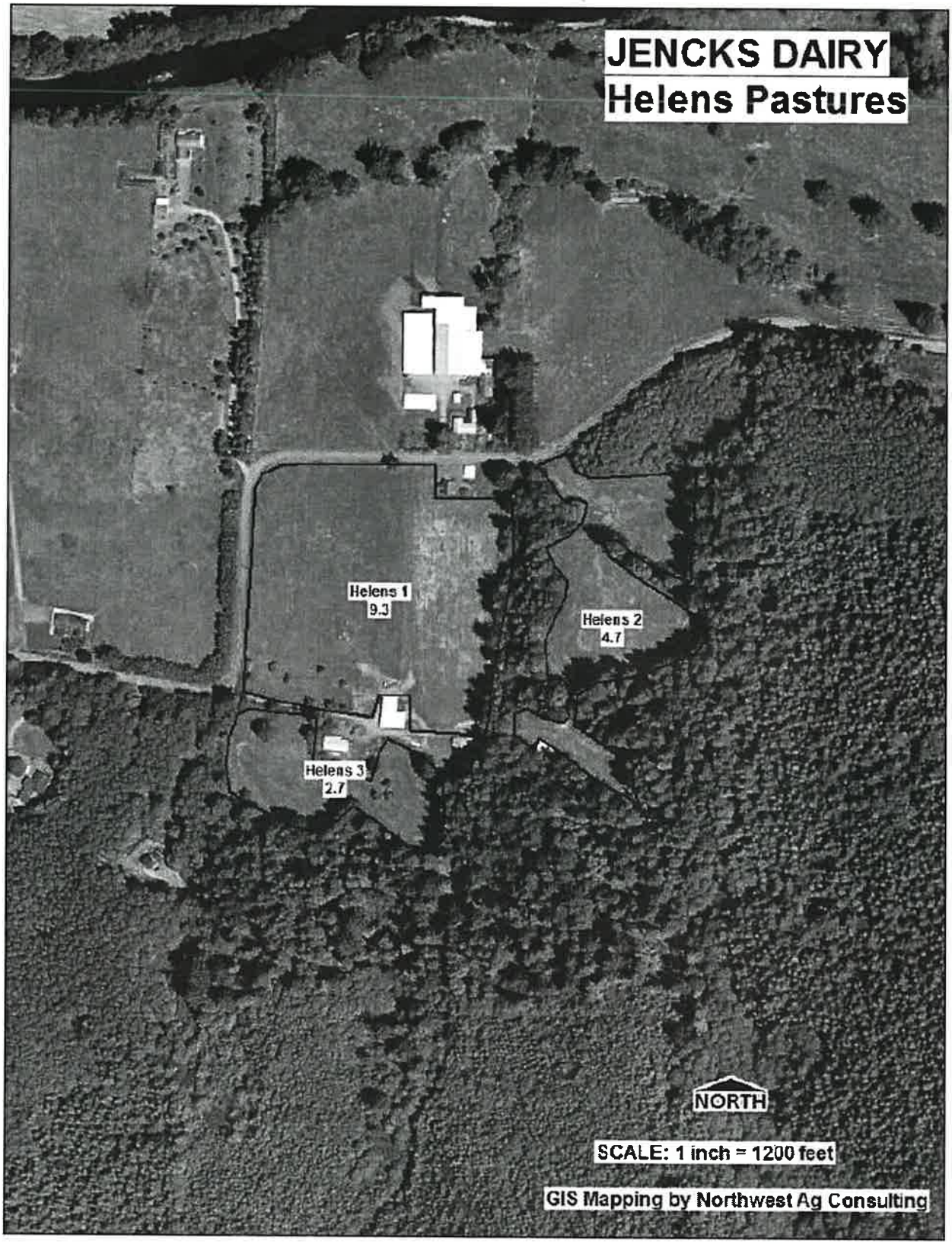

JENCKS DAIRY
New
Highway E
5.5
Highway W
19.3
3 W
11.1
3 E
9.3
2
12.1
1
15.7
Island
13.7
Schwend
East
Schwend
Middle
Schwend
West
10.6
Betty
West
11.9
Betty
Middle
17.5
Betty
East
12.4
Shively West
12.9
Shively East
13.9
Schwend
South
2.2
B1
7
B2
4.2
B3
10.9
B4
7.3
B5
2.6
B6
2.1
B7
3.5
B8
3.9
B9
8.9
B10
12.6
B11
17.1
Norberg N
9.3
Norberg S
13.5
NORTH
SCALE: 1 inch = 1200 feet
GIS Mapping by Northwest Ag Consulting

UTILIZATION AREA

FIELD MAP(S)



UTILIZATION AREA



UTILIZATION AREA

APPLICATION

The manure and irrigation application systems will be calibrated in accordance with guidance starting on page 3-5 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 on page 3-8. Applications of wastewater and solids containing manure should be made in accordance with guidance starting on page 3-5 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 Western Oregon Phosphorus Index and is shown in the table on page 4-17. Wastewater, solids and commercial fertilizer for any field with a high runoff rating must be applied on a phosphorus basis. Wastewater, solids and commercial fertilizer for any field with a low or medium runoff rating can be applied on a nitrogen basis. No applications manure or commercial fertilizer containing phosphorus are to be made on a field with a very high phosphorus runoff rating.

GENERAL CONSIDERATIONS FOR MAKING MANURE APPLICATIONS

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.

- **Manure applications may commence once T-Sum 200 has been reached for the calendar year** 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.

  Surface air temperature is monitored and the daily minimum and maximum air temperatures are summed and divided by two the get the average daily air temperature then converted to centigrade (F degrees minus 32 times 0.556). Manure applications may begin once 200 heat units have been accumulated. The average date of T-Sum 200 for Jenck Farm LLC is January 30 for the 30 year average from 1981-2010. 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.

UTILIZATION AREA

- **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 starting on page 3-7. Refer to page 3-17 for guidance on the calibration of application equipment.
- **Maintain setbacks for manure application from any surface waters.**
- **DAIRY** (Fields- 1, 2, 3E, 3W, Betty East, Betty Middle, Betty West, Highway E, Highway W, Schwend South, Island, Schwend E, Schwend Middle, Schwend West)
- The entire perimeter of the dairy is diked with interior drainage ditches separating fields to move water out of fields. All fields are fenced. Thus, manure applications may be made, throughout the year, up to the toe of the dike irrespective of distance from water. The interior drainage systems will be buffered at 3 feet from the fence during the dry season and extended to 35 feet from the fence once the first significant rainfall occurs.
- **BLASER** (Fields- Ba, Bb, B1-B11)
- The Blaser Heifer Facility is not diked and has no river frontage. Interior drainage ditches are all fenced and drain to a larger ditch along the western border. The interior drainage systems will be buffered at 3 feet from the fence during the dry season and extended to 35 feet from the fence once the first significant rainfall occurs.
- **NORBERG** (Fields- Norberg N, Norberg S)
- This farm has natural 35 foot plus buffers along it eastern edge near the river. No interior ditched are present. Thus, the entire farm may receive manure to the field edges.
- **SCHIVELEY** (Fields- Shively East, Shively West)
- This farm has no dike along its river frontage but does have a natural 30 foot plus buffer. The interior ditch that runs to the northern edge of the property and drains into a vegetated swale is fenced. Manure applications may be made to the field edges except along the river and ditch edges where a 3 foot buffer will used in the dry season and extended to 35 feet from the fence once the first significant rainfall occurs.

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- **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 starting on page 3-7. Refer to page 3-17 for guidance on the calibration of application equipment.
- **Maintain setbacks for manure application from any surface waters.**

  Setbacks are the distance between open waterways and manure application area.

  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.

  DAIRY (Fields- 1, 2, 3E, 3W, Betty East, Betty Middle, Betty West, Highway E, Highway W, Schwend South, Island, Schwend E, Schwend Middle, Schwend West)
  The entire perimeter of the dairy is diked with interior drainage ditches separating fields to move water out of fields. All fields are fenced. Thus, manure applications may be made, throughout the year, up to the toe of the dike irrespective of distance from water. The interior drainage systems will be setback 10 feet for Drag Hose and Solid Spreader applicators and 35 feet for Big Gun applicators from the fence during the dry season. Setbacks will be extended to 50 feet from the fence for all applicators once the first significant rainfall occurs.

  BLASER (Fields- Ba, Bb, B1-B11)
  The Blaser Heifer Facility is not diked and has no river frontage. Interior drainage ditches are all fenced and drain to a larger ditch along the western border. The interior drainage systems will be setback 10 feet for Drag Hose and Solid Spreader applicators and 35 feet for Big Gun applicators from the fence during the dry season. Setbacks will be extended to 50 feet from the fence for all applicators once the first significant rainfall occurs.

  NORBERG (Fields- Norberg N, Norberg S)
  This farm has natural 35 foot plus buffers along it eastern edge near the river. No interior ditches are present. Thus, the entire farm may receive manure to the field edges during the dry season. Setbacks will be 50 feet from any open water course for Big Gun, Drag Hose and Solid Spreader applicators once the first significant rainfall occurs.

UTILIZATION AREA

SCHIVELEY (Fields- Shively East, Shively West)
This farm has no dike along its river frontage but does have a natural 30 foot plus buffer. The interior ditch that runs to the northern edge of the property and drains into a vegetated swale is fenced. Manure applications may be made to the field edges except along the river and ditch edges where a 10 foot setback for Drag Hose and Solid Spreader applicators and 50 feet for Big Gun applicators will be maintained during the dry season. The setback will extended to 50 feet for all applicators once the first significant rainfall occurs.

HELENS (Fields- Helens 1-3)
This farm is all upland fields with a small drainage running south to north between field 1 and 2. Natural vegetated buffers greater than 35 feet separate the fields from the drainage. Manure applications may be made to the field edges but 50 foot setbacks must be maintained for all applicators once the first significant rainfall occurs.

- **Record applications, transfers or exports of nutrients (manure and fertilizer)** and maintain them for at least 5 years. The CAFO Recordkeeping Calendar or the tools and forms referenced in Section 5 may be used to record this information.

CONSIDERATIONS FOR SPRING AND SUMMER MANURE APPLICATIONS:

Apply wastewater and solids containing manure at **agronomic rates** shown on the table on page 3-21 using the following guidelines:

- Begin making manure applications once 200 heat units (T-Sum 200) have been accumulated. The average date of T-Sum 200 for Jenck Farm LLC is January 30 for the 30 year average from 1981-2010.
- ***Do not apply*** 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 on page 3-6 and shown on the Setback Map on page 3-8 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 the tools and forms referenced in Section 5 may be used to record this information.

UTILIZATION AREA

- **HELENS** (Fields- Helens 1-3)
- This farm is all upland fields with a small drainage running south to north between field 1 and 2. Natural vegetated buffers greater than 35 feet separate the fields from the drainage. Manure applications may be made to the field edges.

- **Record applications, transfers or exports of nutrients (manure and fertilizer)** and maintain them for at least 5 years. The CAFO Recordkeeping Calendar or the tools and forms referenced in Section 5 may be used to record this information.

CONSIDERATIONS FOR SPRING AND SUMMER MANURE APPLICATIONS:

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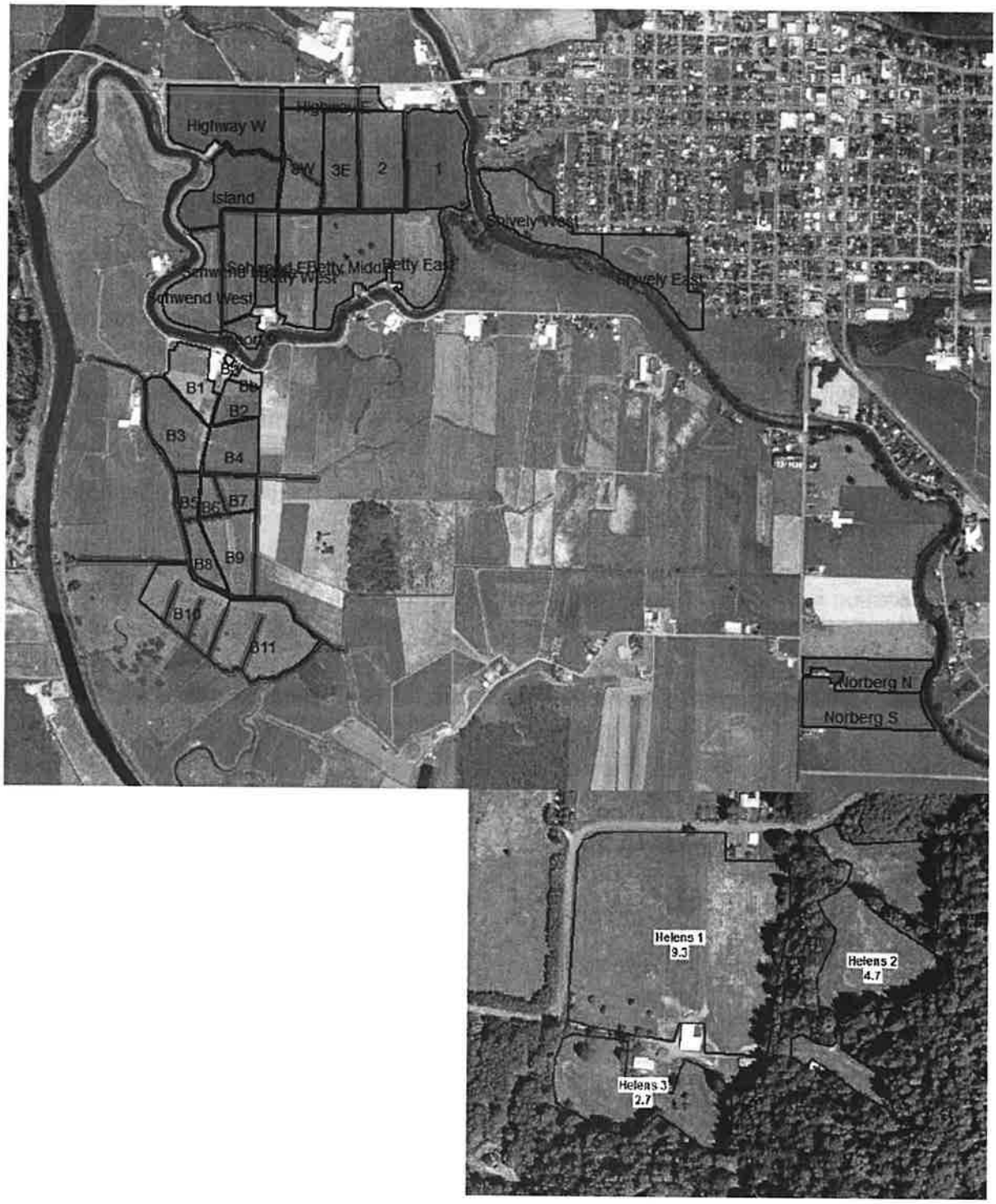
- Apply to land being prepared for crops. Till manure into soil within 3 days of application if possible or apply to actively growing crops such as grass, clover or alfalfa after cutting.
- ***Maintain the setback buffer distances*** described on page 3-6 and shown on the Setback Map on page 3-8 when 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 the tools and forms referenced in Section 5 may be used to record this information.

Revised
4/5/14
BB

UTILIZATION AREA

SETBACK MAP(S) FOR JENCK FARM LLC



Map Legend

_____ - Field Setback Buffers

UTILIZATION AREA

CONSIDERATIONS FOR LATE FALL AND WINTER 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 CAN NOT 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 the table on page 3-6 and shown on the Setback Map on page 3-8 when making applications of liquids or solids containing manure.
- ***Do not apply*** 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 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 the tools and forms referenced in Section 5 may 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.

UTILIZATION AREA

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.

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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.

UTILIZATION AREA

MANURE TESTS

Manure Nutrient Analyses

Manure Source	Dry Matter (%)	Total N	NH_4-N	Total P_2O_5	Total K_2O	Avail. P_2O_5	Avail. K_2O	Units	Analysis Source and Date
Storage Tanks	3.8	15.9	8.0	6.5	18.8	6.5	18.8	Lb/1000Gal	5 Year Average 2007-2009, 2011-2012
Solids Storages	18.6	10.4	3.4	2.9	9.4	2.9	9.4	Lb/Ton	2 Year Average 2004 and 2011
Livestock	12.0	29.7	4.0	11.6	7.3	11.6	7.3	Lb/1000Gal	Based on 2013 Analysis

(1) Entered analysis may be the average of several individual analyses.
(2) Oregon assumes that 100% of manure phosphorus and 100% of manure potassium is crop available. First-year per-acre nitrogen availability for individual manure applications is given in the Planned Nutrient Applications table. For more information about nitrogen availability in Oregon, see Waste Utilization Jobsheet 633 OR-JS, Oregon USDA-NRCS, May 2003 (http://efotg.sc.egov.usda.gov/references/public/OR/633js042707.pdf).

Manure analyses should be performed by a laboratory that meets the requirements and performance standards of the Manure Testing Laboratory Certification Program (MTLCP), http://www.mda.state.mn.us/licensing/pestfert/manurelabs.htm.

To develop a cumulative manure analysis history as a basis for nutrient allocation to the fields, manure should be analyzed annually for a minimum of three (3) consecutive years.

UTILIZATION AREA

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". Oregon State university Extension publication EC1478, "Soil Test interpretation Guide" 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 and from the 12-24" 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.

UTILIZATION AREA

UTILIZATION AREA

SOIL TESTS

Soil Test Data

Field	Test Year	OM (%)	P Test Used	P	K	Mg	Ca	Na	Units	Soil pH	Buffer pH	CEC (meq/ 100g)	NO_3-N (ppm)	EC (mmhos/ cm)
1	2011		Bray P1	56	1,494	952	5,000		ppm	6.6	6.5	42.8	59.0	
2	2011		Bray P1	41	1,567	1,037	4,940		ppm	6.4	6.4	44.6	72.0	
3E	2012		Bray P1	35	1,222	1,037	4,640		ppm	5.9	6.0	47.0	34.0	
3W	2012		Bray P1	35	1,222	1,037	4,640		ppm	5.9	6.0	47.0	34.0	
B1	2011		Bray P1	57	1,695	1,025	5,100		ppm	6.4	6.3	46.8	46.0	
B10	2011	10.2	Bray P1	23	786	1,049	2,600		ppm	4.6	5.2	45.4	81.0	
B11	2012	10.2	Bray P1	23	786	1,049	2,600		ppm	4.6	5.2	45.4	81.0	
B2	2011		Bray P1	57	1,695	1,037	5,100		ppm	6.4	6.3	46.9	46.0	
B3	2011		Bray P1	57	1,695	1,037	5,100		ppm	6.4	6.3	46.9	46.0	
B4	2011		Bray P1	57	1,695	1,025	5,100		ppm	6.4	6.3	46.8	46.0	
B5	2011		Bray P1	50	1,617	1,135	4,500		ppm	6.6	6.4	43.3	16.0	
B6	2011		Bray P1	50	1,617	1,135	4,500		ppm	6.6	6.4	43.3	16.0	
B7	2011		Bray P1	50	1,617	1,135	4,500		ppm	6.6	6.4	43.3	16.0	
B8	2011		Bray P1	25	927	939	2,460		ppm	5.2	5.3	42.9	14.0	
B9	2011		Bray P1	25	927	939	2,460		ppm	5.2	5.3	42.9	14.0	
Ba	2011		Bray P1	25	500	900	2,500		ppm	6.0	6.0	33.3	15.0	
Bb	2011		Bray P1	25	500	900	2,500		ppm	6.0	6.0	33.3	15.0	
Betty East	2013		Bray P1	15	768	830	4,000		ppm	5.7	5.9	42.1	29.0	
Betty Middle	2013		Bray P1	18	770	964	3,600		ppm	6.4	6.5	34.0	20.0	
Betty West	2013		Bray P1	28	1,556	842	4,680		ppm	6.3	6.5	40.4	9.0	
Helens 1	2010		Bray P1	58	890	537	2,080		ppm	5.9	6.2	26.8		
Helens 2	2010		Bray P1	58	890	537	2,080		ppm	5.9	6.2	26.8		
Helens 3	2010		Bray P1	58	890	537	2,080		ppm	5.9	6.2	26.8		
Highway E	2010		Bray P1	36	1,389	1,061	3,420		ppm	6.5	6.6	34.3	5.0	
Highway W	2010	4.4	Bray P1	37	763	805	3,480		ppm	6.4	6.6	30.9	5.0	
Schwend South	2011		Bray P1	10	1,000	800	4,000		ppm	6.0	6.0	41.2	10.0	

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Field	Test Year	OM (%)	P Test Used	P	K	Mg	Ca	Na	Units	Soil pH	Buffer pH	CEC (meq/ 100g)	NO_3-N (ppm)	EC (mmhos/ cm)
Island	2013		Bray P1	38	1,500	976	4,480		ppm	6.7	6.5	40.4	11.0	
Norberg N	2011	5.5	Bray P1	15	827	866	4,860		ppm	6.0	5.9	46.8	8.0	
Norberg S	2011	5.5	Bray P1	15	827	866	4,860		ppm	6.0	5.9	46.8	8.0	
Schwend E	2013		Bray P1	10	1,000	800	4,000		ppm	6.0	6.0	41.2	10.0	
Schwend Middle	2011		Bray P1	28	1,067	805	4,180		ppm	6.1	6.2	39.9	53.0	
Schwend West	2011		Bray P1	14	1,339	1,122	3,660		ppm	6.1	6.0	43.1	24.0	
Shively East	2011		Bray P1	21	800	744	3,860		ppm	6.5	6.4	34.8	3.0	
Shively West	2010	3.8	Bray P1	21	800	744	3,860		ppm	6.5	6.4	34.8	3.0	

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/.

UTILIZATION AREA

HOW TO CALIBRATE APPLICATION EQUIPMENT

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

Irrigation System Calibration

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

Inches Liquid Manure Applied via Irrigation:	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	27,154
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.

UTILIZATION AREA

Load-Area Method:
The load-area method is the most accurate and can be used for both liquid and soild 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.

UTILIZATION AREA

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:

1. Desired manure application rate based on soil and manure tests,
2. Width of the manure spread, and
3. 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.

UTILIZATION AREA

AMOUNT OF MANURE TO APPLY FOR CROPS GROWN

The timing and frequency of applications of wastewater and solids containing manure for utilization by crops shown in the table below are based on information provided in Oregon State University Extension publications listed in Section 5.

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 percent (%) dry matter (DM) of harvested crop/100 X planned or measured yield per yield unit

Total P_2O_5 to apply in pounds = P in pounds per yield unit from the table for the crop grown X 2.291 P_2O_5/P X percent (%) dry matter (DM) of harvested crop/100 X planned or measured yield per yield unit

Total K_2O to apply in pounds = K in pounds per yield unit from the table for the crop grown X 1.205 K_2O/K X percent (%) dry matter (DM) of harvested crop/100 X planned or measured yield per yield unit

The following table shows the crops that may be grown on this farm:

				Nutrient Removal (lb/yield unit)		
FRUIT OR VEGETABLES	**Yield Unit**	**lb/Unit**	**% DM**	**N**	**P**	**K**
Beans, dry edible	cwt	100	100	3.13	0.45	0.85
Caneberries	ton	2000	100	11.43	7.42	11.43
Corn, Sweet	ton	2000	100	17.80	4.8	11.6
Mixed Vegetables & Fruit	ton	2000	100	8.33	2.08	10.20
Onions	cwt	100	100	0.30	0.06	0..22
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	6.60	1.20	10.33

UTILIZATION AREA

GRAIN, SEED OR OIL CROPS	Yield Unit	lb/Unit	% DM	Nutrient Removal (lb/yield unit)		
				N	P	K
Barley	bushels	48	100	0.87	0.16	0.21
Beets, sugar	ton	2000	100	4.00	0.60	2.78
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	10.03	1.08	8.33
Fescue, seed (Fine or Tall)	lb	1	100	0.02	0.00	0.00
Grass Seed	cwt	100	100	1.60	0.20	0.40
Grass Seed, Straw Removed	ton	2000	100	33.90	5.50	34.40
Oats, grain	bushels	32	100	0.62	0.11	0.16
Orchardgrass seed	lb	1	100	0.016	0.002	0.004
Pumpkins	ton	2000	100	4.00	1.40	6.60
Red Clover seed	lb	1	100	0.05	0.01	0.02
Ryegrass Seed	cwt	100	100	1.60	0.20	0.40
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, Soft White Straw Removed	ton	2000	100	83.40	17.10	37.10

UTILIZATION AREA

HAY AND PASTURE CROPS	Yield Unit	lb/Unit	% DM	Nutrient Removal (lb/yield unit) N	P	K
Alfalfa, Hay	ton	2000	100	64.00	8.00	42.00
Alta Fescue Hay/Pasture	ton	2000	100	33.00	6.90	37.60
Grass Legume Hay/Pasture	ton	2000	100	33.90	5.50	34.40
Meadow Fescue Hay/Pasture	ton	2000	100	41.60	8.80	47.40
Oats Hay/Pasture	ton	2000	100	60.00	10.20	14.80
Orchardgrass Hay/Pasture	ton	2000	100	53.20	8.60	18.60
Perennial Hay/Pasture (Low Intensity)	ton	2000	100	32.00	6.00	38.00
Perennial Hay/Pasture (Low-Med Intensity)	ton	2000	100	38.00	6.00	38.00
Perennial Hay/Pasture (Medium Intensity)	ton	2000	100	48.00	7.00	38.00
Perennial Hay/Pasture (Med- High Intensity)	ton	2000	100	58.00	8.00	40.00
Perennial Hay/Pasture (High Intensity)	ton	2000	100	64.00	8.00	40.00
Ryegrass Hay	ton	2000	100	33.40	5.40	28.40
Ryegrass, Perennial Pasture	ton	2000	100	58.00	8.00	48.00
Tall Fescue Hay/Pasture	ton	2000	100	39.40	4.00	40.00

SILAGE AND HAYLAGE CROPS	Yield Unit	lb/Unit	% DM	Nutrient Removal (lb/yield unit) N	P	K
Corn for Silage	ton	2000	100	25.00	4.00	20.00
Crimson Clover forage	ton	2000	100	40.00	4.41	32.98
Field Pea, Forage	ton	2000	100	73.60	8.00	18.00
Oat haylage	ton	2000	100	60.00	10.20	14.80
Oats & Peas/ Green Beans	ton	2000	100	32.03	5.58	18.65
Red Clover forage	ton	2000	100	40.00	4.41	32.98
Ryegrass Haylage	ton	2000	100	50.00	8.00	42.67
Sorghum-Sudan Haylage	ton	2000	100	54.33	6.33	58.00
Triticale Haylage	ton	2000	100	49.00	6.80	11.40
Wheatgrass Hay/Pasture	ton	2000	100	28.40	5.40	53.60

UTILIZATION AREA

OTHER CROPS	Yield Unit	lb/Unit	% DM	Nutrient Removal (lb/yield unit)		
				N	P	K
Hops, Cones	bale	200	100	9.00	0.96	5.00
Natural Area (Trees and Grass)	ton	2000	100	10.52	1.56	9.20
Nursery Stock	ton	2000	100	8.33	2.08	10.20

UTILIZATION AREA

SOLID MANURE APPLICATION CHART

Test Date: 2 Yr Average
Type: Solids Storage

MANURE ANALYSIS
(As received lb/ton)

Total N	P_2O_5	K_2O
10.40	2.90	9.40

Manure Nutrient Content

Manure Applied	Thickness to apply	Total N	P_2O_5	K_2O
(T/A)	(in)	(lb/A)	(lb/A)	(lb/A)
1.00	0.013	10	3	9
1.50	0.020	16	4	14
2.00	0.026	21	6	19
2.50	0.033	26	7	24
3.00	0.039	31	9	28
3.50	0.046	36	10	33
4.00	0.052	42	12	38
4.50	0.059	47	13	42
5.00	0.066	52	15	47
5.50	0.072	57	16	52
6.00	0.079	62	17	56
6.50	0.085	68	19	61
7.00	0.092	73	20	66
7.50	0.098	78	22	71
8.00	0.105	83	23	75
8.50	0.111	88	25	80
9.00	0.118	94	26	85
9.50	0.124	99	28	89
10.00	0.131	104	29	94
10.50	0.138	109	30	99

LIQUID MANURE APPLICATION CHART

Test Date: 5 Yr Average
Location: Storage Tanks

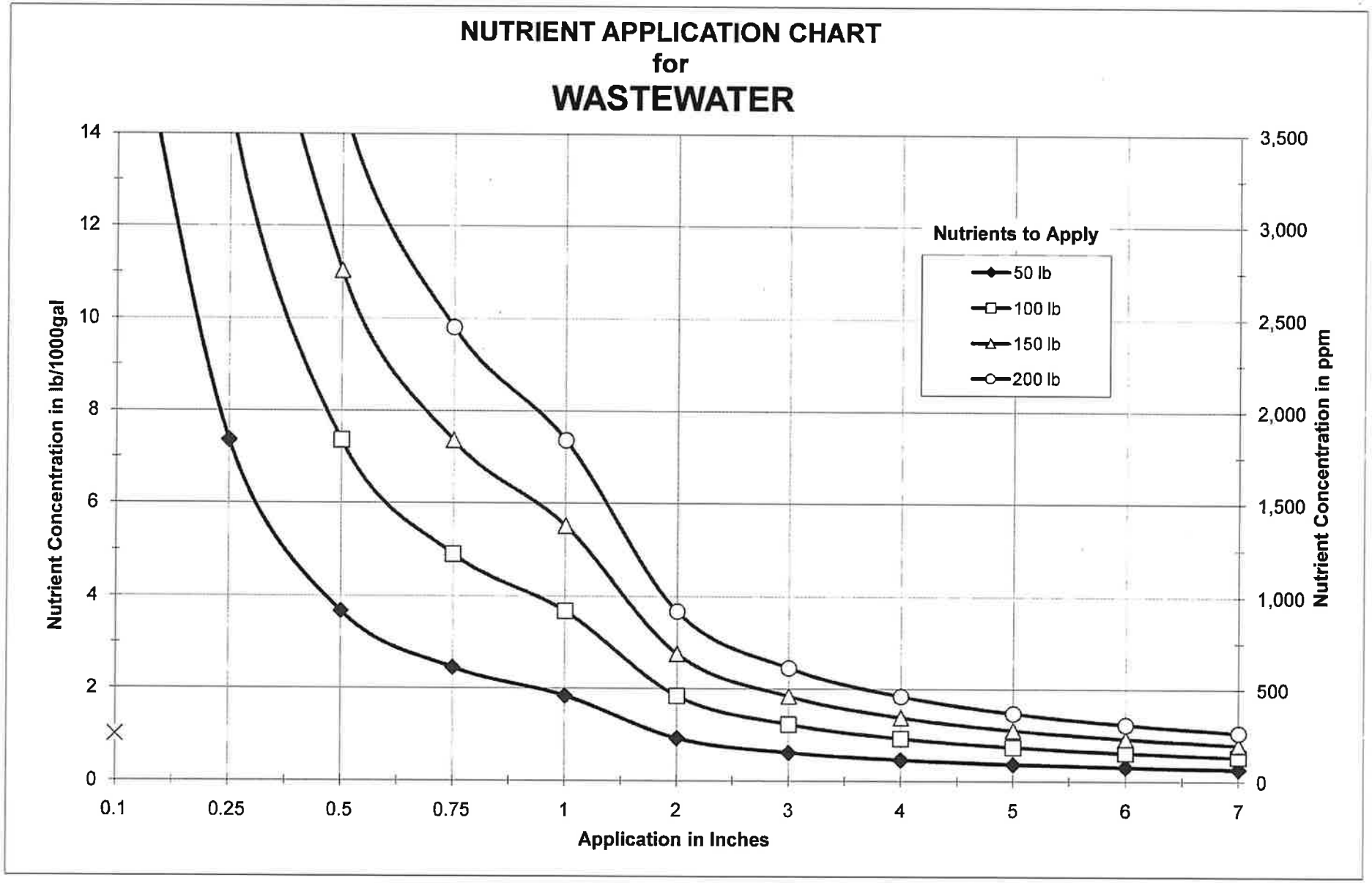
MANURE ANALYSIS
(As received lb/1000 gal)

Total N	P_2O_5	K_2O
15.90	6.50	18.80

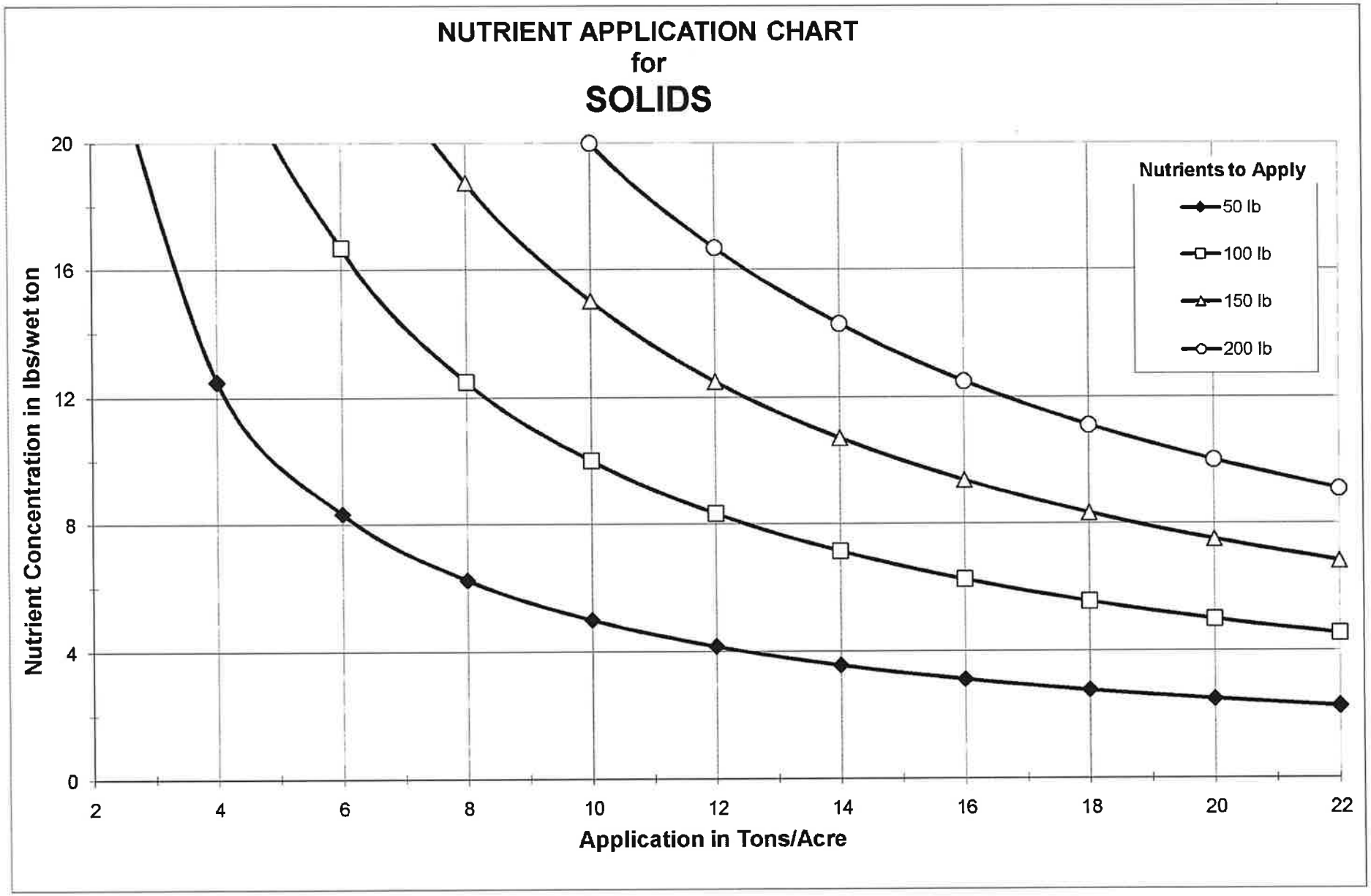
Manure Nutrient Content

Manure Applied	Thickness to apply	Total N	P_2O_5	K_2O
(gallons)	(inch)	(lb/A)	(lb/A)	(lb/A)
2,715	0.10	43	18	51
5,431	0.20	86	35	102
8,146	0.30	130	53	153
10,862	0.40	173	71	204
13,577	0.50	216	88	255
16,292	0.60	259	106	306
19,008	0.70	302	124	357
21,723	0.80	345	141	408
24,439	0.90	389	159	459
27,154	**1.00**	**432**	**177**	**510**
29,869	1.10	475	194	562
32,585	1.20	518	212	613
35,300	1.30	561	229	664
38,016	1.40	604	247	715
40,731	1.50	648	265	766
43,446	1.60	691	282	817
46,162	1.70	734	300	868
48,877	1.80	777	318	919
51,593	1.90	820	335	970
54,308	2.00	863	353	1021

UTILIZATION AREA



UTILIZATION AREA

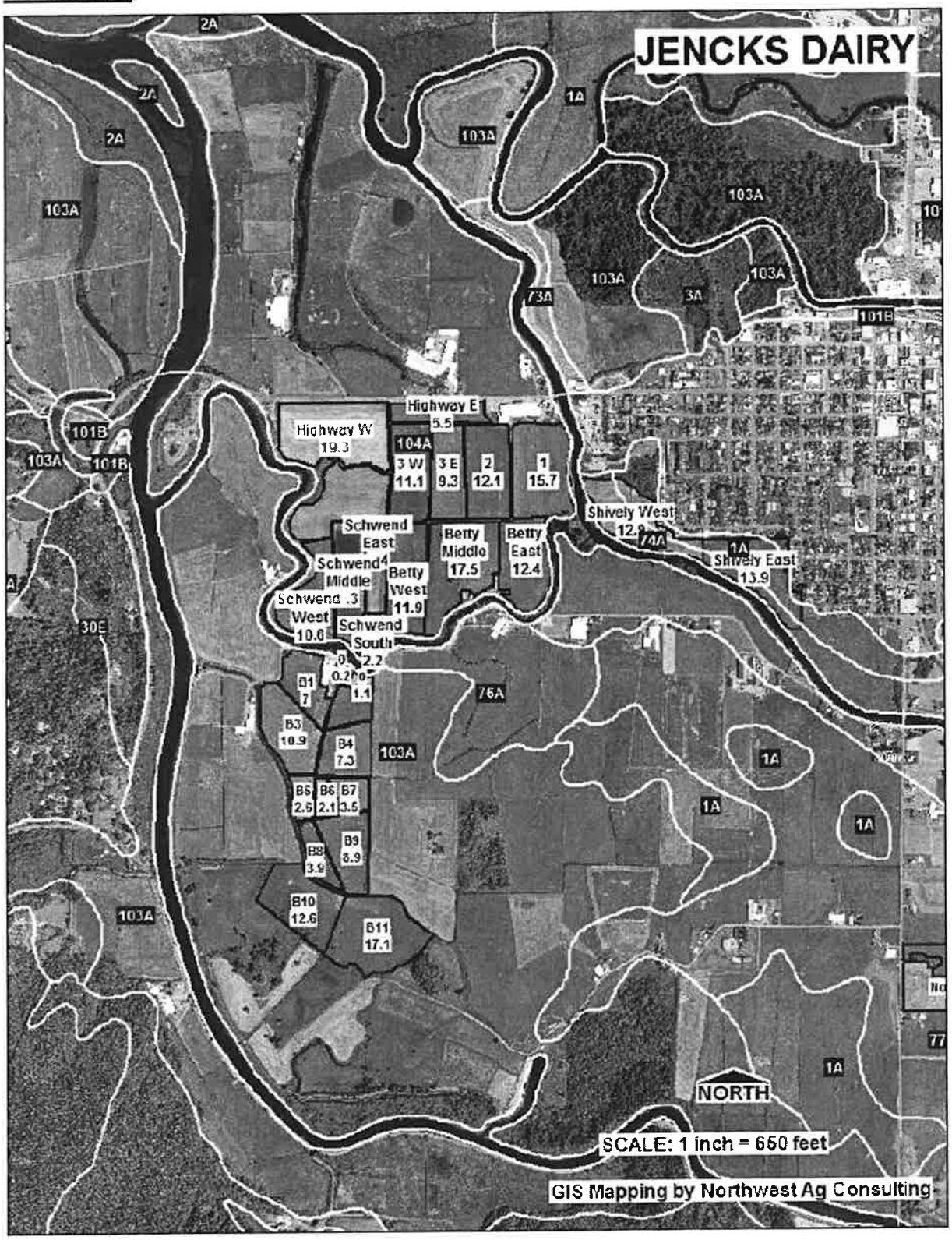


UTILIZATION AREA


JENCKS DAIRY
Soil Map
Highway E
5.5
Highway W
19.3
3 W
11.1
3 E
9.3
2
12.1
1
15.7
Island
13.7
Shively West
12.9
Shively East
13.9
Schwend East
Schwend Middle
Schwend West
Schwend South
Betty Middle
17.5
Betty West
11.9
Bb
Ba
1.1
B1
7
B2
4.2
B3
10.9
B4
7.3
B5
2.6
B6
2.1
B7
3.5
B8
3.9
B9
8.9
B10
12.6
B11
17.1
Norberg N
9.3
Norberg S
13.5
103A
101B
104A
73A
3A
95B
76A
74A
77A
1A
1B
2A
NORTH
SCALE: 1 inch = 1350 feet
GIS Mapping by Northwest Ag Consulting

SOIL AND RISK ASSESSMENT

SOIL MAP(S)

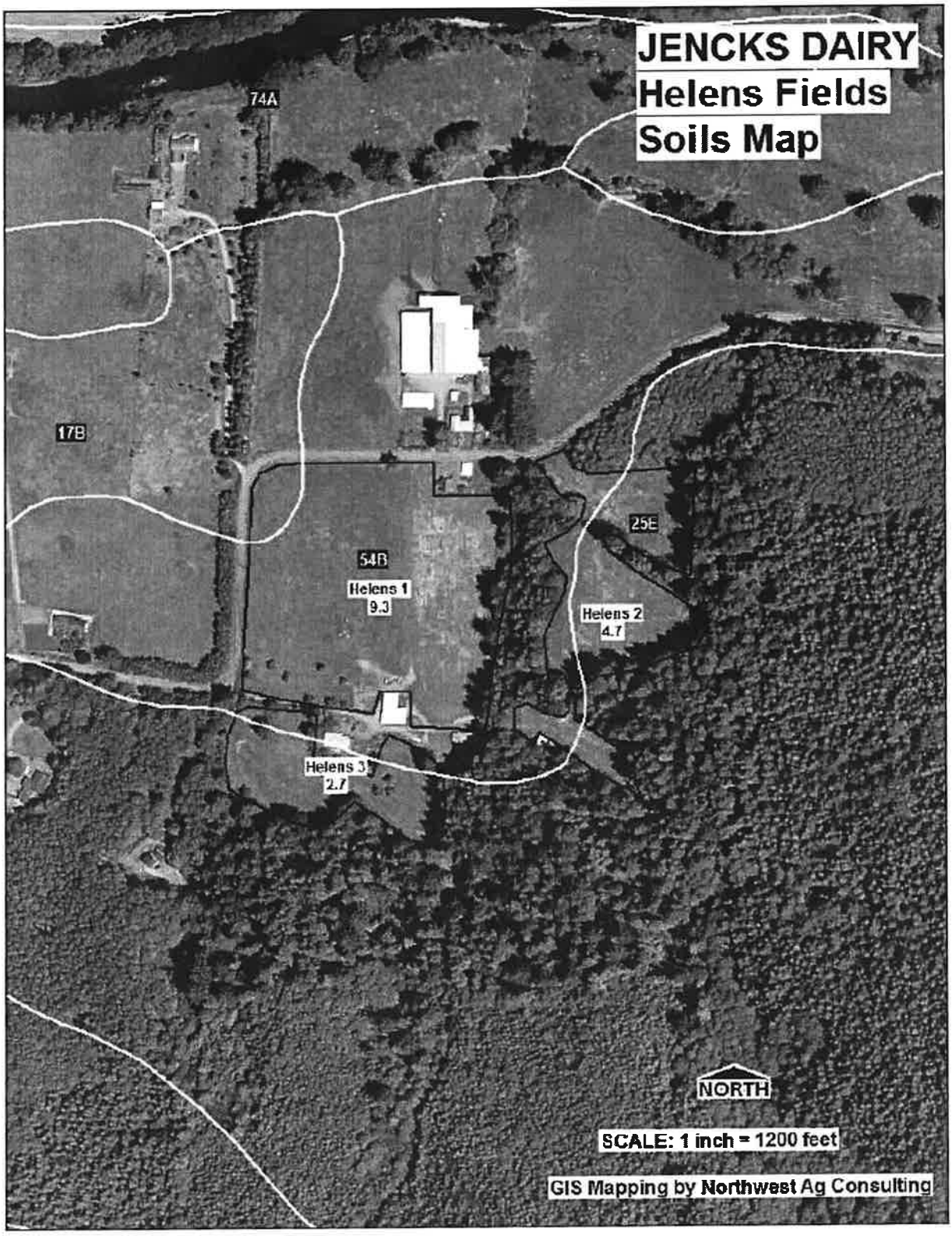


SOIL AND RISK ASSESSMENT

Map Unit Legend

Tillamook County, Oregon (OR057)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1A	Brenner silt loam, 0 to 1 percent slopes	12.2	3.4%
74A	Nehalem silt loam, 0 to 3 percent slopes	35.2	9.9%
76A	Nestucca silt loam, 0 to 3 percent slopes	0.7	0.2%
77A	Nestucca-Brenner silt loams, 0 to 3 percent slopes	9.7	2.7%
95B	Urban land-Quillamook complex, 0 to 7 percent slopes	2.5	0.7%
103A	Coquille silt loam, 0 to 1 percent slopes, diked	90.0	24.7%
104A	Coquille-Brenner-Nehalem association, 0 to 3 percent slopes, protected	181.5	49.9%
W	Water	31.3	8.6%
Totals for Area of Interest		363.9	100.0%

SOIL AND RISK ASSESSMENT



SOIL AND RISK ASSESSMENT

Map Unit Legend

Tillamook County, Oregon (OR057)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
17B	Chitwood-Hebo complex, 0 to 5 percent slopes	0.5	1.8%
25E	Lebam-Nesanicum complex, 30 to 60 percent slopes	12.8	44.3%
54B	Knappa medial silt loam, 0 to 7 percent slopes	15.6	53.9%
Totals for Area of Interest		28.9	100.0%

SOIL AND RISK ASSESSMENT

SOIL REPORTS

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

Tillamook County, Oregon

Map Unit: 1A—Brenner silt loam, 0 to 1 percent slopes

Component: Brenner (85%)

The Brenner component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains, river valleys. The parent material consists of alluvium derived from igneous and sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, November, December. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria.

Map Unit: 17B—Chitwood-Hebo complex, 0 to 5 percent slopes

Component: Chitwood (50%)

The Chitwood component makes up 50 percent of the map unit. Slopes are 0 to 5 percent. This component is on fluviomarine terraces, stream terraces, river valleys. The parent material consists of mixed alluvium and/or fluviomarine deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 11 inches during January, February, December. Organic matter content in the surface horizon is about 9 percent. Nonirrigated land capability classification is 3e. This soil does not meet hydric criteria.

SOIL AND RISK ASSESSMENT

Component: Hebo (35%)

The Hebo component makes up 35 percent of the map unit. Slopes are 0 to 5 percent. This component is on depressions on stream terraces, drainageways on fluviomarine terraces, river valleys. The parent material consists of mixed alluvium and/or fluviomarine deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 9 percent. Nonirrigated land capability classification is 4e. This soil meets hydric criteria.

Map Unit: 25E—Lebam-Necanicum complex, 30 to 60 percent slopes

Component: Lebam (60%)

The Lebam component makes up 60 percent of the map unit. Slopes are 30 to 60 percent. This component is on mountains, mountain slopes. The parent material consists of colluvium and residuum derived from tuffaceous sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Necanicum (20%)

The Necanicum component makes up 20 percent of the map unit. Slopes are 30 to 60 percent. This component is on mountains, mountain slopes. The parent material consists of colluvium derived from igneous rock and tuff. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 75 percent. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Map Unit: 54B—Knappa medial silt loam, 0 to 7 percent slopes

Component: Knappa (85%)

The Knappa component makes up 85 percent of the map unit. Slopes are 0 to 7 percent. This component is on stream terraces, fluviomarine terraces, river valleys. The parent material consists of mixed alluvium and/or fluviomarine deposits derived from sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink- swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 9 percent. Nonirrigated land capability classification is 2e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component: Hebo (3%)

Generated brief soil descriptions are created for major components. The Hebo soil is a minor component.

Component: Croquib (2%)

Generated brief soil descriptions are created for major components. The Croquib soil is a minor component.

SOIL AND RISK ASSESSMENT

Map Unit: 74A—Nehalem silt loam, 0 to 3 percent slopes

Component: Nehalem (80%)

The Nehalem component makes up 80 percent of the map unit. Slopes are 0 to 3 percent. This component is on flood plains, river valleys. The parent material consists of alluvium derived from igneous and sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is frequently flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 2w. Irrigated land capability classification is 2w. This soil does not meet hydric criteria.

Component: Brenner (3%)

Generated brief soil descriptions are created for major components. The Brenner soil is a minor component.

Map Unit: 76A—Nestucca silt loam, 0 to 3 percent slopes

Component: Nestucca (90%)

The Nestucca component makes up 90 percent of the map unit. Slopes are 0 to 3 percent. This component is on flood plains, river valleys. The parent material consists of alluvium derived from igneous and sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 14 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 3w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria.

Component: Brenner (5%)

Generated brief soil descriptions are created for major components. The Brenner soil is a minor component.

Map Unit: 77A—Nestucca-Brenner silt loams, 0 to 3 percent slopes

Component: Nestucca (55%)

The Nestucca component makes up 55 percent of the map unit. Slopes are 0 to 3 percent. This component is on flood plains, river valleys. The parent material consists of alluvium derived from igneous and sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is not ponded. A seasonal zone of water saturation is at 14 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 3w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria.

Component: Brenner (40%)

The Brenner component makes up 40 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains, river valleys. The parent material consists of alluvium derived from igneous and sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is

poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, November, December. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria.

Map Unit: 95B—Urban land-Quillamook complex, 0 to 7 percent slopes

Component: Urban land (55%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Quillamook (30%)

The Quillamook component makes up 30 percent of the map unit. Slopes are 0 to 7 percent. This component is on stream terraces, river valleys. The parent material consists of silty alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very high. Shrink- swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 17 percent. Nonirrigated land capability classification is 2e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component: Hebo (5%)

Generated brief soil descriptions are created for major components. The Hebo soil is a minor component.

Map Unit: 103A—Coquille silt loam, 0 to 1 percent slopes, diked

Component: Coquille, diked (85%)

The Coquille, diked component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes, lowlands. The parent material consists of estuarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, December. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 4w. Irrigated land capability classification is 4w. This soil meets hydric criteria.

Component: Histosols (10%)

Generated brief soil descriptions are created for major components. The Histosols soil is a minor component.

Component: Brenner (5%)

Generated brief soil descriptions are created for major components. The Brenner soil is a minor component.

SOIL AND RISK ASSESSMENT

Map Unit: 104A—Coquille-Brenner-Nehalem association, 0 to 3 percent slopes, protected

Component: Coquille, protected (50%)

The Coquille, protected component makes up 50 percent of the map unit. Slopes are 0 to 1 percent. This component is on estuaries, lowlands. The parent material consists of estuarine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is rarely flooded. It is frequently ponded. A seasonal zone of water saturation is at 14 inches during January, February, December. Organic matter content in the surface horizon is about 7 percent. Nonirrigated land capability classification is 4w. Irrigated land capability classification is 4w. This soil meets hydric criteria.

Component: Brenner, protected (30%)

The Brenner, protected component makes up 30 percent of the map unit. Slopes are 0 to 1 percent. This component is on lowlands, flood plains. The parent material consists of alluvium derived from igneous and sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is frequently ponded. A seasonal zone of water saturation is at
14 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 3w. Irrigated land capability classification is 3w. This soil meets hydric criteria.

Component: Nehalem, protected (15%)

The Nehalem, protected component makes up 15 percent of the map unit. Slopes are 0 to 3 percent. This component is on flood plains, lowlands. The parent material consists of alluvium derived from igneous and sedimentary rock. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 8 percent. Nonirrigated land capability classification is 2w. Irrigated land capability classification is 2w. This soil does not meet hydric criteria.

Map Unit: W—Water

Component: Water (100%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Data Source Information

Soil Survey Area:	Tillamook County, Oregon
Survey Area Data:	Version 4, Sep 14, 2012

SOIL AND RISK ASSESSMENT

SOIL AND RISK ASSESSMENT

PREDICTED SOIL EROSION

USDA NRCS Natural Resources Conservation Service

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	*Tract #*	*Field name*
Jenck Farm LLC	**33, 174**	**1, 2, 3E, 3W, Ba, Bb,B1-B11,Betty East, Betty Middle, Betty West, Highway E, Highway W, Schwend South, Island, Schwend E, Schwend Middle, Schwend West**

Location	*Soil*	*T value, t/ac/yr*	*Slope length (horiz), ft*	*Avg. slope steepness, %*
Oregon\Tillamook County\OR_Tillamook_R80-90	104A Coquille-Brenner-Nehalem association, 0 to 3 percent slopes, protected\Coquille silt loam 50%	5.0	900	1.0

Alternatives:

Description	*Management*	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss*	*Soil conditioning index (SCI)*	*STIR value*	*Wind & irrigation-induced erosion for SCI, t/ac/yr*	*Equiv. diesel use, gal/ac*	*Energy use, BTU/ac*	*Fuel cost, US$/ac*
Erosion on Pasture	a.Single Year/Single Crop Templates\Pasture, yr1 fall plant; manure appl., Z71	a. rows up-and-down hill	(none)	(none)	0.49	1.0	94.9	0	15	2000000	44

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

SOIL AND RISK ASSESSMENT

USDA NRCS Natural Resources Conservation Service

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	*Tract #*	*Field name*
Jenck Farm LLC	**33, 174**	**Norberg N, Shively West**

Location	*Soil*	*T value, t/ac/yr*	*Slope length (horiz), ft*	*Avg. slope steepness, %*
Oregon\Tillamook County\OR_Tillamook_R80-90	74A Nehalem silt loam, 0 to 3 percent slopes\Nehalem silt loam 80%	5.0	900	3.0

Alternatives:

Description	*Management*	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss*	*Soil conditioning index (SCI)*	*STIR value*	*Wind & irrigation-induced erosion for SCI, t/ac/yr*	*Equiv. diesel use, gal/ac*	*Energy use, BTU/ac*	*Fuel cost, US$/ac*
Erosion on Pasture	a.Single Year/Single Crop Templates\Pasture, yr1 fall plant; manure appl., Z71	a. rows up-and-down hill	(none)	(none)	1.5	0.9	94.9	0	15	2000000	44

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

SOIL AND RISK ASSESSMENT

USDA NRCS Natural Resources Conservation Service

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	*Tract #*	*Field name*
Jenck Farm LLC	**33, 174**	**Norberg S**

Location	*Soil*	*T value, t/ac/yr*	*Slope length (horiz), ft*	*Avg. slope steepness, %*
Oregon\Tillamook County\OR_Tillamook_R80-90	77A Nestucca-Brenner silt loams, 0 to 3 percent slopes\Nestucca silt loam 55%	5.0	900	3.0

Alternatives:

Description	*Management*	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss*	*Soil conditioning index (SCI)*	*STIR value*	*Wind & irrigation-induced erosion for SCI, t/ac/yr*	*Equiv. diesel use, gal/ac*	*Energy use, BTU/ac*	*Fuel cost, US$/ac*
Erosion on Pasture	a.Single Year/Single Crop Templates\Pasture, yr1 fall plant; manure appl., Z71	a. rows up-and-down hill	(none)	(none)	1.2	0.9	94.9	0	15	2000000	44

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

SOIL AND RISK ASSESSMENT

USDA NRCS Natural Resources Conservation Service

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	*Tract #*	*Field name*
Jenck Farm LLC	**33, 174**	**Shively East**

Location	*Soil*	*T value, t/ac/yr*	*Slope length (horiz), ft*	*Avg. slope steepness, %*
Oregon\Tillamook County\OR_Tillamook_R80-90	1A Brenner silt loam, 0 to 1 percent slopes\Brenner silt loam 85%	5.0	900	1.0

Alternatives:

Description	*Management*	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss*	*Soil conditioning index (SCI)*	*STIR value*	*Wind & irrigation-induced erosion for SCI, t/ac/yr*	*Equiv. diesel use, gal/ac*	*Energy use, BTU/ac*	*Fuel cost, US$/ac*
Erosion on Pasture	a.Single Year/Single Crop Templates\Pasture, yr1 fall plant; manure appl., Z71	a. rows up-and-down hill	(none)	(none)	0.50	1.0	94.9	0	15	2000000	44

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

SOIL AND RISK ASSESSMENT

USDA NRCS Natural Resources Conservation Service

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	Tract #	Field name
Jenck Farm LLC	Unkown	Helens 1

Location	Soil	T value, t/ac/yr	Slope length (horiz), ft	Avg. slope steepness, %
Oregon\Tillamook County\OR_Tillamook_R80-90	54B Knappa medial silt loam, 0 to 7 percent slopes\Knappa medial silt loam 85%	5.0	800	7.0

Alternatives:

Description	Management	Contouring	Strips / barriers	Diversion/terrace, sediment basin	Cons. plan. soil loss	Soil conditioning index (SCI)	STIR value	Wind & irrigation-induced erosion for SCI, t/ac/yr	Equiv. diesel use, gal/ac	Energy use, BTU/ac	Fuel cost, US$/ac
Erosion on Pasture	a.Single Year/Single Crop Templates\Pasture, yr1 fall plant; manure appl., Z71	a. rows up-and-down hill	(none)	(none)	4.2	0.7	94.9	0	15	2000000	44

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

SOIL AND RISK ASSESSMENT

USDA NRCS Natural Resources Conservation Service

RUSLE2 Worksheet Erosion Calculation Record

Info:

Owner name	*Tract #*	*Field name*
Jenck Farm LLC	**Unkown**	**Helens 2 & 3**

Location	*Soil*	*T value, t/ac/yr*	*Slope length (horiz), ft*	*Avg. slope steepness, %*
Oregon\Tillamook County\OR_Tillamook_R80-90	25E Lebam-Necanicum complex, 30 to 60 percent slopes\Lebam slightly decomposed plant material 60%	5.0	290	10

Alternatives:

Description	*Management*	*Contouring*	*Strips / barriers*	*Diversion/terrace, sediment basin*	*Cons. plan. soil loss*	*Soil conditioning index (SCI)*	*STIR value*	*Wind & irrigation-induced erosion for SCI, t/ac/yr*	*Equiv. diesel use, gal/ac*	*Energy use, BTU/ac*	*Fuel cost, US$/ac*
Erosion on Pasture	a.Single Year/Single Crop Templates\Pasture, yr1 fall plant; manure appl., Z71	a. rows up-and-down hill	(none)	(none)	4.3	1	94.9	0	15	2000000	44

The **SCI** is the **Soil Conditioning Index** rating. If the calculated index is a negative value, soil organic matter levels are predicted to decline under that production system. If the index is a positive value, soil organic matter levels are predicted to increase under that system.

The **STIR** value is the **Soil Tillage Intensity Rating**. It utilizes the speed, depth, surface disturbance percent and tillage type parameters to calculate a tillage intensity rating for the system used in growing a crop or a rotation. STIR ratings tend to show the differences in the degree of soil disturbance between systems. The kind, severity and number of ground disturbing passes are evaluated for the entire cropping rotation as shown in the management description.

SOIL AND RISK ASSESSMENT

OREGON PHOSPHORUS INDEX (WEST)

FIELD SUMMARY & P INDEX

Enter data in gray cells and select best choice from drop down menus.
Cells with blue font are completed automatically.

Grower:	Jenck Farm LLC
Application Plan by:	Tom Thomson
Date:	May 24, 2013

	Field	Acres	Soil	Soil test date	Bray 1 P (ppm)	Acetate K (ppm)	pH	SMP	TRANSPORT FACTORS	Sheet & rill erosion (tons/ac-yr)	Irrigation erosion (tons/ac-yr)	Runoff Class	Flooding Frequency	Distance to stream (ft)	Buffers	Drainage	SOURCE FACTORS	Commercial P2O5 rate (lbs/ac)	Commercial P2O5 method	Commercial P2O5 timing	Organic P2O5 rate (lbs/ac)	Organic P2O5 method	Organic P2O5 timing	SCORE	P RUNOFF RISK RATING
	1	15.7	104A, Coquille	2011	56	1,494	6.6	6.5		<1	no irrig. runoff	medium	frequent	<100 ft	> 30 ft or NRCS spec.	no tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	18.6	Medium
	2	12.1	104A, Coquille	2011	41	1,567	6.4	6.4		<1	no irrig. runoff	medium	frequent	<100 ft	> 30 ft or NRCS spec.	no tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	17.1	Medium
	3E, 3W	20.5	104A, Coquille	2012	35	1,222	5.9	6		<1	no irrig. runoff	medium	frequent	<100 ft	> 30 ft or NRCS spec.	no tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	16.5	Medium
	B1-B4	28.4	103A, COQUILLE	2011	57	1,695	6.4	6.3		<1	no irrig. runoff	low	rare	<100 ft	> 30 ft or NRCS spec.	no tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	15.4	Medium
	B5-B7	8.4	103A, COQUILLE	2011	50	1,617	6.6	6.4		<1	no irrig. runoff	low	rare	<100 ft	> 30 ft or NRCS spec.	no tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	14.7	Medium
	B8, B9, Ba, Bb	13.1	103A, COQUILLE	2011	25	500	6	6		<1	no irrig. runoff	low	rare	<100 ft	> 30 ft or NRCS spec.	no tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	12.2	Low
	B10, B11	29.7	103A, COQUILLE	2012	23	786	4.6	5.2		<1	no irrig. runoff	low	rare	<100 ft	> 30 ft or NRCS spec.	no tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	12.0	Low
	Betty East	12.4	104A, Coquille	2013	15	768	5.7	5.9		<1	no irrig. runoff	medium	frequent	<100 ft	> 30 ft or NRCS spec.	tiles		0	None applied	None applied	161	Not incorp. in 5 days	All months possible	15.0	Medium

SOIL AND RISK ASSESSMENT

FIELD SUMMARY & P INDEX

Enter data in gray cells and select best choice from drop down menus.
Cells with blue font are completed automatically.

Grower:	Jenck Farm LLC
Application Plan by:	Tom Thomson
Date:	May 24, 2013

Field	Betty Middle	Betty West	Helens 1	Helens 2 &3	Highway E	Highway W	Schwend South	Island
Acres	17.5	11.9	9.3	7.4	5.6	19.3	2.2	13.7
Soil	104A, Coquille	104A, Coquille	54B, KNAPPA	25E, Lebam	104A, Coquille	104A, Coquille	104A, Coquille	104A, Coquille
Soil test date	2013	2013	2010	2010	2010	2010	2011	2013
Bray 1 P (ppm)	18	28	58	58	36	37	18	38
Acetate K (ppm)	770	1,558	890	890	1,389	763	1,060	1,500
pH	6.4	6.3	5.9	5.9	6.5	6.4	6	6.7
SMP	6.5	6.5	6.2	6.2	6.6	6.6	6	6.5
TRANSPORT FACTORS								
Sheet & rill erosion (tons/ac-yr)	<1	<1	4-6	4-6	<1	<1	<1	<1
Irrigation erosion (tons/ac-yr)	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff
Runoff Class	medium	medium	low	medium	medium	medium	medium	medium
Flooding Frequency	frequent	frequent	none	none	frequent	frequent	frequent	frequent
Distance to stream (ft)	<100 ft	<100 ft	>500 ft	>500 ft	>500 ft	<100 ft	<100 ft	<100 ft
Buffers	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.
Drainage	no tiles	no tiles	no tiles	no tiles	no tiles	no tiles	no tiles	no tiles
SOURCE FACTORS								
Commercial P2O5 rate (lbs/ac)	0	0	0	0	0	0	0	0
Commercial P2O5 method	None applied	None applied	None applied	None applied	None applied	None applied	None applied	None applied
Commercial P2O5 timing	None applied	None applied	None applied	None applied	None applied	None applied	None applied	None applied
Organic P2O5 rate (lbs/ac)	161	161	161	161	161	161	161	161
Organic P2O5 method	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days
Organic P2O5 timing	All months possible	All months possible	All months possible	All months possible	All months possible	All months possible	All months possible	All months possible
SCORE	14.8	15.8	17.8	18.8	16.6	16.7	14.0	16.8
P RUNOFF RISK RATING	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium

SOIL AND RISK ASSESSMENT

FIELD SUMMARY & P INDEX

Enter data in gray cells and select best choice from drop down menus.
Cells with blue font are completed automatically.

Grower: Jenck Farm LLC
Application Plan by: Tom Thomson
Date: May 24, 2013

	Field	Norberg N	Norberg S	Schwend E	Schwend Middle	Schwend West	Shively East	Shively West	
	Acres	9.4	13.5	5.4	9.3	10.6	14	12.9	
	Soil	74A, Nehalem	77A, Nestucca	104A, Coquille	104A, Coquille	104A, Coquille	1A, BRENNER	74A, Nehalem	
	Soil test date	2011	2011	2013	2011	2011	2011	2011	
	Bray 1 P (ppm)	15	15	10	28	14	21	21	
	Acetate K (ppm)	827	827	1,000	1,067	1,339	800	800	
	pH	6	6	6	6.1	6.1	6.5	6.5	
	SMP	5.9	5.9	6	6.2	6	6.4	6.4	
TRANSPORT FACTORS									
	Sheet & rill erosion (tons/ac-yr)	1-3	1-3	<1	<1	<1	<1	1-3	<1
	Irrigation erosion (tons/ac-yr)	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irrig. runoff	no irlg. runoff	no irrig. runoff
	Runoff Class	low	medium	medium	medium	medium	medium	low	none
	Flooding Frequency	occasional	frequent	frequent	frequent	frequent	frequent	occasional	none
	Distance to stream (ft)	<100 ft	<100 ft	<100 ft	<100 ft	<100 ft	<100 ft	<100 ft	>500 ft
	Buffers	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.	> 30 ft or NRCS spec.
	Drainage	no tiles	no tiles	no tiles	no tiles	no tiles	no tiles	no tiles	no tiles
SOURCE FACTORS									
	Commercial P2O5 rate (lbs/ac)	0	0	0	0	0	0	0	0
	Commercial P2O5 method	None applied	None applied	None applied	None applied	None applied	Not incorp. in 5 days	None applied	None applied
	Commercial P2O5 timing	None applied	None applied	None applied	None applied	None applied	All months possible	None applied	None applied
	Organic P2O5 rate (lbs/ac)	161	161	161	161	161	161	161	0
	Organic P2O5 method	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	Not incorp. in 5 days	None applied
	Organic P2O5 timing	All months possible	All months possible	All months possible	All months possible	All months possible	All months possible	All months possible	None applied
SCORE		13.5	16.0	14.0	15.8	14.4	23.1	14.1	8.8
P RUNOFF RISK RATING		Medium	Medium	Medium	Medium	Medium	Medium	Medium	Low

SOIL AND RISK ASSESSMENT

SOIL AND RISK ASSESSMENT

Oregon Phosphorus Index Risk Interpretation

P Index rating	Interpretation	Recommended Nutrient Limitation
West PI Score<13 East PI Score<30	Low potential for P movement from this site given current management practices and site characteristics. There is a low probability of an adverse impact to surface waters from P losses on this site. Soil test P and P losses are likely to increase in future due to N-based nutrient management from animal manure.	Nitrogen
West PI Score 13-25 East PI Score 30-100	Medium potential for P movement from this site given current management practices and site characteristics. Practices should be introduced to reduce P losses by surface runoff, subsurface flow, and erosion. Soil test P and P losses are likely to increase in future due to N-based nutrient management from animal manure.	Nitrogen
West PI Score >25-50 East PI Score >100-400	High potential for P movement from this site given current management practices and site characteristics. All practicable management practices to reduce P losses through surface runoff, subsurface flow, or erosion should be implemented.	Phosphorus
West PI Score >50 East PI Score >400	Very high potential for P movement from this site given current management practices and site characteristics. Active remediation techniques should be implemented in an effort to reduce the P loss potential from this site.	No manure

SOIL AND RISK ASSESSMENT

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

Version 4.5

7/1 /13

CLIENT: JENCK FARMS LLC

ASSISTED BY: Northwest Ag Consulting - Tom Thomson

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

ANIMAL INVENTORY

Milk Production in Pounds/Cow/Day= 80

Type of Animal	Number of Animals	Average Weight (lbs.)	Animal Units (1,000 lb.)	Nutrient Production (lbs/day/1000 lb. Animal Unit) N	P	K	Nutrient Production (lbs/day) N	P	K	Manure CF/D/AU	Annual Days Confined	Annual Days Grazed	Annual Days Off Farm
MILKER (Holstein)	552	1,300	717.6	0.72	0.13	0.33	516.67	90.27	238.39	1.78	212	153	0
MILKER (DRY)	84	1,400	117.6	0.30	0.04	0.10	35.28	4.94	11.76	0.92	197	169	0
HEIFERS (12-24 Months)	230	970	223.1	0.27	0.05	0.12	59.34	10.15	26.77	0.90	174	191	0
CALVES (1-12 Months)	124	150	18.6	0.42	0.05	0.11	7.81	1.00	2.05	1.34	365	0	0
Totals/Averages>	990	955	1,076.9	0.57	0.10	0.26	619.1	106.4	279.0	1.5			

GRAZING PERIOD

Type of Animal	Percent of Month and Number of Animals Grazing OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	AU-YR.
MILKER (Holstein)	50%	0%	0%	0%	0%	0%	20%	70%	90%	90%	90%	90%	
	552	552	552	552	552	552	552	552	552	552	552	552	3,588
MILKER (DRY)	50%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	
	84	84	84	84	84	84	84	84	84	84	84	84	647
HEIFERS (12-24 Months)	50%	0%	0%	0%	0%	25%	50%	100%	100%	100%	100%	100%	
	230	230	230	230	230	230	230	230	230	230	230	230	1,394
CALVES (1-12 Months)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	124	124	124	124	124	124	124	124	124	124	124	124	0
													0
													0
													0
													0
													0
													0
Total AUM's Available>	0	0	0	0	0	0	0	0	0	0	0	0	0
Total AUM's Needed>>>	329	0	0	0	0	56	255	843	987	987	987	987	5,629
Total AUM's>>>>>>>>>>	-329	0	0	0	0	-56	-255	-843	-987	-987	-987	-987	-5,629

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

Version 4.5

CLIENT: JENCK FARMS LLC

ASSISTED BY: Northwest Ag Consulting - Tom Thomson

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

WEATHER STATION

TILLAMOOK 1 W

Month	25Yr-24Hr	6.00	Lot Runoff Factors as a Percent of Monthly Precipitation	
	RCN=	95.00		
	Average Monthly Inches			
	Precipitation	Evaporation	Paved	Unpaved
October	7.16	1.42	50%	20%
November	13.71	0.75	60%	25%
December	13.94	0.60	60%	25%
January	13.09	0.48	60%	25%
February	10.79	0.78	50%	25%
March	9.90	1.26	45%	15%
April	6.81	1.90	40%	15%
May	4.84	3.22	40%	10%
June	3.41	3.40	35%	10%
July	1.64	3.91	30%	0%
August	1.42	3.52	40%	10%
September	3.68	2.54	45%	15%
Annual	90.39	23.78		

AREAS CONTRIBUTING RUNOFF TO LIQUID STORAGE FACILITY

Description of Runoff Area	Area In SF
Paved Lot Area >> Is paved lot scraped daily? (Y/N) NO	0
Unpaved Lot Area >>>	0
Roof Area >>>	0
Surface Area of Silage Storage Facility>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> Does Silage Seepage Drain to Storage Facility? (Y/N) YES	6,970
Total Runoff Area Contributing to Liquid Storage Facility>>>>>>>>>>>>>>>	6,970

WATER USE THAT ENTERS LIQUID STORAGE FACILITY

Type of Water Use	Number of Animals	Number of Washes per Day	Gallons of Water Used per Wash-Day	Total Water Use per Day, Gallons	Total Water Use per Day, Cubic Feet
Animal Washwater	552.0	2	1.03	1137	152.0
Equipment Wash		2	100.00	200	26.7
Flushwater		0	0.00	0	0.0
Miscellaneous		2	87.50	175	23.4
Total>>				1512	202.2

CROP DATA

Field Number	Acres	Crop	Percent Dry Matter (DM)	Yield Units	Target Yield	Nutrients Removed in Pounds per Acre: Nitrogen N	Phosphorous P_2O_5	Potassium K_2O
Dairy T174,234	156.0	Perennial Hay/Pasture(Med-High Intensity)	85%	Ton	6.50	320	101	266
Schively T653	26.8	Perennial Hay/Pasture(Med-High Intensity)	85%	Ton	6.50	320	101	266
Blaser T33	80.1	Perennial Hay/Pasture(Med-High Intensity)	85%	Ton	6.50	320	101	266
Norberg T410	22.8	Perennial Hay/Pasture(Med-High Intensity)	85%	Ton	6.50	320	101	266
Off Farm								

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

Version 4.5

CLIENT: JENCK FARMS LLC

ASSISTED BY: Northwest Ag Consulting - Tom Thomson

ANIMAL WASTE MANAGEMENT SYSTEM INVENTORY

BEDDING VOLUME

Type of Animal	Type of Bedding Facility	Bedding Material	Unit Weight Lbs/CF	Amount Needed Lbs/Day/AU	Volume CF/Day/AU	Total Volume CF/Day	Total Weight Lbs/Day
MILKER (Holstein)	Free Stall	Chopped Straw	7.00	2.70	0.39	280	1,938
MILKER (DRY)	Free Stall	Chopped Straw	7.00	2.70	0.39	46	318
HEIFERS (12-24 Months)	Free Stall	Chopped Straw	7.00	2.70	0.39	87	602
CALVES (1-12 Months)	Loose Housing	Chopped Straw	7.00	11.00	1.57	29	205

SOLIDS SEPARATION FACTOR

Type of Animal	Type of Separator	Separation Factor %	Volume of Solids Separated CF/Day	Volume of Solids in Liquids CF/Day	Volume of Manure in Liquids CF/Day	Volume of Manure in Solids CF/Day	Accumulated Sludge in Storage CF/Day	Density of Separated Solids Lbs/CF	Weight of Separated Solids Lbs/Day
MILKER (Holstein)	Dry Scrape System	70%	1,088	466	382	892	221	18	19,584
MILKER (DRY)	Dry Scrape System	100%	154	0	0	108	0	18	2,773
HEIFERS (12-24 Months)	Dry Scrape System	100%	288	0	0	201	0	18	5,180
CALVES (1-12 Months)	Dry Scrape System	100%	54	0	0	25	0	18	974
Total Solids>>			1,584	466	382	1,226	221		28,512

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

Version 4.5

CLIENT: **JENCK FARMS LLC**
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ANIMAL WASTE MANAGEMENT SYSTEM PRODUCTION

MONTHLY VOLUMES

Month	Runoff in Cubic Feet: Roof Area Square Feet 0	Paved Slab Area Square Feet 0	Unpaved Lot Area Square Feet 0	Silage Pit Surface Area, SF 6,970	Facility Water Use Cubic Feet	Manure Solids Cubic Feet	Manure Liquids Cubic Feet	Bedding Cubic Feet	Bedding Pounds	Solids Separated Cubic Feet	Solids Separated Pounds	Solids in Liquids Cubic Feet	Solids in Liquids Pounds	Total Solids Cubic Feet	Total Liquids Cubic Feet
October	0	0	0	2,443	6,267	3,273	22,043	7,303	50,632	25,391	457,039	7,228	130,097	25,391	15,938
November	0	0	0	3,524	6,065	6,252	41,999	13,258	91,860	47,520	855,363	13,989	251,800	47,520	23,577
December	0	0	0	3,636	6,267	6,460	43,399	13,700	94,922	49,104	883,875	14,455	260,193	49,104	24,358
January	0	0	0	3,512	6,267	6,460	43,399	13,700	94,922	49,104	883,875	14,455	260,193	49,104	24,234
February	0	0	0	3,021	5,660	5,835	39,199	12,374	85,736	44,352	798,339	13,056	235,013	44,352	21,738
March	0	0	0	2,474	6,267	6,222	42,081	13,026	90,254	46,874	843,727	14,455	260,193	46,874	23,196
April	0	0	0	2,126	6,065	4,817	32,775	10,274	71,200	36,675	660,151	11,191	201,440	36,675	19,382
May	0	0	0	281	6,267	1,595	11,030	3,508	24,362	11,797	212,338	4,337	78,058	11,797	10,884
June	0	0	0	198	6,065	569	4,002	1,716	11,951	4,888	87,981	1,399	25,180	4,888	7,662
July	0	0	0	0	6,267	588	4,135	1,773	12,349	5,051	90,914	1,446	26,019	5,051	7,712
August	0	0	0	82	6,267	588	4,135	1,773	12,349	5,051	90,914	1,446	26,019	5,051	7,795
September	0	0	0	1,854	6,065	569	4,002	1,716	11,951	4,888	87,981	1,399	25,180	4,888	9,317
Annual	0	0	0	23,152	73,787	43,231	292,198	94,120	652,488	330,694	5,952,499	98,855	1,779,387	330,694	195,794
Annual Gallons	0	0	0	173,177	551,924	323,368	2,185,643	704,018		2,473,594		739,434		2,473,594	1,464,536

DAILY NUTRIENT PRODUCTION

Type of Animal	Pounds/Day of Nutrients from LIQUIDS: N	P_2O_5	K_2O	Pounds/Day of Nutrients from SOLIDS: N	P_2O_5	K_2O	Pounds/Day of Nutrients from GRAZING: N	P_2O_5	K_2O	Grazing Manure Gallons/Yr	Confined Manure Cubic Feet/Yr
MILKER (Holstein)	155.00	62.05	86.18	361.67	144.77	201.08	516.67	206.82	287.26	1,458,540	270,185
MILKER (DRY)	0.00	0.00	0.00	35.28	11.32	14.17	35.28	11.32	14.17	136,363	21,260
HEIFERS (12-24 Months)	0.00	0.00	0.00	59.34	23.26	32.26	59.34	23.26	32.26	287,240	34,887
CALVES (1-12 Months)	0.00	0.00	0.00	7.81	2.30	2.47	0.00	0.00	0.00	0	9,097
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0
									Total-	1,882,143	335,429

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

Version 4.5

CLIENT: **JENCK FARMS LLC**
ASSISTED BY: **Northwest Ag Consulting - Tom Thomson**

ANIMAL WASTE MANAGEMENT SYSTEM PRODUCTION

MONTHLY NUTRIENT PRODUCTION

Month	Pounds of Nutrients from LIQUIDS			Pounds of Nutrients from SOLIDS			Pounds of Nutrients from GRAZING			Pounds of Nutrients going OFF-FARM			Total Pounds of Nutrients from ALL SOURCES		
	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
October	2,403	962	1,336	7,315	2,851	3,913	9,475	3,742	5,172	0	0	0	19,192	7,554	10,421
November	4,650	1,861	2,585	13,923	5,449	7,499	0	0	0	0	0	0	18,573	7,311	10,085
December	4,805	1,923	2,671	14,387	5,631	7,749	0	0	0	0	0	0	19,192	7,554	10,421
January	4,805	1,923	2,671	14,387	5,631	7,749	0	0	0	0	0	0	19,192	7,554	10,421
February	4,340	1,737	2,413	12,995	5,086	6,999	0	0	0	0	0	0	17,335	6,823	9,412
March	4,805	1,923	2,671	13,927	5,451	7,499	460	180	250	0	0	0	19,192	7,554	10,421
April	3,720	1,489	2,068	10,863	4,232	5,809	3,990	1,590	2,207	0	0	0	18,573	7,311	10,085
May	1,442	577	801	3,606	1,418	1,946	14,145	5,560	7,673	0	0	0	19,192	7,554	10,421
June	465	186	259	1,319	503	677	16,789	6,621	9,149	0	0	0	18,573	7,311	10,085
July	481	192	267	1,363	520	700	17,349	6,842	9,454	0	0	0	19,192	7,554	10,421
August	481	192	267	1,363	520	700	17,349	6,842	9,454	0	0	0	19,192	7,554	10,421
September	465	186	259	1,319	503	677	16,789	6,621	9,149	0	0	0	18,573	7,311	10,085
Annual	**32,860**	**13,154**	**18,269**	**96,769**	**37,796**	**51,918**	**96,345**	**37,998**	**52,508**	**0**	**-1**	**0**	**225,975**	**88,946**	**122,696**

OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

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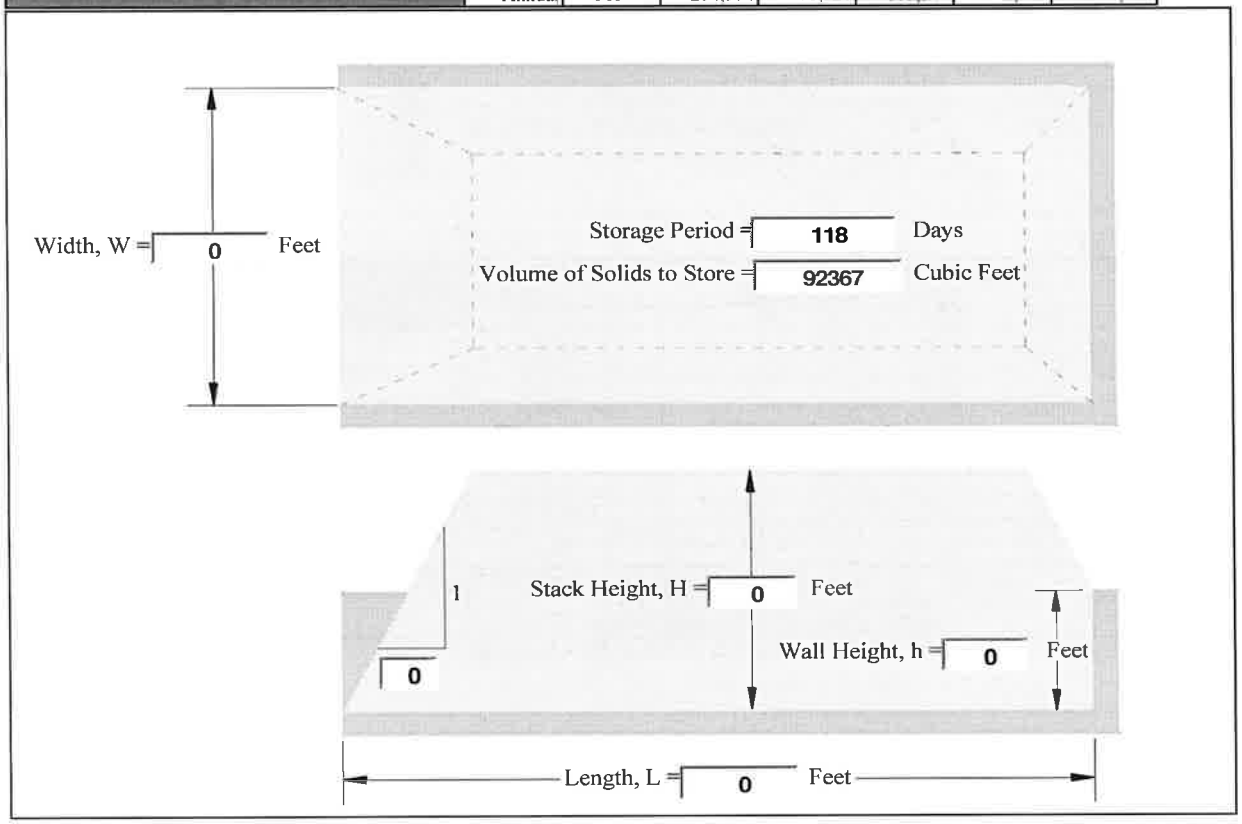
ANIMAL WASTE MANAGEMENT SYSTEM STORAGE

SOLIDS STACKING FACILITY

Solids Storage Facility Parameters	Value
Storage Period, Days=	118
Stacking Width, W in Feet=	0
Stacking Height, H in Feet=	0.00
Wall Height, h in Feet=	0.00
Stack Side Slope (X:1)=	0.00
Existing Storage, Cubic Feet=	92,640
Surface Area of Existing Storage, SF=	15,440
25 Year-24 Hour Storm Runoff, CF=	6,963
Volume Needed, Cubic Feet=	92,367
Design Volume, Cubic Feet=	0
Is Facility Covered?	YES

MONTHLY SOLIDS VOLUME STACKED IN FACILITY

Month	Number of Days	Manure CF	Bedding CF	Solids to Store CF	Solids to Store Tons	Normal Runoff CF
October	31	19390	6,001	12,696	229	1,843
November	30	36781	10,739	23,760	428	4,410
December	31	38007	11,097	24,552	442	4,484
January	31	38007	11,097	24,552	442	4,211
February	28	34329	10,023	22,176	399	3,471
March	31	36451	10,423	23,437	422	1,911
April	30	28416	8,259	18,338	330	1,314
May	31	9069	2,727	5,898	106	623
June	30	3424	1,464	2,444	44	439
July	31	3538	1,513	2,525	45	0
August	31	3538	1,513	2,525	45	183
September	30	3424	1,464	2,444	44	710
Annual	365	254,374	76,321	165,347	2,976	23,597



OREGON ANIMAL WASTE MANAGEMENT DESIGN AID (ORAWM)

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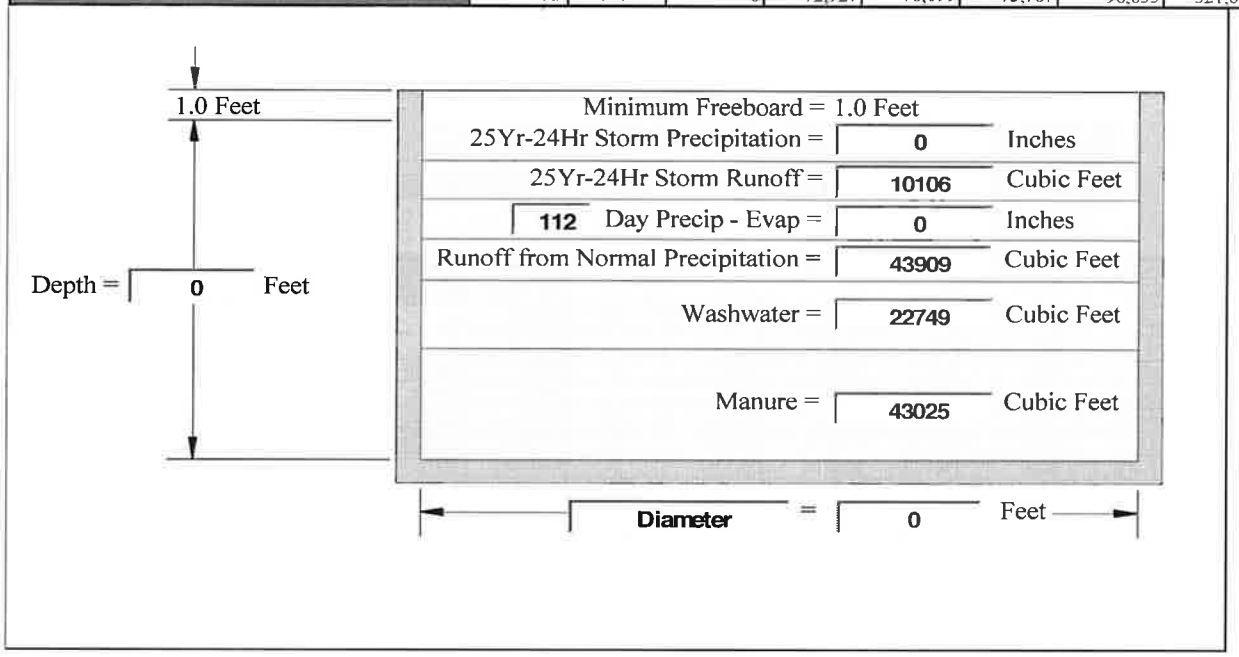
ANIMAL WASTE MANAGEMENT SYSTEM STORAGE

TANK

Tank Parameters	Value
Storage Period, Days=	112
Tank Diameter, Feet=	0
Existing Storage, Cubic Feet=	171,192
Surface Area of Existing Storage, SF=	13,138
25 Year-24 Hour Storm Runoff, CF=	10,106
Volume Needed, Cubic Feet=	171,072
Design Volume, Cubic Feet=	0
Is Tank Covered?	YES
Tank Dimensions?	Circular

MONTHLY INFLOWS INTO TANK

Month	Number of days	Rain-Evap on Tank CF	Rain-Evap on Existing Storage, CF	Normal Runoff CF	Washwater CF	Solids CF	Waste to Store CF	Waste to Store Gallons
October	31	0	6,284	6,001	6,267	7,228	25,780	192,848
November	30	0	14,189	12,373	6,065	13,989	46,616	348,711
December	31	0	14,605	12,581	6,267	14,455	47,908	358,376
January	31	0	13,806	11,814	6,267	14,455	46,342	346,659
February	28	0	10,959	9,738	5,660	13,056	39,414	294,836
March	31	0	9,459	7,661	6,267	14,455	37,842	283,080
April	30	0	5,376	5,270	6,065	11,191	27,901	208,716
May	31	0	1,774	3,434	6,267	4,337	15,811	118,274
June	30	0	11	2,419	6,065	1,399	9,894	74,011
July	31	0	-2,485	953	6,267	1,446	6,180	46,227
August	31	0	-2,299	1,007	6,267	1,446	6,421	48,030
September	30	0	1,248	2,848	6,065	1,399	11,559	86,470
Annual	365	0	72,927	76,099	73,787	98,855	321,667	2,406,239



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ANIMAL WASTE MANAGEMENT SYSTEM UTILIZATION

NUTRIENTS AVAILABLE AFTER STORAGE

Nutrient Source	Type of Operation / Type of Storage Facility	Pounds of Nutrients Available			Percent Nutrients Retained After Storage			Pounds of Nutrients Retained After Storage		
		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Liquids	Dairy / Tank Manure Analysis	47,818	18,367	53,283	80%	85%	85%	38,254	15,612	45,290
Solids	Solids Storage Manure Analysis	41,112	9,623	31,171	75%	90%	90%	30,834	8,661	28,054
Grazing	NONE	96,345	37,998	52,508	58%	57%	26%	56,020	21,831	13,607

NUTRIENTS AVAILABLE AFTER APPLICATION

Nutrient Source	Type of Application System	Pounds of Nutrients Available			Percent Nutrients Retained After Application			Pounds of Nutrients Retained After Application		
		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Liquids	Sprinkling	38,254	15,612	45,290	83%	100%	100%	31,709	15,612	45,290
Solids	Broadcast (Incorporated 7 or more days after application)	30,834	8,661	28,054	83%	100%	100%	25,592	8,661	28,054
Grazing	Grazing	56,020	21,831	13,607	83%	100%	100%	46,497	21,831	13,607

NUTRIENTS AVAILABLE AFTER DENITRIFICATION

Nutrient Source	Location / Coast / Soil Drainage Class	Pounds of Nutrients Available			Percent Nutrients Retained After Denitrification			Pounds of Nutrients Retained After Denitrification		
		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
Liquids	Poorly Drained	31,709	15,612	45,290	80%	100%	100%	25,367	15,612	45,290
Solids	Poorly Drained	25,592	8,661	28,054	80%	100%	100%	20,474	8,661	28,054
Grazing	Poorly Drained	46,497	21,831	13,607	80%	100%	100%	37,197	21,831	13,607
							TOTAL-	***83,038***	***46,104***	***86,952***

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ANIMAL WASTE MANAGEMENT SYSTEM UTILIZATION

PERCENT OF MANURE TO BE APPLIED TO FIELD AND UTILIZATION ACRES NEEDED BASED ON NITROGEN, N

Field Number	Acres	Crop	LIQUIDS Percent to be Applied	LIQUIDS Pounds of Nutrients to be Applied	LIQUIDS Acres Needed for Utilization of Nutrients	SOLIDS Percent to be Applied	SOLIDS Pounds of Nutrients to be Applied	SOLIDS Acres Needed for Utilization of Nutrients	GRAZING Percent to be Applied	GRAZING Pounds of Nutrients to be Applied	GRAZING Acres Needed for Utilization of Nutrients
Dairy T174,234	156.0	Perennial Hay/Pasture(Med-High Intensity)	55%	13,851	43	55%	11,179	35	55%	20,311	63
Schively T653	26.8	Perennial Hay/Pasture(Med-High Intensity)	9%	2,380	7	9%	1,921	6	9%	3,489	11
Blaser T33	80.1	Perennial Hay/Pasture(Med-High Intensity)	28%	7,112	22	28%	5,740	18	28%	10,429	33
Norberg T410	22.8	Perennial Hay/Pasture(Med-High Intensity)	8%	2,024	6	8%	1,634	5	8%	2,968	9
Off Farm			0%	0		0%	0		0%	0	
TOTALS-	**285.7**		**100%**	**25,367**	**79**	**100%**	**20,474**	**64**	**100%**	**37,197**	**116**

NUTRIENT BALANCE BASED ON AVAILABLE ACRES

Field Number	Acres	Crop	NUTRIENTS APPLIED Nitrogen, N Lbs/Acre	NUTRIENTS APPLIED Phosphorous, P_2O_5 Lbs/Acre	NUTRIENTS APPLIED Potassium, K_2O Lbs/Acre	- NUTRIENTS REMOVED Nitrogen, N Lbs/Acre	- NUTRIENTS REMOVED Phosphorous, P_2O_5 Lbs/Acre	- NUTRIENTS REMOVED Potassium, K_2O Lbs/Acre	= NUTRIENT BALANCE Nitrogen, N Lbs/Acre	= NUTRIENT BALANCE Phosphorous, P_2O_5 Lbs/Acre	= NUTRIENT BALANCE Potassium, K_2O Lbs/Acre
Dairy T174,234	156.0	Perennial Hay/Pasture(Med-High Intensity)	291	161	304	320	101	266	-30	60	38
Schively T653	26.8	Perennial Hay/Pasture(Med-High Intensity)	291	161	304	320	101	266	-30	60	38
Blaser T33	80.1	Perennial Hay/Pasture(Med-High Intensity)	291	161	304	320	101	266	-30	60	38
Norberg T410	22.8	Perennial Hay/Pasture(Med-High Intensity)	291	161	304	320	101	266	-30	60	38
Off Farm											

☒ AWMP Summary ☒ AWMP MRE ☒ AMP Approval letter

AWMP Summary

Date: 04/01/14 Reviewer: BK	Information		Page #
1. Facility Name	Jencks Farms		
2. Contact Name & Phone Number	Joe Jenck		
3. Master Address & Plan Log Number	MA# 7139	AWMP# & Date: 14022 / 01/11/14	
4. Type of Operation	Dairy		
5. Mailing Address	745 Third Street Tillamook, OR 97141		
6. Physical Address	Same		
7. Plan Writter	Tom Thompson		
8. Reason for New Plan			
9. Permitted Animal Number ☐Small ☑Medium ☐Large CAFO	Current 636 / 354		
10. FT^2 Paved Slab Entering Storage			
11. Storm Water Diversion	☒Roof Gutters ☐Other:_____ ☐Paved Slab		2-1
12. Method of Cleaning Production Area.	☐Flush ☒Scrape ☐Other_____		2-3
13. Type of Bedding Used	Chopped Straw		
14. Application method of liquid manure and/or processed waste water.	☒Traveler ☐Injection ☐Pivot ☒Honey Wagon ☐Splash Plate ☐Stationary Gun ☐Linear ☐Other_____		1-2
15. Application method of solid manure (Check all that apply).	☒Manure Spreader ☐Other_____		1-2
16. Animals Confined/Grazed	Days Confined	Days Grazing	
17. Land Base	Acres Manure Applied to	Total Acres	1-2
	287.4	287.4 + 11.2	

* Table for application (buffer) by application method and field.

18. Application Dates/Limitations T-Sum 200	Date:	Date:	
	1/30 → 30 yr Avg		
19. Nutrient Export Can	Solid Manure	Liquid Manure	
20. Freeboard	1'		2-3
21. Dry Season Manure Application Set-backs	Solid Manure	Liquid Manure	
			3-6
22. Wet Season Manure Application Set-backs	Solid Manure	Liquid Manure	3-6
23. Emergency Application Field(s)			
24. Manure Processing (*Check all that apply*)	☐Compost ☐Digester ☐Other_____ ☐Bedding ☐Seperator		
25. Mortalities	TCCA		1-2
26. Sampling Frequency	Manure	Soil	
27. P Index Worksheet Results	Low + Medium		4-18
28. Irrigation Worksheet Results			
29. Special Monitoring/POC's/RA's			
30. Notes/AWMP Log	4/1 Sent Tom questions @ plan		

Jenck Farms, LLC
AWMP Summary

From old Plan

Facility's MA# is 71139 and facility's location is 745 Third St. Tillamook, OR

1. No manure applications to saturated soils or during rainfall events that are expected to result in saturated soils or surface water runoff.

2. Yearly Maximum Pounds (lbs) of N/Acre for Perennial Grass Forage Fields:

Tract Number	174	234	410	653	702	33
Lbs N/acre/year	440	440	380	380	318	270

3. Liquid manure applications are only made from February through October, each year. Solid manure applications are only made from March through October, each year.

4. Manure application setbacks:

Manure type	Application Equipment	Season	
		Wet	Dry
Liquid	Big gun	50 feet (ft)	35 feet (ft)
Liquid	Drag hose	N/A	10 ft
Solid	Spreader	50 ft	20 ft

5. All manure applications are to be recorded on CAFO calendar and kept in farm office.

6. CAFO inspection results, manure application equipment calibration results, soil test results, manure test results, CAFO Permit, Permit Summary, and AWMP are all located in the file in the main office.

7. Jenck Farms, LLC, operator contact information in case of manure emergency is:

Joe Jenck	(503) 812 8352
Main office (farm)	(503) 842 6955
Donnie Jenck	(503) 812 8348

8. ODA's CAFO Program contact information (report discharges within 24 hours) is:

Armando Macias, CAFO Inspector	(503) 842 6278 (Office ph.) (503) 801 1630 (Cell ph.)
CAFO Program/Salem	(503) 986 4699 (Office ph.)

Storage Capacities for Operation with Multiple Facilities

Facility: Joe Jencks
Date: 04/01/14
Reviewer: BK

Manure Storage-

Facility/Tract	Storage Type	Capacity/Size	Estimated Storage Period	Transfer
Jenck HQ Milking	BGLT	1,500 gal		
	BGLT	40×15×6 (A+Blazer)		
	BGLT	40×8	300d	
	AGLT	100×16		
	AGLT	60×10 (A+Blazer)		
	Solids	40×10×6	68d	
Mom's HQ Heifers	Solids	40×48×6	365d	
Dry Cow HQ	Solids	40×100×6	150d	
Blazer HQ Heifers	BGLT	2,000 gal		
	BGLT	40×15×6	Used to store liquids	
	AGLT	60×10	from Milking facility	
	Solids	40×120×6	365	
* Manure Total	can be stored	moved between the facilities* days = 118 solids 112 liquids		

* Some solids maybe exported.

Facility: Joe Jenck
Date: 4/1/14

Crop Type, Yield Goals, and Nutrient Utilization Rates

Farm/Tract #	Field Name	Acres	Crop	Expected Yield	% DM	Nitrient Removal/Acre			Total Nitrient Removal		
						N	P2O5	K2O	N	P2O5	K2O
	1	15.7	Pasture			320	101	266	5,024	1,586	4,176
	2	12.1	Pasture			320	101	266	3,872	1,222	3,219
	3E	9.3	Pasture			320	101	266	2,976	939	2,474
	3W	11.1	Pasture			320	101	266	3,552	1,121	2,953
	B1	7	Pasture			320	101	266	2,240	707	1,862
	B10	12.6	Pasture			320	101	266	4,032	1,273	3,352
	B11	17.1	Pasture			320	101	266	5,472	1,727	4,549
	B2		Pasture			320	101	266	0	0	0
	B3	10.9	Pasture			320	101	266	3,488	1,101	2,899
	B4	7.3	Pasture			320	101	266	2,336	737	1,942
	B5	2.6	Pasture			320	101	266	832	263	692
	B6	2.1	Pasture			320	101	266	672	212	559
	B7	3.5	Pasture			320	101	266	1,120	354	931
	B8	3.9	Pasture			320	101	266	1,248	394	1,037
	B9	8.9	Pasture			320	101	266	2,848	899	2,367
	Ba		Pasture			320	101	266	0	0	0
	Bb		Pasture			320	101	266	0	0	0
	Betty East	12.4	Pasture			320	101	266	3,968	1,252	3,298
	Betty Middle	17.5	Pasture			320	101	266	5,600	1,768	4,655
	Betty West	11.9	Pasture			320	101	266	3,808	1,202	3,165
	Helens 1	9.3	Pasture			320	101	266	2,976	939	2,474
	Helens 2	4.7	Pasture			320	101	266	1,504	475	1,250
	Helens 3	2.7	Pasture			320	101	266	864	273	718
	Highway E	5.5	Pasture			320	101	266	1,760	556	1,463
	Highway W	19.3	Pasture			320	101	266	6,176	1,949	5,134
	Schwend South	2.2	Pasture			320	101	266	704	222	585
	Island	13.7	Pasture			320	101	266	4,384	1,384	3,644
	Norberg N	9.3	Pasture			320	101	266	2,976	939	2,474
	Norberg S	13.5	Pasture			320	101	266	4,320	1,364	3,591
	Schwend E	6.4	Pasture			320	101	266	2,048	646	1,702
	Schwend Middle	9.3	Pasture			320	101	266	2,976	939	2,474
	Schwend West	10.6	Pasture			320	101	266	3,392	1,071	2,820
	Shively East	13.9	Pasture			320	101	266	4,448	1,404	3,697
	Shively West	12.9	Pasture			320	101	266	4,128	1,303	3,431
									0	0	0
									0	0	0
	Total Acres:	299.2				**Total Nutrients Removed:**			95,744	30,219	79,587

Page

04/01/14

04/02/14
→ Received updated maps

Manure samples

	N	P_2O_5
Storage tanks →	15.9	6.5
Solids →	10.4	2.9
Grazing →	29.7	11.6

3-15 Soil samples
→ All fields over 30 ppm = Annual fall soil samples.

* Make Table *!!!

3-3 Field B2 is not labled → acres?
Field Ba + Bb not seen on map

3-8 Field B2 labled, but no acerage.

4-1 Field B2 no labble + no acreage
→ No Ba or Bb

* Fields B2, Ba, Bb all listed in RULSE + PIndex

Page
1-2 Yields are listed @
25 ton/acre @ 30% DM → Jenck Dairy
24 ton/acre @ 30% DM → Blazer, Shively + Norberg

ORAWM - All fields @ 85% DM + 6.5 ton/acre yield

As is x % DM = Dry matter yield
25 x 30% = 7.5 dm
24 x 30% = 7.2 dm
6.5 x .85% = 5.5 dm

4/1 - Sent questions to Tom
- Asked Armando @ Application info / table based off methods + time of year.
4/2 Got info back from Tom
4/2 Sent Approval Documents to Armando
4/2 Use set-backs same as old plan

From: Tom Thomson <tomt@onlinenw.com>
Subject: **Re: Joe Jenck AWMP**
Date: April 1, 2014 4:12:15 PM PDT
To: Ben Krahn <bkrahn@oda.state.or.us>
Cc: Armando A Macias <amacias@oda.state.or.us>, Wym Matthews <wmatthew@mail.oda.state.or.us>, Bruce Wilson <BDWEng@comcast.net>
▶ 2 Attachments, 535 KB

Attached are some new maps. Sometimes the GIS slips up and does not label the way I expect it to.

I checked the acreage in the GIS and it has it at 287.4 acres for all fields listed. I see in the ORAWM that the Blaser field acreages was listed as 80.1 instead of 81.4. That does not affect anything in the plan other than the acreage numbers in ORAWM now matches that of p.1-2. I am not sure where you are getting the 299.2 number form unless you misread a label or count something twice.. The acres reflect the croppable acres with minimum setback distances. Since cropping is usually summer-based, that ought to wrok.

IN the setback map, fields Ba and Bb are shown its just that they are kind tiny! The acreages can be obtained form the other maps (now that I have gotten all the acres labeled).

Regarding the yield information. ORAWM provides one estimate of the dairy management and is always done as the worst case scenario - lower yields, all manure on all fields evenly, etc. The 6.5 T at 85% DM is based on grazing/haying/silage/etc for grass harvest. In the narrative on p.1-2, the 7.2 and 7.5 tons DM is based on records from the farm in 2012 and 2013 of actual forgae harvest. So now we have actual numbers in the plan rather than estimates as provided by ORAWM.

I hope this helps answer some of your questions.....tom

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Tom Thomson Northwest Agricultural Consulting
1275 Oak Villa Road tomt@onlinenw.com
Dallas, Oregon 97338 Phone 503-510-3883

"The only difference between a problem and a solution is that everyone understands the solution." Charles Kettering

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On 4/1/2014 10:50 AM, Ben Krahn wrote:

> Tom,
> Here are some questions/comments I have regarding Joe Jenck's AWMP:

Page	Question/Comment
3-3	-Field B2 is not labeled (acres). -Fields Ba and Bb are not seen on the map
3-8	-Field B2 is labeled, but no acreage -Fields Ba and Bb are not seen on the map
4-1	-Field B2 is not labeled and no acreage -Fields Ba and Bb are not seen on the map
4-11	-Fields B2, Ba, and Bb are all listed in the RULSE calculations and P Index

1-2	-Yields are listed as: -25 ton/acre @30% dm (Jenck Dairy) -24 ton/acre @ 30% dm (Blazer, Shively, and Norberg)
ORAWM	All yields are listed as 6.5 ton/acre @ 85% dm.
	I converted all of the yields to a 100% dm basis to see if I was missing the boat. They ended up being 7.5, 7.2, and 5.5 respectively.
1-2 and ORAWM	I am having some challenges trying to get the acreages to match up for a nutrient balance. Not including fields B2, Ba, and Bb I am getting 299.2 acres based off the acreages listed on the maps. It could be that the map numbers do not take into account set-backs.?. Any direction would be great.

I saw that there has been some conversation between you and Armando about the set-back's for manure application. I am in conversation with Armando and Wym about what they want that to look like.

Thanks for taking a look. Please let me know if you have any questions. I will be in the office most of the week working on plans.

Cheers,

Ben

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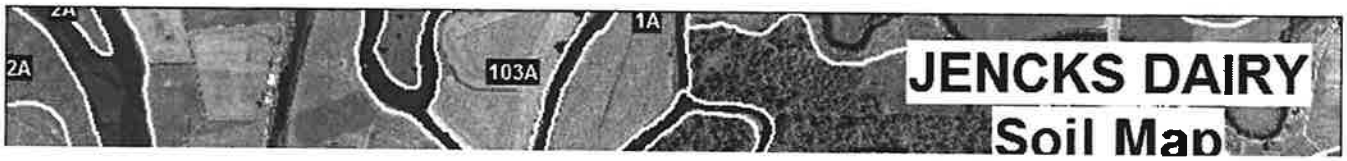
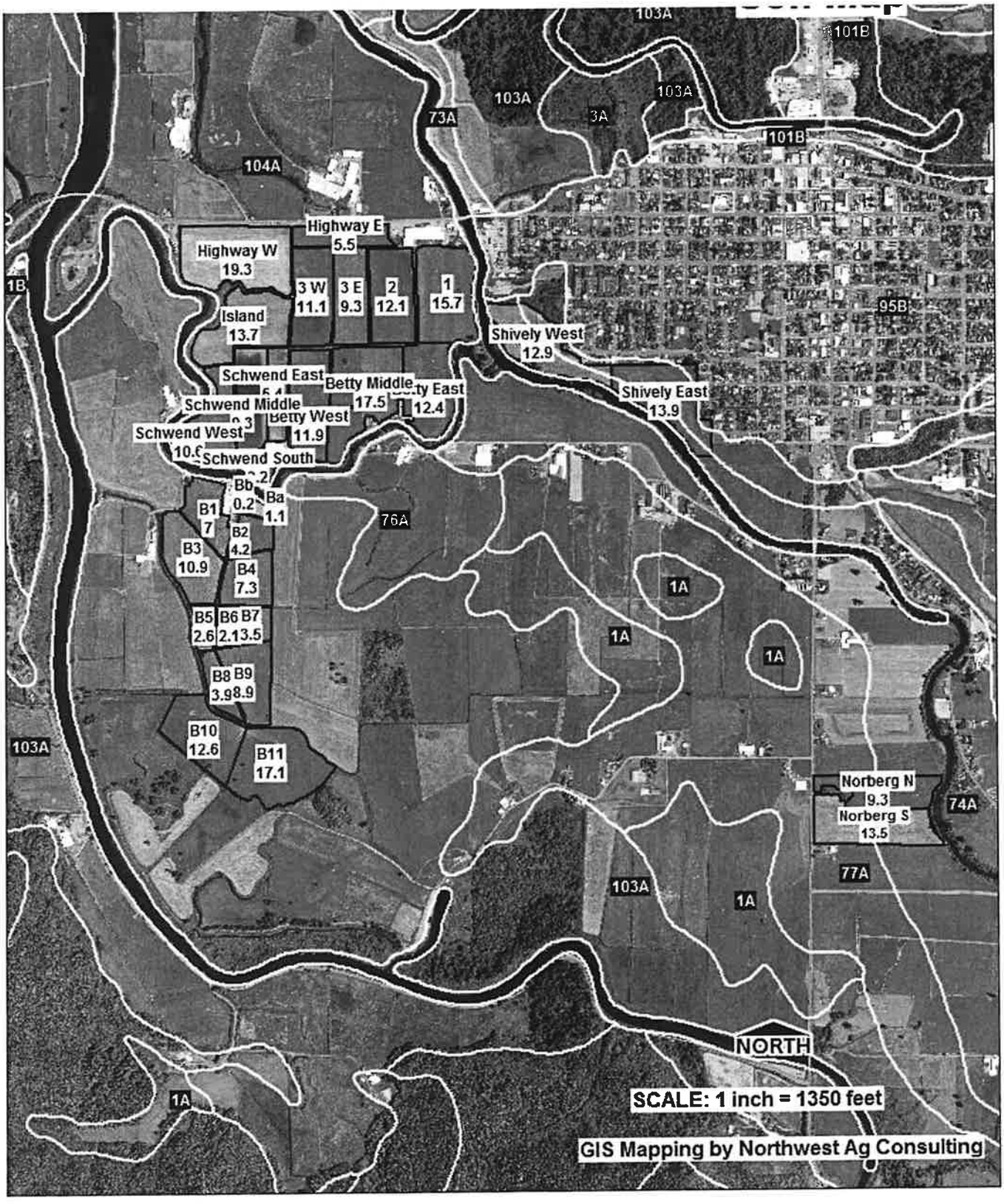
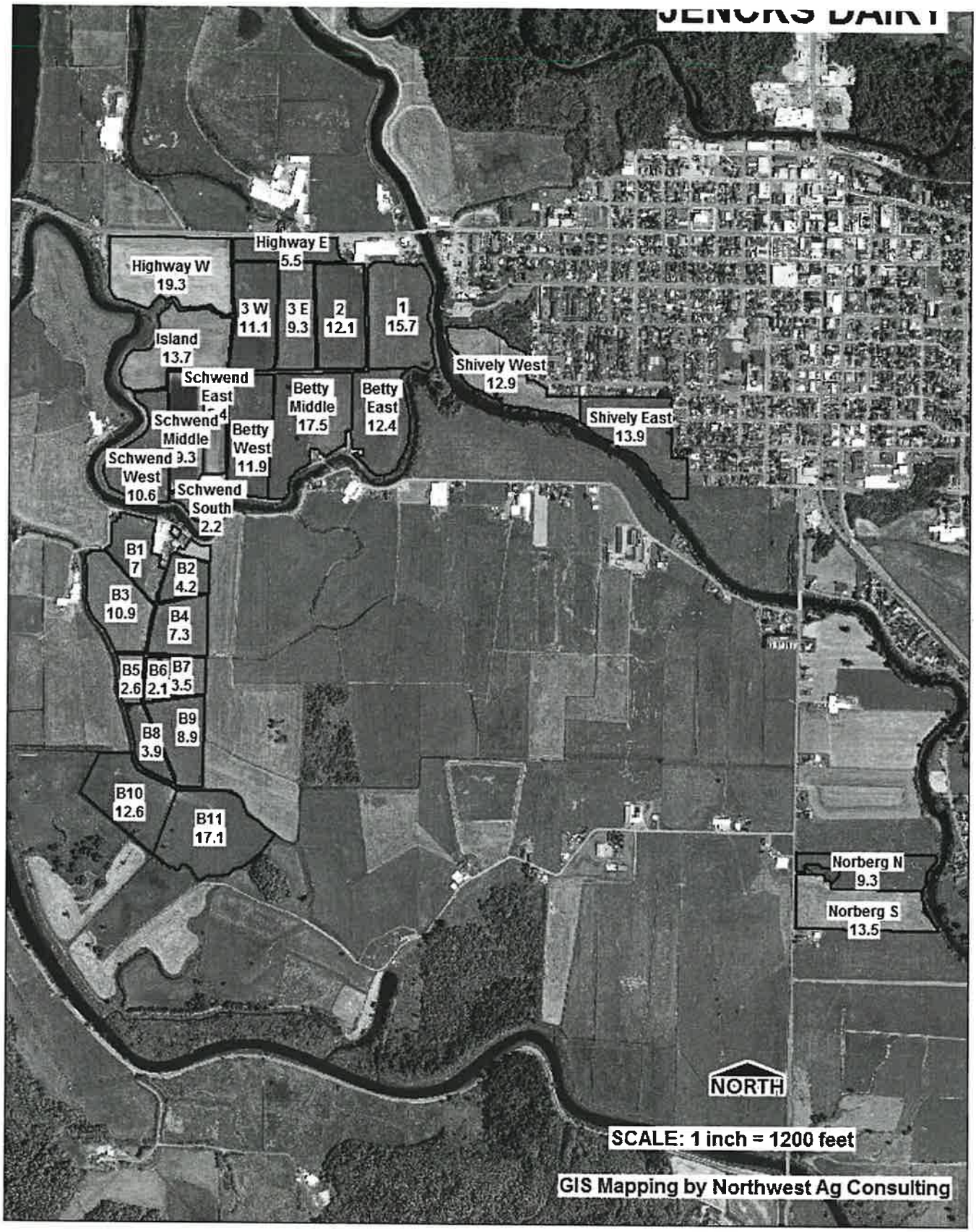




JENCKS DAIRY


JENORS DAIRY
Highway E
5.5
Highway W
19.3
3 W
11.1
3 E
9.3
2
12.1
1
15.7
Island
13.7
Schwend
East
Schwend
Middle
Schwend
West
10.6
Betty
West
11.9
Betty
Middle
17.5
Betty
East
12.4
Shively West
12.9
Shively East
13.9
Schwend
South
2.2
B1
7
B2
4.2
B3
10.9
B4
7.3
B5
2.6
B6
2.1
B7
3.5
B8
3.9
B9
8.9
B10
12.6
B11
17.1
Norberg N
9.3
Norberg S
13.5
NORTH
SCALE: 1 inch = 1200 feet
GIS Mapping by Northwest Ag Consulting