LAW OFFICES OF MICHAEL BROOK

October 21, 2014

Mathias St John, Executive Officer
North Coast Regional Water Quality Control Board
5550 Skylane Blvd. Suite A
Santa Rosa, CA 95403

RE: ACLC No. R1-2014-0054

Dear Mr. St John:

I represent Spring Hill Jersey Cheese, Inc. ("Spring Hill") .This letter presents the summary for hearing of Spring Hill's response to the Complaint in the matter referenced above. (It is still Spring Hill's intent to have the matter resolved prior to hearing.)

Spring Hill does not deny that it has not filed the reports, including the nutrient management plan and waste management plan. However, Spring Hill has done extensive work, costing ten's of thousands of dollars, on work improving the property, directly improving water discharge and nutrient use. Spring Hill has also had a great deal of difficulty employing the requisite professional to prepare the documents required. We have been working with, for instance, the USDA- NRCS, and they have been able to assist directly so far. Recently, we were able to engage the requisite professional and hope the plans will be ready before the hearing, if such is necessary. We are unfortunately facing a hearing due to the extraordinary length of time spent in finding a professional to complete the plans: the demand apparently far exceeds the supply. We would also like to thank staff, particularly, Ms. Blatt for their assistance.

Proposed witnesses: Larry Peter, principal of Spring Hill; Garry Mahrt, professional preparing the plans. We also reserve the right to call any witness identified by the Prosecution Team.

Proposed Evidence List: the nutrient management plan and waste management plan (nearing completion), which will be provided upon completion. (Tetra Tech Consulting) Water Quality Assessment Report for Spring Hill Dairy (already in possession of the Board.) Prior plan (already provided to the Board.) (If additional copies are required, Spring Hill will be happy to provide them upon request.) the Spring Hill reserves the right to introduce any other documents at hearing.

Thank you for your consideration of this matter.

Yours sincerely,

Michael J.M. Brook

645 Fourth Street Suite 200 Santa Rosa CA 95404 [707] 889-7189 mbrooklaw@gmail.com

cc: Samantha Olson, Esq.
Naomi Kaplowitz, Esq.
Ms. Catharine Carter
Ms. Cherie Blatt
David Leland

645 Fourth Street Suite 200 Santa Rosa CA 95404 [707] 889-7189 mbrooklaw@gmail.com

USDA NRCS Natural Resources Conservation Service

Comprehensive Nutrient Management Plan

For:

Larry Peter
Spring Hill Jersey
4235 Spring Hill Road
Petaluma, California

Prepared in Cooperation with the:

USDA – Natural Resources Conservation Service

Approved Conservation Plan

As an Approved Certified Planner, I certify that I have reviewed this CNMP for technical adequacy and that the elements of the CNMP are technically compatible, reasonable and implementable.

Signature _____ Date: 3/7/07
Name: Richard Cornansky
Title: Specialist in Manure and Wastewater Handling and storage

Signature _____ Date: 6/21/07
Name:
Title: Specialist in Land Treatment Practices

Signature _____ Date: 6/21/07
Name:
Title: Specialist in Nutrient Management

Signature Charlette Epifanio Date: 6/21/07
Name:
Title: Conservation Planner

Owner/Operator

As the owner/operator of this CNMP, I certify that I, as the decision maker, have been involved in the planning process and agree the items/practices listed in each element are needed. I understand that I am responsible for keeping all the necessary records associated with the implementation of this CNMP.

Signature: _____ Date: 7/30/07
Larry Peter – Owner/Operator Spring Hill Jersey

COMPREHENSIVE NUTRIENT MANAGEMENT PLAN
LARRY PETER DAIRY

TABLE OF CONTENTS

WS 1-1

Comprehensive Nutrient Management Plan
Cover Sheet

Date of Plan Preparation: 4 /28/2006
MONTH DAY YEAR

Facility Name: Spring Hill Jersey **Farm #** _____ **Tract #** _____

Facility Location: 4235 Spring Hill Road, Petaluma, CA 94952 Sonoma County
STREET CITY COUNTY

Nearest Cross Street: Seavey Road / Bodega Ave.

Contact Information: Provide names, mailing address, and phone numbers for the following persons:

Facility Operator: Larry Peter (707) 762-3446
NAME PHONE

4235 Spring Hill Road, Petaluma, CA 94952
STREET CITY ZIP

Property Owner and Contact Person: SAME Cell: (707) 486-1171
NAME PHONE

Email: larry.peter@springhilldairy.com
STREET CITY ZIP

Location: Long – 122.76004 Lat – 38.23936

Total Facility Acreage: approximately 290 (Home Dairy)

Total Cropland Acreage: Owned: 290 Acres Leased: 1280 Acres

Operation Type: X Dairy ❑ Heifer Breed: Jersey

Animal Population:

Milk cows	400	Beef cows	0
Dry Cows	100	Veal calves	0
Bred heifers	40	Bulls	5
Heifers (1-year to breeding)	50		
Calves (3 months to 1 year)	100		
Baby Calves (under 3 months)	46		

Additional Information:

- Approximate date that confined animal operations first began at this location: 1987
- Date that the facility began operations at this location under the current ownership: 1987
- Spring Hill Jersey is California Certified Organic 4/2006

Producer's Initial Manure Management Objectives:

- Increase heard to 500 milk cows.
- Install ponds higher up hill to transport liquid manure more easily to cropland
- Come into compliance with all Federal, State, and County laws and regulations.

WS 5-3

Issues and Alternative for Improvements

Facility Name: _**Spring Hill Jersey**_____ Preparer: __SF_____ Date: __3/29/06__

Issues (Brought forward from evaluations)	*Producer Priority: 1-4	Alternatives Discussed
Nutrient Management / Land Application (WS 4-6)		
Current management practice does not include soil, waste, or tissue testing to quantify amount of nutrients already in the soil or how much is needed by the plant.	2-3	Initiate record keeping for practices on the facility, such as irrigation schedule, lagoon and manure testing, soil testing, and tissue testing to best utilize nutrients applied to area.
Neither yield data collection nor record keeping on the facility is practiced.	3	Same as above
Nutrient application is done by sprinkler and started at the base of hill and rotated up hill.	1	Peter would prefer to irrigate starting at the top of the hill in order to give the nutrients more of a buffer before reaching any water bodies.
Balance of Available Cropland with Manure Nutrients Generated (EWS2-1)		
Nutrient balance distributed to the cropland is acceptable (Dairy Planning Tool).	1	Peter is converting all his silage fields to pasture land in order to comply with organic dairy standards. He is planning to use leased farmland to grow oat and corn silage. He would like to evaluate nutrient loading and spread the manure between the home dairy and 4 leased properties.
Production Area Facilities (WS 3-2)		
Facility has neither building gutters nor tail water return systems.	2	Has applied for gutters through EQIP
Storm water typically runs over feed storage and manured areas.		
Cropland Runoff and Erosion Control (WS 3-5)		
Run off from cropland is apparent.		
Gullying is apparent.	1-2	Peter has indicated that he is interested in a tail water return system. He would like to contain all his runoff water on the farm to reuse for irrigation. Additionally, he is planning to divert all waste water into the manure ponds. A reel irrigator will be used to distribute liquid manure over the fields and pastures.
Manure Distribution on Cropland (WS 3-4)		
No formal means of measurement is being used. Application amount is based on experience.	2	Discussed manure testing and record keeping on facility.

* Use 1 through 4 with 1 the highest priority

Rate of manure applied is based time and on experience. No technical method is used. Manure is applied using a sprinkler irrigation system.	3	Field visits indicate visible uneven manure application to the fields. Better equipment is needed, and in long term plan, but unaffordable at this time.
Waste water is not formally mixed. It mixes with rainwater and run-off water in the pond	4	Waste water and fresh water need to be mixed prior to field application in order to spread at a more even consistency.
Irrigation (WS 4-C)		
Evidence of gullying in fields to indicate uneven water application. Several field lengths are excessive for flow rate and soil type	2-3	Discussed stabilizing side slopes of fields and the possibility of installing diversions, waterways or terraces.
Peter has a sprinkler irrigation system. Current method is to start from the bottom of hill and move sprinklers up the hill however, a more efficient method maybe to start from the top and move sprinklers down slope.	4	Alternative irrigation methods such as spinklers or center pivots are possible on most areas.
Water may runoff irrigated fields into ditches or neighboring property and eventually reach surface water. Rills, in several fields, are evident.	1	Peter wants to keep all fresh and waste water on the farm, including waste water generated from milk barn and cheese factory.
Periodic overflows occur; Pond is occasionally full and appears that pond may breach from time to time.	2	Peter has money in current EQIP contract to divert fresh water around the dairy facility through gutters and underground outlets
Pond is 50 ft on one side and 60 ft on the other. 270 long and 15 ft deep. Sides are approx 1.5:1. Pond is not the width designed by NRCS. Planned pond was to be pumped every 150 days… current existing pond needs to be pumped every 100 days.		Peter plans to use current pond for liquids and build another waste pond next to it for solids. The solids pond is planned to be at least 2xs the size of the current pond for a minimum 300 days of storage.
There is no marker in place and there is evidence of pond overflow and/or breach. New Ponds are Planned.	3	Installation of marker.
Weeds (Lewis Grass) in his pond that he wants to get rid of.	2	Needs help in how to get rid of weeds.

* Use 1 through 4 with 1 the highest priority

WS 5-X

Summary of Key Manure Management Changes

Farm Wide Nitrogen Balance: According to the Dairy Planning Tool, Farm Wide Nitrogen balance is acceptable with current operation, assuming that Peter continues to spread manure on owned and leased land. Record keeping is advised. Peter is encouraged to being lagoon nutrient testing as soon as possible.
Production Area / Facilities: As of February 2007, Peter had not received the building permit from Sonoma County PRMD to begin building the new barn. Peter is also in the process of acquiring new leased property for silage since the home ranch will be converted to mostly pasture. Once the new facilities are completed (designs are in EQIP 2003 folder), Peter plans to close the old northern manure pond that is ~10 ac-ft. Gutters and fresh water diversions are planned for the new dairy facilities to help separate fresh water and waste water.
Crop Land Erosion & Runoff: Peter wants a tail water return system or sediment basin to capture all water that currently leaves his farm. Peter wants to keep all water from running off the land. He has observed the erosion from the runoff.
Nutrient Management / Land Application: Applies liquid manure to all available land sources that current equipment can access. When Peter gets his fences will use areas for pasture. Begin monitoring for application planning and take care not to over apply nutrients for animal health and water quality.
Irrigation: All Irrigated silage-oats and beans will be converted to pasture in 2007. Plans to use more of the irrigated areas as pasture. Current practice is to start irrigation schedule at the base of the hill and move sprinklers up-hill after a 2 hour interval. Flow rate is unknown, but plans to measure flow rate in 2007 as part of evaluation process. Irrigation system is currently inadequate, but Peter would like to upgrade as soon as the new dairy facilities are completed.

WS 6-X

Producer's Planned Actions and Schedule

To Address: Nutrient Management / Land Application		
Change / Action	**Field(s) or Location(s)**	**Planned year / date**
Peter became California Certified Organic in 2006	All	2006
Review WS 4-6 principles/goals. Add actions to next year's WS 6-x to progress toward goals.	All	Time of annual review
Start monitoring nutrient loading in manure pond	Manure Pond	2007

To Address: Balance of Available Cropland with Manure Nutrients Generated		
Change / Action	**Field(s) or Location(s)**	**Planned year / date**
Convert all home ranch into pasture except pumpkin and potato fields		2007

To Address: Production Area Facilities		
Change / Action	**Field(s) or Location(s)**	**Planned year / date**
Complete new dairy facilities, including gutters and fresh water diversions	HQ	ASAP

To Address: Cropland Runoff and Erosion Control		
Change / Action	**Field(s) or Location(s)**	**Planned year / date**
Work on farmwide irrigation design that would include gully erosion and runoff concerns.	All	As soon as new facilities are finished

To Address: Manure Distribution on Cropland		
Change / Action	**Field(s) or Location(s)**	**Planned year / date**
Purchase a reel irrigator for more efficient manure application	All	ASAP
To Address: Irrigation		
Change / Action	**Field(s) or Location(s)**	**Planned year / date**
Install a pond level marker	HQ	none
Determine most efficient irrigation methods	All	none

LOCAL ENVIRONMENTAL INFORMATION

I. Rainfall records:

1. Average annual precipitation: __32-48_____ inches/year
2. 25-year, 24-hour storm: ___5.0_____ inches

II. Groundwater Information:

1. Recent depth to groundwater (the distances from ground surface to the highest groundwater during the most recent years):
2. Groundwater is greater than 50' from surface.

_____	_____	_____	_____	_____	_____
FEET	YEAR	FEET	YEAR	FEET	YEAR

3. Direction of groundwater gradient: _____

III. Local groundwater characteristics and quality (if readily available):

1. Electrical Conductivity (EC) _____ micromhos/cm
2. Total Dissolved Solids (TDS) _____ parts per million
3. Nitrate (NO_3-N) _____ parts per million

IV. Surface water quality:

1. Name and distance to nearest river or stream Unnamed Perenial Stream
2. Electrical Conductivity (EC) _____ micromhos/cm (if available)
3. Total Dissolved Solids (TDS) _____ parts per million (if available)
4. Nitrate (NO_3-N) _____ parts per million (if available)
5. Descriptions of impairments: (Describe any identified impairments to the surface water)

   _____

6. Applicable Total Maximum Daily Load (TMDL) limits (if any)

   _____

V. **Additional Information:** Use the space below to record any information relevant to the environmental conditions described above:

DESCRIPTION OF MANURE MANAGEMENT SYSTEM

Collection and transfer of manure and wastewater:

- Solid manure is scraped from the milk barn and the corral holding the milk cows. The solid manure is then stacked next to where the new free-stall barn is being constructed. The drainage next to manure stack being reengineered to prevent fresh water contamination. Some runoff may end up in the undersized waste storage pond and some runoff will end up out in the fields. There is a perennial creek that flows through the northwest portion of the property where this runoff may eventually enter.

- Wastewater from the milk barn, cheese plant, and storm water runoff over the corralled area holding the milk cows drains to a central point next to the cold storage building and then drains via gravity and an underground outlet to the waste storage pond located at the north end of the property in a pasture area.

- Whey material is trucked from the cheese plant and stored in a newly constructed waste storage pond. The whey material is eventually fed back to the cows.

Storage of manure and wastewater:

- Solid manure is scraped from the milk barn and the corral holding the milk cows. The solid manure is then stacked next to where the new free-stall barn is being constructed. The drainage next to manure stack is questionable. Some runoff may end up in the waste storage pond and some runoff will end up out in the fields. There is a perennial creek that flows through the northwest portion of the property where this runoff may eventually enter.

- Wastewater from the milk barn, cheese plant and storm water flows over some manured areas is piped to a storage pond. Wastewater from the pond is used in the silage fields and pastures. The current waste storage pond is approximately 10 acre-ft. This pond frequently overflows into the nearby pasture and may eventually drain into the perennial creek

- As per Tech Notes dated 10/05/05, the new waste storage pond has a width of 50 ft on one end and 60 ft on the other. The pond is 270 ft long by an average of 15 ft deep. The side slopes are approximately 1.5:1. The landowner has been informed that the side slopes should be 2:1 and the width of the pond is not what was designed by the NRCS. The pond is currently used to store whey waste.

Treatment of manure and wastewater:

- There is currently no treatment of manure or wastewater prior to field application.

Protection of manured areas from storm water flows:

- Wastewater from the milk barn and cheese plant drains to the waste storage pond located at the north end of the property in a pasture area, which regularly overflows during non-storm events.

- Most of the confined feeding area drains to a central point next to the cold storage building. It then is piped via gravity and an underground outlet to the waste storage pond located at the north end of the property in a pasture area, which regularly overflows during non-storm events.

- Manured calf holding pens drain into the pasture during storm events. The new facilities plans will contain any of the runoff from the calf holding area and divert it to the waste pond.

- Whey material from the cheese plant that is trucked to a waste storage pond next to where the new free-stall barn is being constructed is protected against storm water flows.

Control of irrigation runoff:

- There are no tailwater systems or storm water diversions in place.

- There is a possibility of property runoff into an unnamed perennial creek, located at the northwest portion of the property.

- A "drain" was installed to capture runoff. The drain is ineffective, because it has been silted over and the water was diverted another direction around the installed area in fields 5 and 11. Erosion is still occurring on the side of the drain.

Ultimate use of collected manure and wastewater:

- Manure and wastewater are ultimately used for silage field and pasture fertilization where equipment can access the land.

- Whey material is eventually fed back to the cows.

Method of manure distribution and application to cropland:

- Solid manure is spread via a manure spreader. Evidence of uneven application can be seen in attached photos.

- Irrigation sprinkler system includes a 2.5" pipe with attached irrigation nozzle. The sprinkler puts out ~200 gpm. More specific information is not known at this time.

- Liquid is piped from the waste storage pond to the cropland with a PTO powered pump attached to the tractor. 20-30 ft spacing. More specific information is not known at this time.

Worksheet 3-2

Initial Production Area / Facilities Evaluation

(For each component, select the rank value of the description that best describes conditions on the dairy.)

COMPONENTS THAT RANK 1 OR 2 SHOULD BE ADDRESSED

Facility Name: Spring Hill Jersey Name of Preparer: T. Dean Date: 5/29/06

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
Storm water Control					
Storm water Runoff Management	Storm water is either diverted around feed storage areas and manured areas, or captured and stored for later land application. Facilities are well maintained and function as intended.	Storm water is either diverted around feed storage areas and manured areas, or captured and stored for later land application. Facilities are in need of some maintenance.	Storm water typically crosses feed storage areas or manured areas some rainy seasons and is retained in corrals or on cropland.	Storm water typically crosses feed storage or manured areas each rainy season and may then flow into drainage courses that lead off the property or to waterways.	1
	Comment or describe concerns if rank is 1 or 2: • The main facility (milk barn, cheese plant, cold storage, feed storage area, and confined corral area) generally all drains to the undersized waste storage pond via an underground pipeline and gravity. The problem is that this waste storage pond is undersize and regularly overflows into the pasture and then drains to a perennial creek. • There is a drop inlet structure in the main driveway for storm water, which also is tied to this pipeline. • No storm water is diverted from the main facility except for the storm water captured in the fresh water pond just upland from the main facility. • There are no diversions on the property to protect fields from major storm water flows that are intensified due to the watershed and topography.				
Protection of areas with manure from inundation by a waterway overflow	Whole facility is outside of any historic floodplain	All housing, corrals, ponds, and other areas with manure are protected from overflow of waterways during a 100-yr, 24-hr storm event.	Manure storages, corrals or other manured areas are likely to be protected from overflow of waterways during a 20-yr, 24-hr storm event.	Manure storages, corrals or other manured areas are likely to become inundated during storms smaller than a 20-yr, 24-hr storm event.	4
	Comment or describe concerns if rank is 1 or 2:				

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
Management of Corrals (and other areas with manure)	Corrals and other uncovered and unpaved manured areas are sloped and free of low spots in order to prevent ponding of rainfall and other water. Soils are fine-textured and compacted.	Corrals and other uncovered and unpaved manured areas have depressions that will likely cause ponding over 10% of the surface. Soils are not compacted.	Corrals and other uncovered and unpaved manured areas have depressions that will likely cause ponding over 20% of the surface. Soils are loam to sandy loam in texture and not compacted.	Corrals and other uncovered and unpaved manured areas have depressions that will likely cause ponding over 30% of the surface. Soils are sandy loam or coarser.	3
	Comment or describe concerns if rank is 1 or 2: The calves and dry cows are in pastures on the ranch. The milk cows are placed on pasture that is leased during the winter. During all other times the milk cows are corralled in a fairly small area that has some steep slopes.				
Manure Transfer					
Wastewater Collection (capture of wastewater from the milkbarn, corrals, etc., and stormwater that has contacted manure or feed)	All needed alleys, berms, curbs, ditches, pipelines and other drainage features are in place and in good working condition with no sign of over topping or other forms of failure.	All needed alleys, berms, curbs, pipelines and other drainage features are in place. There are signs of poor maintenance or occasional over topping or other forms of failure.	Manure or stormwater that has contacted manure or feeds seasonally runs onto fields or pastures operated by the producer.	Manure or stormwater that has contacted manure regularly runs onto land at the facility or seasonally runs off the property.	1
	Comment or describe concerns if rank is 1 or 2: • Solid manure is scraped from the milk barn and the corral holding the milk cows. The solid manure is then stacked next to where the new free-stall barn is being constructed. The drainage next to manure stack is questionable. Some runoff may end up in the undersized waste storage pond and some runoff will end up out in the fields. There is a perennial creek that flows through the northwest portion of the property where this runoff may eventually enter. • Wastewater from the milk barn, cheese plant, and storm water runoff over the corralled area holding the milk cows drains to a central point next to the cold storage building and then drains via gravity and an underground outlet to the undersized waste storage pond located at the north end of the property in a pasture area. There is not enough storage and this pond regularly overflows into the pasture and may (probably) end up in the perennial creek located at the northwest portion of the property. • Whey material is trucked from the cheese plant and stored in a newly constructed waste storage pond cost shared with the NRCS. The whey material is eventually fed back to the cows and there appears to be enough storage capacity for the whey material.				

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
Manure Transport (hauling equipment for manure solids and conveyances for wastewater)	Pipelines, ditches, vehicles are in place and appear to be in good working condition to transfer manure to all land application areas required to achieve nutrient balance	Pipelines, ditches, vehicles are in place to transfer manure to all land application areas required to achieve nutrient balance, but there are a few maintenance problems.	There is limited access to some fields needed to achieve nutrient balance.	No access to some of the land required to achieve nutrient balance	1, 2
	Comment or describe concerns if rank is 1 or 2: • The infrastructure to effectively transport all wastewater to fields is non-existent. • The producer does have a manure spreader for solids but access is limited due to the topography of the ranch.				
Wastewater pumps and pipelines	Available, appear to be of adequate capacity, and in good working condition	Available, capacity may be inadequate, and may need maintenance.	Sometimes unavailable and part of the system is in poor repair	Major components of the system are absent or inoperable	1
	Comment or describe concerns if rank is 1 or 2: The infrastructure to effectively transport all wastewater to fields is non-existent.				
Manure Storage					
Management of Ponds (solids ponds, holding ponds, and tailwater ponds containing	No evidence or history of pond overflows. Ponds are pumped when timing is right for nutrient applications to pasture or cropland. Solids are not a problem.	No evidence or history of pond overflows. Liquids must occasionally be pumped to cropland at undesirable times. Only minor accumulation of solids.	Periodic overflows occur; ponds are occasionally full during the winter, or liquids must regularly be pumped to cropland at undesirable times. Large accumulation of solids.	Overflows occur most winters and ponds are often full throughout the winter. Water that is pumped to land and may subsequently flow off the property.	1

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
manure)	Comment or describe concerns if rank is 1 or 2: • There is one waste storage pond located at the north end of the property in a pasture area, which regularly overflows during non-storm events into the pasture and may (probably) end up in the perennial creek located at the northwest portion of the property. • Whey material is trucked from the cheese plant and stored in a newly constructed waste storage pond cost shared with the NRCS. The whey material is eventually fed back to the cows and there appears to be enough storage capacity for the whey material. <u>This pond may or may not be used for future storage of whey material.</u> • There are no tailwater systems / ponds in place.				
Pond Capacity (Determined as described in Appendix 3-2)	Capacity of existing storage ponds meets or exceeds the calculated volume needed for wastewater retention and proper land application.	Capacity of existing storage ponds meets or exceeds the calculated volume needed for wastewater retention.	Capacity of existing storage ponds is less than 90% of the calculated volume needed for wastewater retention	Capacity of existing storage ponds is less than 75% of the calculated volume needed for wastewater retention	1
	Comment or describe concerns if rank is 1 or 2: There effectively is no capacity.				
Pond Design (separation distance between pond bottom and high water table)	No regulatory requirement or there is documentation showing that separation is greater than is required by regulation	Regulation exists and there is not any documentation showing that separation is greater than is required by regulation	Separation is less than is required by regulation and underlying soils are clay loam or finer.	Separation is less than is required by regulation and underlying soils are loam or coarser.	4
	Comment or describe concerns if rank is 1 or 2:				
Pond Construction	Ponds are underlain with soils that meet applicable regulations or have a liner that meets the regulations. Sidewalls have few cracks, rodent holes, or other maintenance problems	Ponds are underlain with soils that meet applicable regulations or have a liner that meets the regulations. Sidewalls have many cracks, rodent holes, or other maintenance problems	No data showing that ponds are underlain with soils that meet applicable regulations or have a liner that meets the regulations. Soils are loam or finer.	No data showing that ponds are underlain with soils that meet applicable regulations or have a liner that meets the regulations. Soils are sandy loam or coarser.	3, 2

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
	Comment or describe concerns if rank is 1 or 2: Soil is Steinbeck Loam 2-9% slope (SnC). There is no data currently available with permeability results.				
Pond Operation (pond has 25-year, 24-hr stormwater capacity marker)	Permanent marker is in place and functions satisfactorily.	Temporary marker is being used	No marker is in place but there is no evidence of pond overflows or emergency releases.	No marker is in place and there is evidence of pond overflows or emergency releases.	1
	Comment or describe concerns if rank is 1 or 2: There is no marker in place and there is evidence of pond overflow and/or breach.				
Manure Treatment					
Manure Treatment (settling ponds, mechanical separators, digesters, composting, etc.)	Treatment components are in place and meet the intended purpose.	Needed treatment components are in place but do not always meet the intended purpose	Needed treatment components are in place but do not meet the intended purpose	Needed treatment components are not in place	1
	Comment or describe concerns if rank is 1 or 2: • There are manure stacks with wasted feed, but no composting facility. • There are no settling ponds or mechanical solid separators.				
Land Application Facilities					
Measurement of Manure Applied to Cropland	Liquid or solids measuring equipment or methods are used to quantify volumes or rates to within 10% of the target amount.	Methods of measurement are used to quantify volumes or rates to within 20% of the target amount.	Methods are in place but the accuracy is not known or is inadequate to quantify volumes or rates to within 20% of the target amount.	Methods are in place but are not used or there is not any reliable or accurate method to measure amount of manure applied to land	1

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
	Comment or describe concerns if rank is 1 or 2: There is not any reliable or accurate method to measure amount of manure applied to land.				
Controlling Rate of Manure Application to Cropland	Valves, calibrated spreaders, or other equipment is adequate to control the rate of manure application.	Devices are available to control the application rate but are used infrequently or are sometimes unreliable.	Controlling devices are in place but are not used or are unreliable or often unsatisfactory.	There is no reliable or accurate method to control the rate of manure application.	1
	Comment or describe concerns if rank is 1 or 2: • There is no reliable or accurate method to control the rate of liquid manure and wastewater applications. • The manure spreader may have way to control the rate of solid manure application?				
Mixing Manure Pond water and Irrigation Water prior to application to cropland	Manure pond water and irrigation water are well mixed in a pond prior to application to cropland.	Manure pond water and irrigation water are mixed prior to entering distribution (turnout) pipelines or ditches prior to application to cropland.	Manure pond water and irrigation water enters at opposite ends of distribution (turnout) pipelines or ditches.	There is limited or no means of mixing manure pond water with irrigation water prior to application to cropland..	1
	Comment or describe concerns if rank is 1 or 2: Liquid manure is not mixed with freshwater prior to irrigation except for the waste water, rainwater / storm water that enters the waste storage pond.				
Backflow Prevention (Keeping wastes out of irrigation water supply sources)	Direct connected irrigation supplies are protected by "chemigation" check valve, and discharges to standpipes have two-pipe diameter air gaps.	Direct connected irrigation supplies are protected by "chemigation" check valve, but discharges to standpipes have less than two-pipe diameter air gaps.	Irrigation water supply discharges against a "head" of water containing manure (side inlet to a stand or box), and a check valve is in place but no chemigation valve.	Irrigation water supply discharges against a "head" of water containing manure (side inlet to a stand or box), and there is no check valve or chemigation valve.	NA
	Comment or describe concerns if rank is 1 or 2: The producer does not mix liquid manure and waste water with water from a deep well for irrigation.				
Potential for rainfall runoff or other liquid to accumulate or run	No wells or no potential for water containing manure or silage leachate to flow near well sites.	Low potential for water containing manure or silage leachate to flow near well sites or run over well head site.	Surface topography is likely to cause wastewater to flow over a well head.	Surface depression is likely to cause accumulation of liquids at a well head.	4

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
over well head site	Comment or describe concerns if rank is 1 or 2:				
Land Application Equipment (for wastewater and manure solids)	There is a method to apply manure to all land needed to achieve nutrient balance, and all equipment is in good working condition.	There is a method to apply manure to all land needed to achieve nutrient balance, but equipment needs maintenance.	There is no documented method to apply nutrients, or equipment is in place but is not reliable or needs repair.	There is no documented method to apply nutrients, or equipment needed for land application is missing or unrepairable.	1
	Comment or describe concerns if rank is 1 or 2: • The infrastructure to effectively transport all wastewater to fields is non-existent. • The producer does have a manure spreader for solids but access is limited due to the topography of the ranch.				
Cropland Management for Irrigation - Furrow and Border Irrigation (see Chap. 4, Appendix 4-C)	Field slopes are appropriate and uniform. Field lengths are appropriate for flow rates and soil types.	Field slope is uneven and in some areas is not appropriate. Field lengths are appropriate.	Field slopes are generally appropriate and uniform, but filed lengths are somewhat excessive.	Low spots in the field impede water advance. Field lengths are excessive for flow rates and soil types.	* N/A
	Comment or describe concerns if rank is 1 or 2: There is no furrow or border irrigation. The majority of the ranch is dry-land farmed.				
Cropland Management for Irrigation - Contour flood irrigation	Distribution ditches and turnout points (cuts) provide uniform coverage to 90% or more of the field surfaces.	Distribution ditches and turnout points provide uniform coverage on 80% to 90% of the field surfaces.	Distribution ditches and turnout points provide uniform coverage on 70% to 80% of the field surfaces.	Distribution ditches and turnout points provide uniform coverage on less than 70% of the field surfaces.	*N/A
	Comment or describe concerns if rank is 1 or 2: There is no contour flood irrigation, although this may be an option. There is sprinkler irrigation (hand-lines) on about 1/5 of the ranch. Although, this irrigation system is inadequate for the entire ranch.				
Solid Manure Containment During Application to Cropland	Setbacks, physical controls, screens or other means are used to keep manure onsite during application. As a result, the application process is not difficult to manage.	Setbacks, physical controls, screens or other means are used but inadequate. Careful management of application is necessary to prevent manure movement off the site.	Physical controls and management practices are inadequate to prevent manure movement off the site, but such movement does not threaten water quality.	Manure movement off the site occurs.	1

Component	Low Risk (Rank 4)	Mod-Low Risk (Rank 3)	Mod-High Risk (Rank 2)	High Risk (Rank 1)	Rank
	Comment or describe concerns if rank is 1 or 2: • There are no diversions in place (except for the freshwater pond) to prevent storm water flow from the above water shed running over fields that may receive solid manure. • There is no tailwater system in place. • Storm water may transport nutrients from solid manure applications to a perennial creek on the ranch.				
Liquid Manure Containment During Application to Cropland	Irrigation runoff is prevented, or a tailwater recovery system is in place, is of adequate capacity, and is in good working condition.	Irrigation runoff is confined to fields by using berms, ditches, berms, etc. There is no runoff to waterways.	Tailwater is confined to fields using ditches, berms, etc. Runoff to waterways sometimes occurs but waste constituents are at low levels.	Tailwater is allowed to run onto neighboring property or into drainage courses leading to waterways.	1
	Comment or describe concerns if rank is 1 or 2: • There are no diversions in place (except for the freshwater pond) to prevent storm water flow from the above water shed running over fields that may receive solid manure. • There is no tailwater system in place. • Storm water may transport nutrients from solid manure applications to a perennial creek on the ranch.				
Rainfall or irrigation induced erosion from land where manure is applied	No evidence of erosion from fields and no noted potential for such erosion to occur.	Noted potential for erosion from fields but no evidence that such erosion has occurred.	Evidence of minor rilling or other forms of erosion from fields	Evidence of significant rilling or other forms of erosion from fields	1
	Comment or describe concerns if rank is 1 or 2: There is evidence of significant rilling or other forms of erosion from fields.				
Animal Access to Waterways					
Animal Access to Waters that Flow Through the Site	There are no waterbodies that transect the site, or animals do not have access to such waterbodies.	Facilities to prevent animals from accessing waterbodies are poorly designed or maintained.	Animals routinely have access to waterbodies that only flow off site during storm events.	Animals routinely have access to perennial flowing waterbodies.	4
	Optional; Comment or describe concerns if rank is 1 or 2:				

Worksheet 3-4

Evaluation of Manure Distribution on Cropland

Facility Name: ____Spring Hill Dairy_____ Name of Preparer: _____SF_____ Date: _3/29/06_ Page ____ of _____

	Solid Manure Application (Y = Yes; N = No)				Liquid Manure Application (Y = Yes; N = No)					
Field	Application Equipment Access?	Solid Manure Applied?	[1]Evidence of Poor On-field Distribution?	[2]Evidence of Excessive Application Rate?	Equipment or Irrigation Access?	Liquid Manure Applied?	Head to Head Flows When Mixing with Irrigation Water?	Dilution Water Available All Year?	[3]Evidence of Uneven Distribution Across Field?	Sludge from Pond Cleanout Applied?
1	Y	Y	Y	N	Y	Y	NA	N	Y	Y
2	Y	Y	Y	N	Y	Y	NA	N	Y	Y
3	Y	Y	-	-	N	N	NA	N	Y	N
4	Y	Y	-	-	N	N	NA	N	Y	N
5	Y	Y	Y	Y	Y	Y	NA	N	Y	N
6	Y	Y	Y	Y	Y	Y	NA	N	Y	N
7	Y	Y	-	-	N	N	NA	N	Y	N
8	Y	Y	Y	Y	Y	Y	NA	N	Y	N
9	Y	Y	Y	Y	Y	Y	NA	N	Y	N
10	Not Applied	N	-	-	N	N	NA	N	Y	Y
11	Y	Y	Y	Y	Y	Y	NA	N	Y	N
12	Not applied	-	-	-	NA	NA	NA	N	NA	NA

[1] Example: Areas of varying manure accumulation and/or poor crop performance
[2] Example: Poor crop performance
[3] Example: Areas of varying manure accumulation and/or poor crop performance

Worksheet 3-5

Crop Land Risk Assessment

(THE SIGNIFICANCE OF ALL "YES" ANSWERS SHOULD EVALUATED FOR TRIGGERING THE APPROPRIATE LEVEL OF ACTION)

Facility Name: ____**Spring Hill Jersey**_____ Name of Preparer: _____**SF**_____ Date: __**3/29/06** Page _1__ of __2__

Field	Acres	Predominant Soil	[1]Runoff Class	Does field have tile drainage?	Historical depth to ground-water 5' or less?	Soil Test Levels (if available)			Risk of Runoff and Erosion				High Risk Area in Field?	
						pH	P (ppm)	K (pp-m)	Irrigation Tailwater Drains Offsite?	Runoff of Manure with Rainfall likely?	Are there signs of erosion from rain or irrigation?		Highly permeable soils?	Adjacent Waterbody
1	20	Steinbeck Loam 9-15 % SnD2	-	N	N	NA	-	-	Y	Y	Y		N	N
2	15	SnD2	-	N	N	NA	- -	-	Y	Y	Y		N	N
3	15	Steinbeck Loam 2-9% SnC	-	N	N	NA	-	-	Y	Y	Y		N	N
4	40	Los Osos Clay Loam 2-15% LoD	-	N	N	NA	-	-	Y	Y	Y		N	N
5	46	¾ Los Osos Clay Loam 30-50% LoF2 ¼ SnC ¼ LoD	-	N	N	NA	-	-	Y	Y	Y		N	N
6	40	½ SnC ½ LoF2	-	N	N	NA	-	-	Y	Y	Y		N	N
7	40	Snc ~1/5 RoF2	-	N	N	NA	-	-	Y	Y	Y		N	N
8	17	SnC	-	N	N	NA	-	-	Y	Y	Y		N	N
9	20	½ SnC ½ SnD2	-	N	N	NA	-	-	Y	Y	Y		N	N

[1] Runoff Class is available in the soil survey and is not needed unless Phosphorous -Index is to be used

Worksheet 3-5

10	30	Los Osos Clay 15-30% LoE	-	N	N	NA	-	-	Y	Y	Y		N	N
11	30	½ SnC ½ LoD2	-	N	N	NA	-	-	Y	Y	Y		N	N
12 HQ		½ SnC ½ SnD2	-	N	N	NA	-	-	-	-	-	-	N	-

Preventative Maintenance Plan

Facility: **Spring Hill Jersey**

Item Maintained	Action	Who	How Often	Dates Completed	Comments
All Mechanical Equipment	Check Daily	Buck Piazzia	Daily		
Irrigation Equipment	Check Daily in Season	Jose Morales	Seasonal		
Generators	Check Monthly	Alex Perez	Monthly		
Lagoon/Pond	Check weekly for signs of breaching or	Larry Peter	Weekly		
Fences/Corrals	Check weekly	Larry Peter	Daily		

WS 3-7

Manure Pond Breach Emergency Plan

Back-up Equipment:

___D9 Caterpillar_____

___Back Hoe_____

___4-wheel Drive Pickup_____

___690 excavator_____

___Skip steer loader_____

___10 yrd dump truck_____

_____

_____

Contacts for help and information:

_____

_Hired Help_____

_Contractor_____

_Brother Tom_____

_____

Contacts to report a problem:

_911_____

_RWQCB___- Adona White 707-576-2672 _____

_County Sherriff_____

_Department of Transportation_____701-565-2511 _____

_Fish and Game_____916-653-7664_____

_____

Electrical Outage Emergency Plan

Back-up Equipment:

_Generator: _____

_PTO on tractor to run milk barn _____

Contacts for help and information:

_Hired help_____

_PGE_____800-743-5000_____

Contacts to report a problem:

_PGE _____800-743-5000_____

WS 3-7

Manure Transport Breach Emergency Plan

Back-up Equipment:

___D9 Catterpillar_____

___Back Hoe_____

___4-wheel Drive Pickup_____

___690 excavator_____

___Skip steer loader_____

___10 yrd dump truck

_____

_____

_____

_____

Contacts for help and information:

_____

_Hired Help_____

_Contractor_____

_Tom - brother_____

__911-emergency_____

Contacts to report a problem:

_____

__County Sheriff_____

__DOT_____707-565-2231_____

__Office of Emergency Serv._____707-565-1152_____

__Fish and Game_____916-653-7664_____

WS 3-7

_____ Emergency Plan

Back-up Equipment:

Contacts for help and information:

Contacts to report a problem:

__NRCS – Sonoma County – Petaluma _____

WS 3-8

Mortality Management Plan

Temporary Mortality Storage:

__Petaluma Auction Yard_____

Disposal Method:

__Haul with truck whenever needed_____

Frequency of Pick up:

___When there is a death discovered, a call is made and carcass is collected.

Contacts for help and information:

_Hired help_____

Producer: Spring Hill Jersey Date: 8/29/06 WS 4-6

Evaluation of Nutrient Management			
Management Principle	**Desirable Management**	**Current Management**	**Change Needed? Y/N**
Estimate crop nutrient needs	Collect actual yield data	Producer does not collect yield data.	Y
Account for all nutrient sources	Consider nitrogen from irrigation water, legume plow down, and other significant sources	Nutrient sources are not accounted for.	Y
Set target application rates	Use crop needs, all sources, and reasonable N losses to set target	No application rates are targeted.	Y
Correctly time manure and fertilizer applications	No large pre-plant liquid manure applications, use several in-season applications that match crop uptake patterns, apply solids in the spring, etc	No specific application dates are set. Application is "before it rains". Sept-Oct or based on observation: when it gets dry or grass starts to turn color and has a dry appearance.	N
Distribute manure evenly among fields	Manure is distributed to all fields, no field receives excessive amounts relative to other fields	Liquid and solid manure is not spread evenly among fields.	Y
Distribute manure evenly on fields	Liquid and solid manure is applied evenly on the whole field each application	The irrigation system for liquid manure and wastewater is pumped only on **one field** via a tractor PTO pump and "big gun" irrigation system. Solid manure is difficult to spread on some fields because steep topography.	Y
Know manure application rate	Measure the weight or volume of manure applied by field and application.	The application rate is unknown.	Y
Apply desired rate	Manure applications can be adjusted to apply desired amounts. Desired fields receive desired amounts.	There is no means to adjust liquid manure application rates.	Y
Know manure nutrient content	Analyze nutrient content of manure from each source before each application	Does not test manure for nutrient content.	Y
Sample for soil nutrient content	Test for P and K every 3 years. For N: post harvest 4' deep, pre-application tests in-season, etc	Soil tests have never been done.	Y
Record important information	Record all fertilizer and manure applications by field, type, amount, date, nutrient content, plant and harvest dates.	Does not keep hard copy records	Y

Management Principle	Desirable Management	Current Management	Change Needed? Y/N
Monitor crop growth in-season	Observe crop conditions, sample tissue and soil as needed. Adjust application plan as needed.	Tissue or soil tests are not conducted.	N
Evaluate outcome of management annually	Compare nutrients applied to crop use, use post harvest deep soil test for N	Management plan is based on memory of prior year,s success.	Y
Schedule irrigations to minimize deep percolation	Base irrigation timing and amount decisions on actual soil moisture conditions or climatic based crop water use estimates	Irrigation scheduling is based on climate and annual practice.	Y
Operate sprinkler irrigation system to achieve uniform application	Move sprinklers/laterals a distance less than 60% of the wetted diameter	Irrigation system is inadequate.	Y
Operate furrow or border irrigation system to achieve uniform application	Onflow rates and shutoff times are selected that encourage equal intake opportunity times along the field length		NA
Keep Irrigation Records	Record irrigation dates and amounts applied to each field	No records are kept.	Y

WS 4-C-1

Simple Stationary Big Gun Irrigation System/Management Evaluation

Producer ____Larry Peter (Spring Hill Jersey) Date: 3/29/2006

Irrigation Uniformity

Describe the spray pattern. Excessive misting indicates pressure is too high. A stream of water with little break up could indicate that the pressure is too low. *(Excessive pressure will result in excessive wind drift and evaporation. Low pressure will result in a non-uniform "doughnut pattern" of application)*

Historic spray pattern is such that the operator starts his sequence at the base of the hill and moves sprinkles vertically up the hill after 2 hours.

Is the sprinkler spacing or move distance limited to 50 to 60% of the wetted diameter? *(Impact-type sprinklers require adequate wetting pattern overlap to achieve a uniform application)*

Irrigation was not observed at this time.

Runoff

Does irrigation runoff occur and is it allowed to leave the property?

Comments:

It is apparent from gullies in the field, that run-off is allowed to leave the property.

No tail water return system or catch pond is being used.

Timing and Amount of Applications

Amount of water typically applied each irrigation:

$$\text{Inches} = \frac{96.3 \times Q\ (\text{gpm}) \times \text{Time (hrs)}}{\text{Area } (\text{ft}^2)}$$

A= feet of move distance forward X feet of move distance laterally

WS 4-C-1

Inches = __500_____(gpm) X _____8____(hrs) X 96.3

____740520_____(ft^2)

= ___0.52_____ (in.)

Target maximum amount of water to refill rootzone:

= Root zone depth (in.) X available water capacity (in./in.) X 0.5
(see table 4-C-1)

= ____36_____ X _____0.15_____ X 0.5

= ____2.7_____ (in.)

Excessive deep percolation may be occurring if the amount applied exceeds the target maximum by more than 20%

Comments: ___Recommend further investigation into irrigation for the pumpkin/potato fields._____

Estimate of crop water use between irrigations during the peak of the season:

Crop _Pumpkin/Potato_ Crop water use for this irrigation period __Unknown____
(see table 4-C-2)

Planting date _June_____ No. days between irrigations ___As needed_____

Estimated Period crop water use: _____ X _____ = _____ (in.)

Excessive deep percolation may be occurring if the amount applied exceeds the period crop water use more than 20%

Comments: _____Based on irrigation evaluation for silage, it is assumed that there is not enough irrigation water being applied to the potatoes and pumpkins. Record keeping is essential to complete a better evaluation of current irrigation water input and crop irrigation water needs.

WS 7-X

Producer: _Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _1-2___Ac._216 Year: _2006- 07____ Crop: _Silage__ Season: __2006___

Date	Activity
October/06	Add Liquid Fertilizer with pipe irrigation.
Nov. 06	Applies Sludge from pond with manure spreader.
2007	Field will be converted to pasture.

WS 7-X

Producer: Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _8__Ac._17 Year: _2006 -07 Crop: Potatoes/Pumpkin__ Season: __2006___

Date	Activity
June	Plant
Nov1	Add liquid fertilizer
2007	Convert all cropped area to pasture.

WS 7-X

Producer: Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _9___Ac._20 Year: _2006____ Crop: _Pasture__ Season: __2006___

Date	Activity
Aug-Sept	Apply liquid fertilizer
2007	

WS 7-X

Producer: Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _10___Ac._30 Year: _2006-07_ Crop: _Rangeland__ Season: __2006-07___

Date	Activity
2006-07	Cattle graze on Rangeland
Sept – Oct	Applies Sludge to Rangeland

WS 7-X

Producer: _Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _11___Ac._30 Year: _2000-07__ Crop: _Pasture__ Season: __2006-07

Date	Activity
Oct	Apply liquid fertilizer

WS 7-X

Producer: Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _12___Ac._15 Year: _2006____ Crop: _HQ __ Season: _____

Date	Activity
--	No Land application or nutrient plan for Head Quarters.

WS 7-X

Producer: _Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _11___Ac._30 Year: _2000-07__ Crop: _Pasture__ Season: __2006-07

Date	Activity
Oct	Apply liquid fertilizer

WS 7-X

Producer: _Larry Peter (Spring Hill Jersey)

Current Year Field by Field Land Application / Nutrient Management Plan

Field(s): _3-7___Ac._216 Year: _2006-07__ Crop: _Silage__ Season: __2006-07

Date	Activity
October	Add Liquid Fertilizer with sprinkler.

Data Used in Farm Wide Initial Nitrogen Balance Assessment

Producer: Spring Hill Jersey Larry Peters Date: 3/7/2007 Entered by: LH

Checked by:

Animal Description	Number of Animals	Estimated Avg weight
Milking Cows	400	1000
Dry Cows	100	1050
Bred Heifers	40	725
Heifers, 1 year to breeding	50	550
Calves, 3 months to 1 year	100	350
Calves, birth to 3 months	46	100

601 Total 1000 lb. AUs

736 Total Animals

Breed of Cows: Jersey

Animal Housing The sum of each row should equal 100%.	% of animals in each facility type Flushed Freestall	Scraped Freestall	Flushed Lanes	Scraped Drylot
Milking Cows (60% Pasture)		40%		
Dry Cows (60% pature)		40%		
Bred Heifers (100% pasture)				
Heifers, 1 year to breeding (40% pasture)				60%
Calves, 3 months to 1 year (40% pasture)				60%
Calves, birth to 3 months				100%

Waste Use and Treatment

Percent of dry manure used off dairy	0%	
Percent of waste water used off dairy	0%	
Tons of N imported with bedding per year	0.0	N, Tons/yr
Double cropped acres used to dispose of waste onsite	0	Acres
Single cropped acres used to dispose of waste onsite	270	Acres
Cost per unit of commercial Nitrogen	$0.25	$/lb. - N

Current Cropping data

Crop Code	Crop Name	Acres	Yield (tons/ac)	% Moisture	% Protein	Fertilizer N lbs/ac.	Irrigation N lbs/ac.	Legume N lbs/ac
11	Oats silage, soft dough	270.0	7.2	70.0%	12.0%			
25	Ryegrass, hay	270.0	1.2	10.0%	10.0%			
99	Bell and Fava beans	270.0	3.6	70.0%	12.0%			
99	Potatoes and Pumpkins	20.0						
99	Pasture, neighboring	160.0	2.0	60.0%	11.0%			
99	Pasture, Fallon Rd	311.0	2.0	60.0%	11.0%			
99	Pasture, Westside Rd	100.0	2.0	60.0%	11.0%			
99	Pasture, Westside Rd	709.0	2.0	60.0%	11.0%			

Include acres for each crop of double or triple cropped fields on separate rows of the table.
For example, a 40 acre field used to grow corn silage and small grain silage in the same year would appear in this table as 40 acres of corn silage and 40 acres of small grain silage.

Data Used in Storage Pond Calculations

Entered by: LH

Producer: Spring Hill Jersey Date: 3/7/2007 Checked by: _____

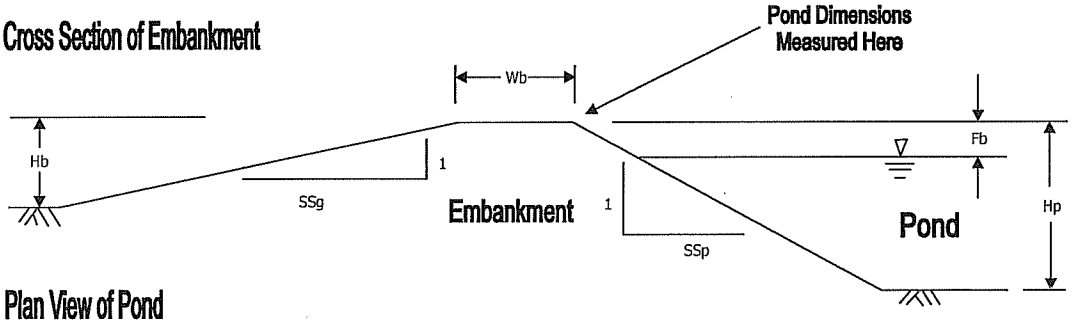
Pond Design Data

Days of Storage	365	days	
Net Daily Water Use per Milking Cow	40	gal/cow/day	Producer provided value
Other Water (Cheese Factory Waste Water)	1,429	gal/day	
Manured surfaces draining to the pond	4.3	acres	
Concrete surfaces draining to the pond	26,000	ft^2	
Roof surfaces draining to the pond	21,050	ft^2	

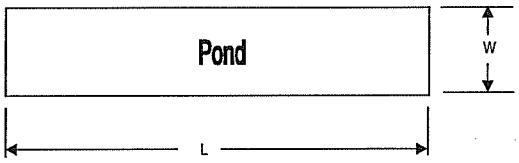
			Pond 1	Pond 2	Pond 3
Hb	Embankment Height	ft	4.0	4.0	4.0
Wb	Embankment Top Width	ft	4.0	8.0	4.0
Fb	Freeboard	ft	2.0	2.0	2.0
Hp	Depth of Pond (Freeboard + Design Depth)	ft	15.0	20.0	15.0
SSg	Side Slope (Ground Side)	'X' Horiz:1 Vert	3.5	3.0	3.0
SSp	Side Slope (Pond Side)	'X' Horiz:1 Vert	1.5	2.0	2.0
L	Pond Length (measured at top inside edge of embankment)	ft	270	270	270
W	Pond Width (measured at top inside edge of embankment)	ft	55	175	110
C:F	Cut:Fill Ratio	'X' Cut:1 Fill	1.3	1.3	1.3

			Pond 4	Pond 5	Pond 6
Hb	Embankment Height	ft			
Wb	Embankment Top Width	ft			
Fb	Freeboard	ft			
Hp	Depth of Pond (Freeboard + Design Depth)	ft			
SSg	Side Slope (Ground Side)	'X' Horiz:1 Vert			
SSp	Side Slope (Pond Side)	'X' Horiz:1 Vert			
L	Pond Length (measured at top inside edge of embankment)	ft			
W	Pond Width (measured at top inside edge of embankment)	ft			
C:F	Cut:Fill Ratio	'X' Cut:1 Fill			

Cross Section of Embankment



Plan View of Pond



Data Used in Dairy Waste Management Calculations

Producer: Spring Hill Jersey

Date: 3/7/2007

Crop Code	Crop Name	Units	Average Yield	% Moisture (typical)	% Protein (typical)	N LB/Unit
1	Alfalfa hay	tons	8	(10%)	18%-24% (21%)	60
2	Barley (grain)	tons	2.5			64
3	Barley Silage, boot stage	tons	8	(70%)	15%-19% (17%)	16
4	Barley Silage, soft dough	tons	16	(70%)	8%-12% (10%)	10
5	Bermudagrass, hay	tons	4		9% - 13% (11%)	4
6	Corn (grain)	tons	5			48
7	Corn (silage)	tons	30	(70%)	8%-11% (9%)	8
8	Cotton	bale	3			80
9	Clover-grass, hay	tons	6	(10%)	10%- 14% (12%)	38
10	Oats (grain)	tons	1.6			100
11	Oats silage, soft dough	tons	12	(70%)	8%-15% (12%)	10
12	Oats (hay)	tons	4	(10%)	8%-15% (12%)	40
13	Tall Fescue, hay	tons	6	(10%)	8%-12%(10%)	32
14	Safflower	tons	2			100
15	Sorghum	tons	4	(10%)		50
16	Sudan silage	tons	8/cutting	(70%)	8%-12% (10%)	11
17	Sudan hay	tons	8	(10%)	8%-12% (10%)	32
18	Sugar Beets	tons	30			9
19	Triticale, boot stage	tons	12	(70%)	14%-18% (16%)	15
20	Triticale, soft dough	tons	22	(70%)	8%-12% (10%)	10
21	Wheat (grain)	tons	3	(10%)		58
22	Wheat Silage, boot stage	tons	10	(70%)	15%-19% (17%)	16
23	Wheat Silage, soft dough	tons	18	(70%)	9%-13% (11%)	11
24	Orchardgrass, hay	tons	6	(10%)	9%-14% (11%)	35
25	Ryegrass, hay	tons	6	(10%)	8%-12% (10%)	32
26	Timothy, hay	tons	6	(10%)	9%-14% (11%)	35
99	Other					

Estimate of daily winter Barn Water Usage	Typical Volume	Estimated Volume	Units	Number per milking	Total gallons/day
Bulk Tank:					
Automatic, 3 cycle wash	60-110		gal/wash	once/day	0
Manual Wash	30-50		gal/wash	once/day	0
Pipeline in Parlor:					
(Higher for long Flat Barns)	75-150		gal/wash		0
Milkhouse and Parlor floors	300-700		gal/wash		0
Bucket milkers	0 - 40		gallons/milking		0
Miscellaneous	0 - 50		gallons/milking		0
Cow Preparation Wash:	Flow from Drop Hoses at each cow				
Automatic	0-4.5		gal/wash/cow	400	0
Manual	0 -.5		gal/wash/cow	400	0
Wash Pen Sprinklers:					
Flow rate	2 - 7		gal/min/sprinkler		0

Milkings per Day =
Strings/Milking =
Sprinklers/pen =
Minutes/Wash =
Washes/String =

Total gallons per day = 0
Total gallons less sprinklers = 0
Wash Pen use, gallons/cow = 0.0

Do not double count water used for more than one purpose.

- When using this table, enter "Total Gallons per day" (pink) into "Other Daily Fresh Water added to the pond" (N8) and leave "Net Daily Water Use per Milking Cow" (N7) blank.
- If all water is cycled through storage tanks, you may use the tank volumes along with fill/drain cycles to estimate water usage per day, rather than this table. Enter the result as "Other Daily Fresh Water added to the pond" (N8), and leave "Net Daily Water Use per Milking Cow" (N7) blank. ***Be certain to add extra water that is pumped for washing in the winter.***
- "Net Daily Water Use per Milking Cow" (N7) is used when the best water use estimate available is in terms of Gallons per Milk Cow and neither this chart or the storage tank volume method of estimation are practical to use.
- Sprinkler flow rates vary with nozzle size and operating pressure. To estimate, consult design tables or measure flow rates.
- Separating sprinkler pen water from other water can be useful when planning for storage needs. Sprinkler pen water is separated from other water by entering "Wash pen use, gallons/cow" (yellow) into "Net Daily Water Use per Milking Cow" (N7), and entering "Total gallons less sprinklers (green) into "Other Daily Fresh Water added to the pond" (N8).

Concrete, Roof, Manured, and Bare Areas Drained to the Pond

Producer: Spring Hill Jersey

Entered by: LH

Checked by:

Date: 3/7/2007

Roof areas that may drain to pond					
Label	Width	Length	Area	Diverted	Diverted
	Ft	Ft	Ft^2	(y or n)	Area
1	100	500	50000	y	50000
2	100	175	17500	y	17500
3	38	25	950	n	0
4	138	100	13800	n	0
5	88	50	4400	n	0
6	50	38	1900	n	0
7			0		0
8			0		0
9			0		0
10			0		0
11			0		0
12			0		0
13			0		0
14			0		0
15			0		0
16			0		0
17			0		0
18			0		0
19			0		0
20			0		0
21			0		0
22			0		0
23			0		0
24			0		0
25			0		0
26			0		0
Total Roof Area =			88550 SqFt		
Diverted Roof Area =			67500 SqFt		
Undiverted Roof Area =			21050 SqFt		

Concrete areas NOT under a roof			
Label	Width	Length	Area
	Ft	Ft	Ft^2
A	200	130	26000
B			0
C			0
D			0
E			0
F			0
G			0
H			0
J			0
K			0
L			0
M			0
N			0
O			0
P			0
Q			0
R			0
S			0
T			0
U			0
V			0
W			0
X			0
Y			0
Z			0
Total Area (SqFt) =			26000

Manured and bare areas draining to the pond:

Measure the total potential area drained to the pond. The spreadsheet will subtract the concrete and roof areas to determine the manured and bare areas.

Total Area drained to the pond =	300240	SqFt
Total Roof Area =	88550	SqFt
Concrete Areas =	26000	SqFt
Total manured and bare areas =	4.26	Acres

9 acres minus pond surface areas

Dairy Waste Storage Pond Design

Producer: Spring Hill Jersey
Date: 03/07/07

Entered by: LH
Checked by:

	Flushed Freestall	Flushed Lanes	Scraped Freestall	Scraped Drylot	Animal Weight lbs	Daily Waste ft³/day
Milking Cows			160		1,000	219
Dry Cows			40		1,050	58
Bred Heifers					725	
Heifers, 1 year to breeding				30	550	23
Calves, 3 months to 1 year				60	350	29
Calves, birth to 3 months				46	100	6

Days of Storage	365	days
Net Daily Water Use per Milking Cow	40	gal/cow/day
Other Daily Fresh Water added to the pond	1,429	gal/day
25 year 24 hour Storm Rainfall	5.0	inches
Manured surfaces draining to the pond	4.3	acres
Concrete surfaces draining to the pond	26,000	ft²
Roof surfaces draining to the pond	21,050	ft²

Storage Volume Calculations

1) Animal Waste Volume

Manure Waste to be stored in the Pond		335	ft³/day
Manure Waste handled dry and not stored in the Pond			ft³/day
Total Manure waste volume for the storage period of	365 days =	122,275	ft³

2) Barn Water Volume

Wash Water used during the Storage Period of	365 days =	312,258	ft³
Other Fresh Water used during the Storage Period o	365 days =	69,700	ft³
	Total =	381,958	ft³

3) Rainfall and Runoff Volume

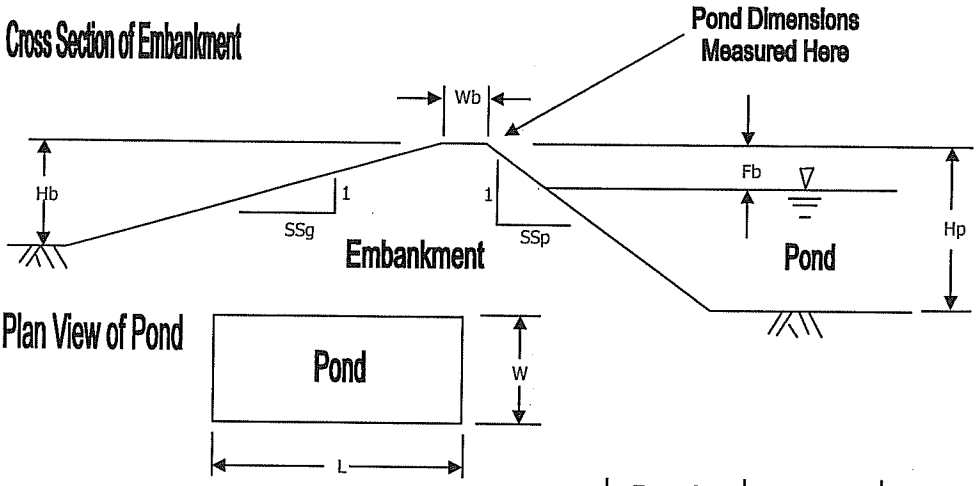
	25 YR. STORM	NORMAL	
Runoff Volume from Manured Surfaces	59,983	67,746	ft³
Runoff Volume from Concrete Surfaces	10,069	23,714	ft³
Runoff Volume from Roof Surfaces	8,769	38,399	ft³
Rainfall on Pond Surface	38,250	167,459	ft³
Rainfall Subtotals	117,070	297,317	ft³
Total Rainfall Influence (25 Yr. + Normal)		414,387	ft³
Evaporation Credit		62,978	ft³

4) Total Required Volume **855,643** ft³

Dairy Waste Storage Pond Design

Producer: Spring Hill Jersey
Date: 03/07/07

Entered by: LH
Checked by:



			Pond 1	Pond 2	Pond 3
Hb	Embankment Height	ft	4	4	4
Wb	Embankment Top Width	ft	4	8	4
Fb	Freeboard	ft	2	2	2
Hp	Depth of Pond (Freeboard + Design Depth)	ft	15	20	15
SSg	Side Slope (Ground Side)	'X' Horiz:1 Vert	3.5	3	3
SSp	Side Slope (Pond Side)	'X' Horiz:1 Vert	1.5	2	2
L	Pond Length (measured at top inside edge of embankment)	ft	270	270	270
W	Pond Width (measured at top inside edge of embankment)	ft	55	175	110
C:F	Cut : Fill Ratio	'X' Cut:1 Fill	1.3	1.3	1.3

			Pond 4	Pond 5	Pond 6
Hb	Embankment Height	ft			
Wb	Embankment Top Width	ft			
Fb	Freeboard	ft			
Hp	Depth of Pond (Freeboard + Design Depth)	ft			
SSg	Side Slope (Ground Side)	'X' Horiz:1 Vert			
SSp	Side Slope (Pond Side)	'X' Horiz:1 Vert			
L	Pond Length (measured at top inside edge of embankment)	ft			
W	Pond Width (measured at top inside edge of embankment)	ft			
C:F	Cut : Fill Ratio	'X' Cut:1 Fill			

Dairy Waste Storage Pond Design

Producer: Spring Hill Jersey
Date: 03/07/07

Entered by: LH
Checked by:

Volumes	Pond 1	Pond 2	Pond 3	
Pond Storage Capacity	95,414	540,684	236,097	ft^3
Additional Required Storage	760,229	219,545	none	ft^3
Cumulative Storage is:	Inadequate	Inadequate	Adequate	
Dimensions				
Footprint Length	306	310	302	ft
Footprint Width	91	215	142	ft
Bottom Length	225	190	210	ft
Bottom Width	10	95	50	ft
Bank Full Surface Area	14,850	47,250	29,700	ft^2
Surface Area at Max Capacity	12,936	43,754	26,724	ft^2
Earthwork				
Total Cut	2,644	16,910	6,871	cy
Potential Available Fill	2,034	13,008	5,285	cy
Total Fill Needed	1,422	2,484	1,630	cy
Excess Material*	612	10,524	3,655	cy

* Negative numbers indicate imported material is required.

Volumes	Pond 4	Pond 5	Pond 6	
Pond Storage Capacity				ft^3
Additional Required Storage				ft^3
Cumulative Storage is:				
Dimensions				
Footprint Length				ft
Footprint Width				ft
Bottom Length				ft
Bottom Width				ft
Bank Full Surface Area				ft^2
Surface Area at Max Capacity				ft^2
Earthwork				
Total Cut				cy
Potential Available Fill				cy
Total Fill Needed				cy
Excess Material*				cy

* Negative numbers indicate imported material is required.

Summary Conclusion:

Combined Pond Capacity	872,195	ft^3
Required Pond Capacity	855,643	ft^3

Combined Pond Capacity is ADEQUATE

Farm Wide Initial Nitrogen Balance Assessment

EWS2-1

Producer: Spring Hill Jersey
Date: 3/7/2007

Entered by: LH
Checked by:

Crop Code	Crop Name	Acres	Fertilizer N - Tons	Irrigation N - Tons	Legume N - Tons	Yield t/ac	Moisture %	Protein %	Harvested N lbs/ac	Harvested N lbs/ton	Total N tons
11	Oats silage, soft dough	270				7.2	70.0%	12.0%	83	12	11.2
25	Ryegrass, hay	270				1.2	10.0%	10.0%	35	29	4.7
99	Other	270				3.6	70.0%	12.0%	41	12	5.6
99	Other	20									
99	Other	160				2	60.0%	11.0%	28	14	2.3
99	Other	311				2	60.0%	11.0%	28	14	4.4
99	Other	100				2	60.0%	11.0%	28	14	1.4
99	Other	709				2	60.0%	11.0%	28	14	10.0

Estimated N removedby harvest with this cropping pattern	39.5
Total N applied as fertilizer	
Total N applied with liquid manure, accounting for any exported manure	28.2
Total N applied with solid manure, accounting for any exported manure	
Total N applied with manure, accounting for any exported manure	28.2
Total N applied from previous legume crops	
Total N applied from irrigation water source	
Total N imported with bedding	
Additional N needed or (excess) for this cropping pattern	11
Total N applied/Crop Removal	0.7

If **"Total N applied/Crop Removal"** is:	Then:
Less than or equal to 2	Excellent
Greater than 2 but less than 5	Minor to Major modifications will be needed
Greater than 5	Major modifications will be needed

Value of nitrogen in liquid manure as commercial N/year $7,039
Value of nitrogen in solid manure as commercial N/year

Criteria used to evaluate Manure Management System

Producer: Spring Hill Jersey
Date: 3/7/2007

Entered by: LH
Checked by:

Limits for land application as set by regulatory agency

(Note: This section is no longer used by the program)

Maximum allowable non-N salts to apply per double cropped acre per year	3000	lb./ac./yr.
Maximum allowable non-N salts to apply per single cropped acre per year	2000	lb./ac./yr.
Maximum Nitrogen allowed per double cropped acre per year	425	lb./ac./yr.
Maximum Nitrogen allowed per single cropped acre per year	250	lb./ac./yr.

Manure storage site as determined by housing type

% of waste going to pond or handled dry for each housing system:

		Pond	Dry
Flushed	Freestall	80%	20%
Flushed	Lanes	35%	65%
Scraped	Freestall	100%	0%
Scraped	Drylot	100%	0%

Nitrogen and Salt Excreted per Day per unit of Body Weight

		per 1000 lb.	per 1400 lb.	per animal
Milking Cows	lbs. N/day	0.728	1.02	0.73
Dry Cows	lbs. N/day	0.450	0.63	0.47
Bred Heifers	lbs. N/day	0.450	0.63	0.33
Heifers, 1 year to breeding	lbs. N/day	0.450	0.63	0.25
Calves, 3 months to 1 year	lbs. N/day	0.450	0.63	0.16
Calves, birth to 3 months	lbs. N/day	0.450	0.63	0.05
Non-Nitrogen salt	lbs. /day	1.282	1.79	

Nitrogen behavior after excretion of manure

Total % Nitrogen lost from dilute liquid manure	0%
Total % Nitrogen lost from solid manure	0%
% Nitrogen lost from land application of dilute liquid manure	0%
% Nitrogen lost during storage of dilute liquid manure	0%
% Nitrogen lost from land application of solid manure	0%
% Nitrogen lost during storage of solid manure	0%

Pond Design Factors

Producer: Spring Hill Jersey
Date: 03/07/07

Entered by: LH
Checked by:

Percent moisture in fresh manure	88%	
Total waste, cu.ft./day per 1000 lb. animal	1.37	cu.ft./day
Total waste (wet), lb./day per 1000 lb. animal	85	lb./day
Density of fresh waste, feces and urine	62	lb./cu.ft.
Runoff Curve Number for manured areas	90	
Runoff Curve Number for concrete areas	97	
Runoff Curve Number for roof areas	100	
25 Year 24 Hour Storm Rainfall	5.0	inches

Location: Two Rock

Normal Runoff Determination Chart - Enter values ONLY for months waste water must be stored.

Month*	Monthly* Precip. in.	Monthly* Evap. in.	% Runoff** Corral Surfaces %	Runoff Corral Surfaces in.	% Runoff** Concrete Surfaces %	Runoff Concrete Surfaces in.	% Runoff** Roofed Surfaces %	Runoff Roofed Surfaces in.
January	5.41	1.24	20	1.08	50	2.71	100	5.41
February	5.31	1.68	20	1.06	50	2.66	100	5.31
March	3.85	3.10	20	0.77	50	1.93	100	3.85
April	0.00	0.00	20	0.00	50	0.00	100	0.00
May	0.00	0.00	20	0.00	50	0.00	100	0.00
June	0.00	0.00	20	0.00	50	0.00	100	0.00
July	0.00	0.00	20	0.00	50	0.00	100	0.00
August	0.00	0.00	20	0.00	50	0.00	100	0.00
September	0.00	0.00	20	0.00	50	0.00	100	0.00
October	0.00	0.00	20	0.00	50	0.00	100	0.00
November	3.52	1.80	20	0.70	50	1.76	100	3.52
December	3.80	1.24	20	0.76	50	1.90	100	3.80
Total (in.)	21.89	9.06		4.38		10.95		21.89

*Input data for design storage period months only.

**Use runoff percentage values from the NRCS Agricultural Waste Handbook, 10C, (5-31).

Estimated partition of manure between the liquid and solid form based on animal residence time on flushed concrete

Category	Hours per day that manure is collected in a liquid system												Annual % stored in pond	Annual % stored dry
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec		
Milk cows in freestalls	22	22	18	18	18	18	18	18	18	18	20	22	80%	20%
Milk cows on flush lanes													0%	0%
Dry cows on flush lanes													0%	0%
Bred heifers on flush lanes													0%	0%
													0%	0%
													0%	0%

Instructions:
Enter the average hours per day that each animal category spends on flushed concrete for each month of the year.
To utilize this information in the spreadsheet:
Go to the Criteria worksheet section "Manure storage site as determined by housing type"
Enter "Annual % stored in pond" from this sheet under "Pond" for the correct housing type in the Criteria worksheet.
Change the housing type name to correspond with the housing being used, if necessary.

Dairy Waste Management Summary

Producer: Spring Hill Jersey
Date: 3/7/2007

Entered by: LH
Checked by:

HERD DESCRIPTION

	Number of Animals	Avg weight in pounds
Milking Cows	400	1000
Dry Cows	100	1050
Bred Heifers	40	725
Heifers, 1 year to breeding	50	550
Calves, 3 months to 1 year	100	350
Calves, birth to 3 months	46	100

ANIMAL HOUSING

	Enter the percent of animals in each facility type. The sum of each row should be 100%.			
	Flushed Freestall	Scraped Freestall	Flushed Lanes	Scraped Drylot
Milking Cows		40%		
Dry Cows		40%		
Bred Heifers				
Heifers, 1 year to breeding				60%
Calves, 3 months to 1 year				60%
Calves, birth to 3 months				100%

WASTE USE AND TREATMENT

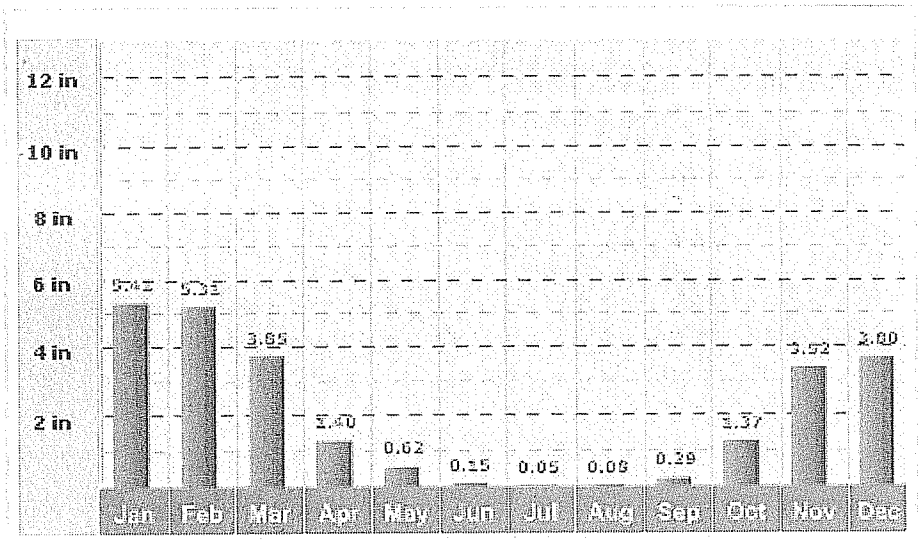
Percent of solid, dry scraped manure used off site		
Percent of waste water used off site		
Double cropped acres used to dispose of waste onsite		Acres
Single cropped acres used to dispose of waste onsite	270	Acres
Cost per unit of commercial Nitrogen	$0.25	$/lb - N

Farm Wide Nitrogen and Salt Balance Estimates using Regulatory Guidelines

Maximum nitrogen usable with this cropping and acreage	33.8	tons/year
Actual nitrogen from manure applied to available cropland	28.2	tons/year
According to the criteria used in this calculation this dairy is	in nitrogen balance	
Maximum salt loading for this cropping pattern and acreage	270	tons/year
Actual salt applied to available cropland with manure	57	tons/year
According to the criteria used in this calculation this dairy is	in salt balance	

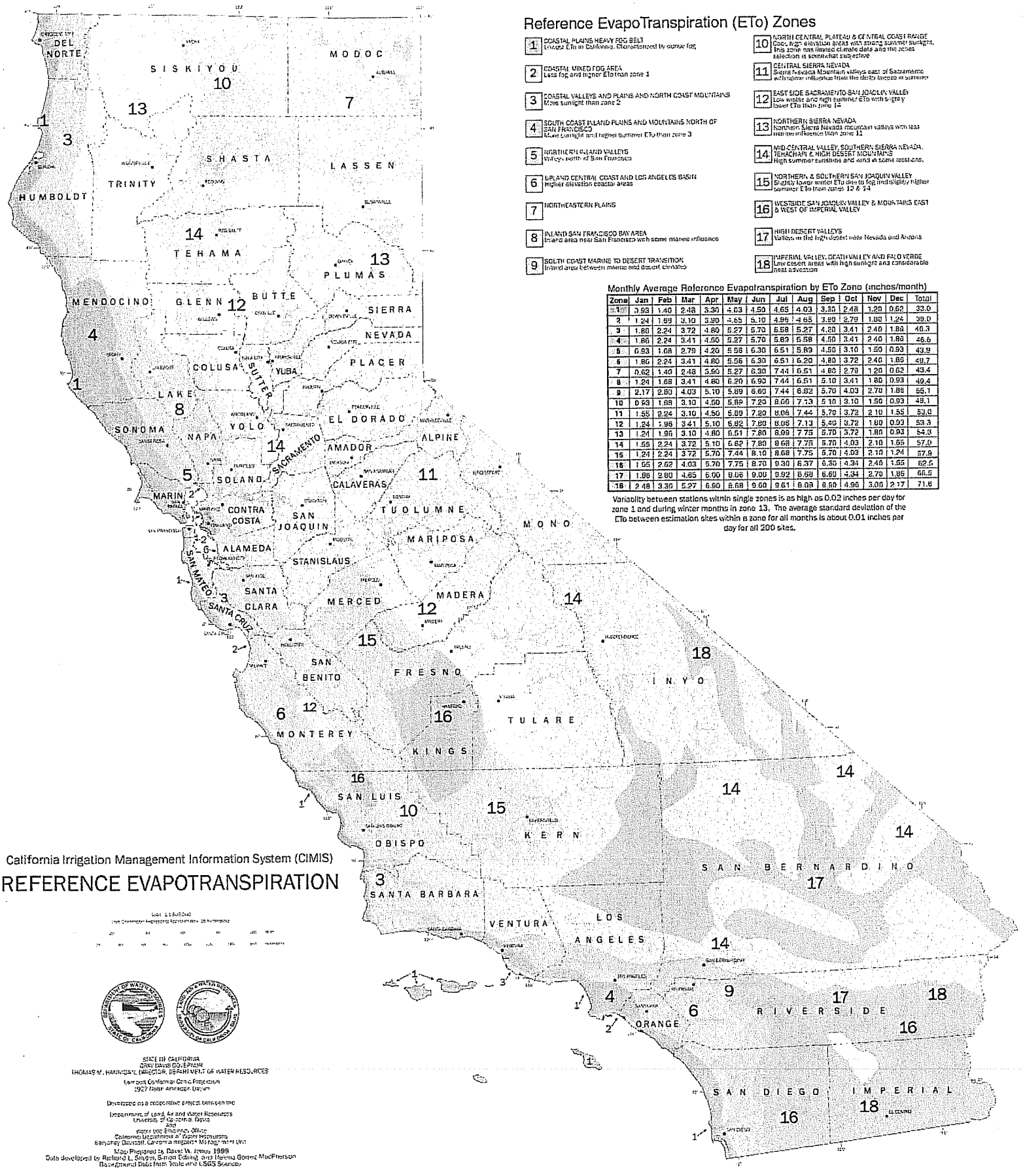
Estimated Value of N in Manure used onsite:

Value of nitrogen in the pond as commercial N	$14,077	/year
Value of nitrogen in solid manure as commercial N		/year



Petaluma, CA (94952) Weather Facts

- July is the average warmest month.
- The highest recorded temperature was 110°F in 1972.
- On average, the coolest month is December.
- The lowest recorded temperature was 18°F in 1989.
- The maximum average precipitation occurs in January.



Reference EvapoTranspiration (ETo) Zones

1. COASTAL PLAINS HEAVY FOG BELT
   Lowest ETo in California. Characterized by dense fog.
2. COASTAL MIXED FOG AREA
   Less fog and higher ETo than zone 1
3. COASTAL VALLEYS AND PLAINS AND NORTH COAST MOUNTAINS
   More sunlight than zone 2
4. SOUTH COAST INLAND PLAINS AND MOUNTAINS NORTH OF SAN FRANCISCO
   More sunlight and higher summer ETo than zone 3
5. NORTHERN INLAND VALLEYS
   Valleys north of San Francisco
6. UPLAND CENTRAL COAST AND LOS ANGELES BASIN
   Higher elevation coastal areas
7. NORTHEASTERN PLAINS
8. INLAND SAN FRANCISCO BAY AREA
   Inland area near San Francisco with some marine influence
9. SOUTH COAST MARINE TO DESERT TRANSITION
   Inland area between marine and desert climates
10. NORTH CENTRAL PLATEAU & CENTRAL COAST RANGE
    Cool, high elevation areas with strong summer sunlight. This zone has limited climate data and the zones selection is somewhat subjective
11. CENTRAL SIERRA NEVADA
    Sierra Nevada Mountain valleys east of Sacramento with some influence from the delta breeze in summer
12. EAST SIDE SACRAMENTO-SAN JOAQUIN VALLEY
    Low winter and high summer ETo with slightly lower ETo than zone 14
13. NORTHERN SIERRA NEVADA
    Northern Sierra Nevada mountain valleys with less marine influence than zone 11
14. MID-CENTRAL VALLEY, SOUTHERN SIERRA NEVADA, TEHACHAPI & HIGH DESERT MOUNTAINS
    High summer sunshine and wind in some locations.
15. NORTHERN & SOUTHERN SAN JOAQUIN VALLEY
    Slightly lower winter ETo due to fog and slightly higher summer ETo than zones 12 & 14
16. WESTSIDE SAN JOAQUIN VALLEY & MOUNTAINS EAST & WEST OF IMPERIAL VALLEY
17. HIGH DESERT VALLEYS
    Valleys in the high desert near Nevada and Arizona
18. IMPERIAL VALLEY, DEATH VALLEY AND PALO VERDE
    Low desert areas with high sunlight and considerable heat advection

Monthly Average Reference Evapotranspiration by ETo Zone (inches/month)

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	0.93	1.40	2.48	3.30	4.03	4.50	4.65	4.03	3.30	2.48	1.20	0.62	33.0
2	1.24	1.69	3.10	3.90	4.65	5.10	4.96	4.65	3.60	2.79	1.80	1.24	39.0
3	1.86	2.24	3.72	4.80	5.27	5.70	5.58	5.27	4.20	3.41	2.40	1.86	46.3
4	1.86	2.24	3.41	4.50	5.27	5.70	5.89	5.58	4.50	3.41	2.40	1.86	46.6
5	0.93	1.68	2.79	4.20	5.58	6.30	6.51	5.89	4.50	3.10	1.50	0.93	43.9
6	1.86	2.24	3.41	4.80	5.58	6.30	6.51	6.20	4.80	3.72	2.40	1.86	49.7
7	0.62	1.40	2.48	3.90	5.27	6.30	7.44	6.51	4.80	2.79	1.20	0.62	43.4
8	1.24	1.68	3.41	4.80	6.20	6.90	7.44	6.51	5.10	3.41	1.80	0.93	49.4
9	2.17	2.80	4.03	5.10	5.89	6.60	7.44	6.82	5.70	4.03	2.70	1.86	55.1
10	0.93	1.68	3.10	4.50	5.89	7.20	8.06	7.13	5.10	3.10	1.50	0.93	49.1
11	1.55	2.24	3.10	4.50	5.89	7.20	8.06	7.44	5.70	3.72	2.10	1.55	53.0
12	1.24	1.96	3.41	5.10	6.82	7.80	8.06	7.13	5.40	3.72	1.80	0.93	53.3
13	1.24	1.96	3.10	4.80	6.51	7.80	8.99	7.75	5.70	3.72	1.80	0.93	54.3
14	1.55	2.24	3.72	5.10	6.82	7.80	8.68	7.75	5.70	4.03	2.10	1.55	57.0
15	1.24	2.24	3.72	5.70	7.44	8.10	8.68	7.75	5.70	4.03	2.10	1.24	57.9
16	1.55	2.52	4.03	5.70	7.75	8.70	9.30	8.37	6.30	4.34	2.40	1.55	62.5
17	1.86	2.80	4.65	6.00	8.06	9.00	9.92	8.68	6.60	4.34	2.70	1.86	66.5
18	2.48	3.36	5.27	6.90	8.68	9.60	9.61	8.68	6.90	4.96	3.00	2.17	71.8

Variability between stations within single zones is as high as 0.02 inches per day for zone 1 and during winter months in zone 13. The average standard deviation of the ETo between estimation sites within a zone for all months is about 0.01 inches per day for all 200 sites.

California Irrigation Management Information System (CIMIS)

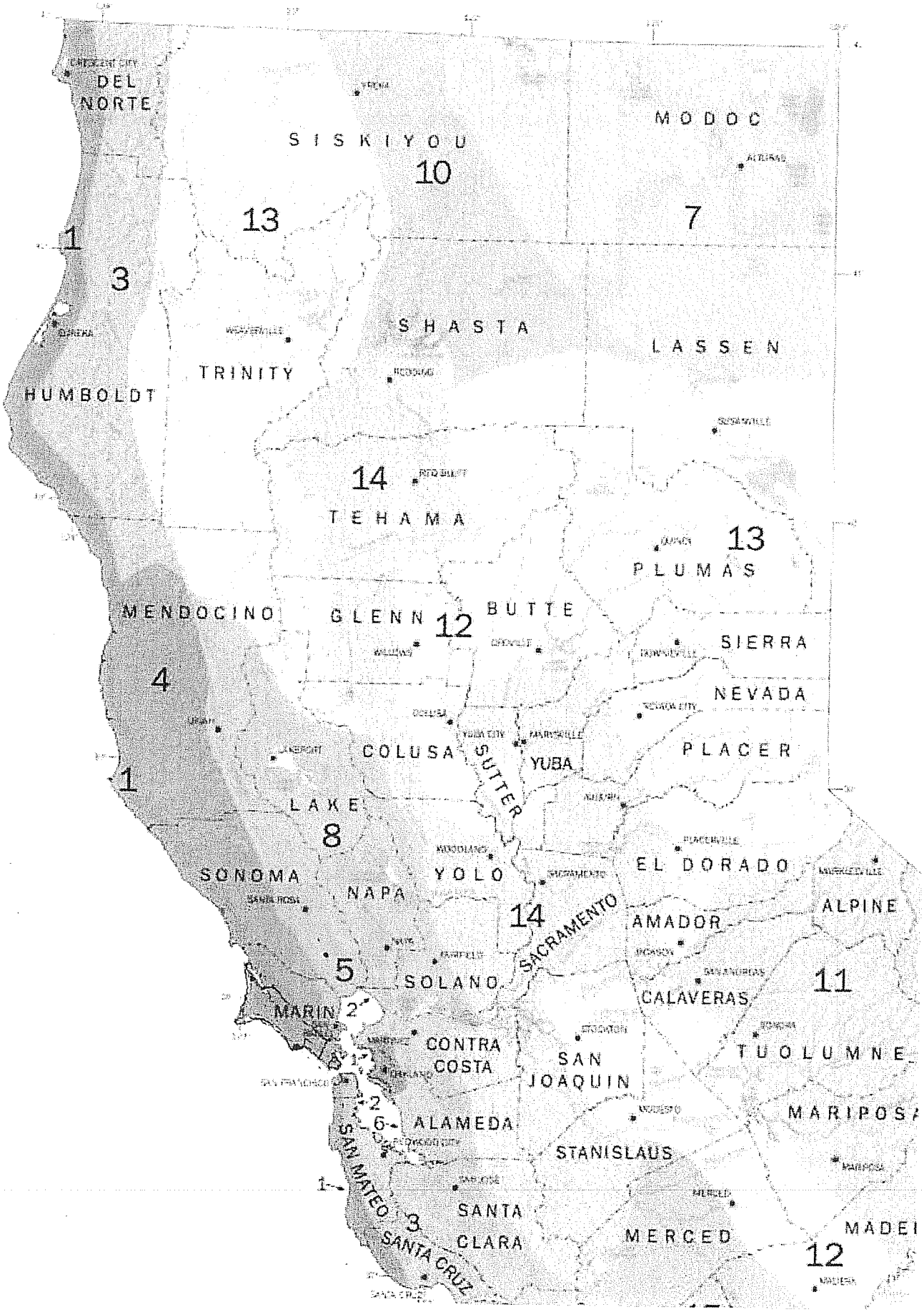
REFERENCE EVAPOTRANSPIRATION

STATE OF CALIFORNIA
GRAY DAVIS GOVERNOR
THOMAS M. HANNIGAN, DIRECTOR, DEPARTMENT OF WATER RESOURCES

Lambert Conformal Conic Projection
1927 North American Datum

Developed as a cooperative project between the
Department of Land, Air and Water Resources
University of California, Davis
and
Water Use Efficiency Office
California Department of Water Resources
Sacramento

Map Prepared by Dave W. Jones 1999
Data developed by Richard L. Snyder, Sungie Ebling and Helena Gomez MacPherson
Background Data from Tiger and USGS Sources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10
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HUMBOLDT
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TEHAMA
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PLUMAS
MENDOCINO
GLENN
12
BUTTE
SIERRA
4
NEVADA
COLUSA
SUTTER
YUBA
PLACER
1
LAKE
8
EL DORADO
SONOMA
YOLO
NAPA
ALPINE
14
SACRAMENTO
AMADOR
5
SOLANO
11
CALAVERAS
MARIN
2
CONTRA COSTA
SAN JOAQUIN
TUOLUMNE
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6
ALAMEDA
MARIPOSA
STANISLAUS
SAN MATEO
3
SANTA CLARA
MERCED
MADEI
SANTA CRUZ
12

Table 4-C-1 Available Water Capacity by Soil Texture, inches of water per inch of soil depth (in./in.)

Sand	Loamy Sand	Sandy Loam	Loam	Silt Loam	Sandy Clay Loam	Sandy Loam	Clay Loam	Silty Clay Loam	Silty Clay	Clay
0.06	0.08	0.10	0.15	0.17	0.10	0.09	0.13	0.16	0.14	0.13

Table 4-C-2 Normal Year Crop Water Use (in./day)

Alfalfa, Feb. 1-Nov.1		**Cotton, Acala, Apr. 10-Oct 15**		**Irrigated Wheat, Jan.1-June 10**	
Month	Water Use in./day	Month	Water Use in./day	Month	Water Use in./day
Jan.	0.04	Jan.		Jan.	0.03
Feb.	0.05	Feb.		Feb.	0.04
Mar.	0.11	Mar.		Mar.	0.13
Apr.	0.17	Apr.	0.05	Apr.	0.19
May	0.22	May	0.64	May	0.29
Jun.	0.27	Jun.	0.25	Jun.	0.10
Jul.	0.27	Jul.	0.34	Jul.	
Aug.	0.22	Aug.	0.27	Aug.	
Sept.	0.17	Sept.	0.10	Sept.	
Oct.	0.11	Oct.	0.01	Oct.	
Nov.	0.05	Nov.		Nov.	
Dec.	0.03	Dec.		Dec.	

Pasture, Cool Season		**Silage Corn, Apr. 15-Sept. 15**		**Silage Corn, May 15-Sept. 30**	
Month	Water Use in./day	Month	Water Use in./day	Month	Water Use in./day
Jan.	0.03	Jan.		Jan.	
Feb.	0.06	Feb.		Feb.	
Mar.	0.11	Mar.		Mar.	
Apr.	0.17	Apr.	0.04	Apr.	
May	0.24	May	0.11	May	0.06
Jun.	0.28	Jun.	0.26	Jun.	0.11
Jul.	0.30	Jul.	0.33	Jul.	0.30
Aug.	0.26	Aug.	0.26	Aug.	0.29
Sept.	0.19	Sept.	0.13	Sept.	0.16
Oct.	0.13	Oct.		Oct.	
Nov.	0.04	Nov.		Nov.	
Dec.	0.03	Dec.		Dec.	

Table 4-C-3 Maximum Graded Border Lengths (feet)[1]

Soil Type	Flow Rate, cfs/ft. of border width	Maximum Length
Clay	0.02	750
	0.03	1,125
	0.04	1,500
	0.05	1,875
	0.06	2,250
Clay Loam	0.03	450
	0.05	750
	0.07	1,050
	0.09	1,350
	0.1	1,500
Sandy Loam	0.03	340
	0.05	560
	0.07	825
	0.09	1,050
	0.11	1,240
	0.13	1,500
	0.15	1,725
Loamy Sand	0.04	310
	0.06	490
	0.08	640
	0.1	825
	0.12	975
	0.14	1,125
	0.16	1,275
	0.18	1,425
	0.2	1,650
	0.25	2,025
Sand	0.04	240
	0.06	360
	0.08	480
	0.1	600
	0.12	720
	0.14	865
	0.16	975
	0.18	1,090
	0.2	1,200
	0.25	1,500

[1] NRCS National Engineering Handbook, Section 15, Chapter 4, n=0.04, DU=75%

Table 4-C-4 Maximum Graded Furrow Lengths (feet)[1]

Furrow Slope, %	Clays	Loams	Sands
0.05	1300	1300	500
0.1	1400	1400	600
0.2	1500	1500	800
0.3	1600	1600	900
0.5	1600	1500	800
1.0	1300	1200	700
1.5	1100	1100	600
2.0	900	1000	500

[1]Adopted from Booher, "Surface Irrigation"

Location Map

Customer(s): LARRY PETER
District: SSCRCD
Approximate Acres: 313

Date: 1/19/2007
Field Office: PETALUMA
Agency: USDA-NRCS
Assisted By: L. Hilkert
State and County: CA, SONOMA

0.25 0 0.25 0.5 0.75 1 Miles

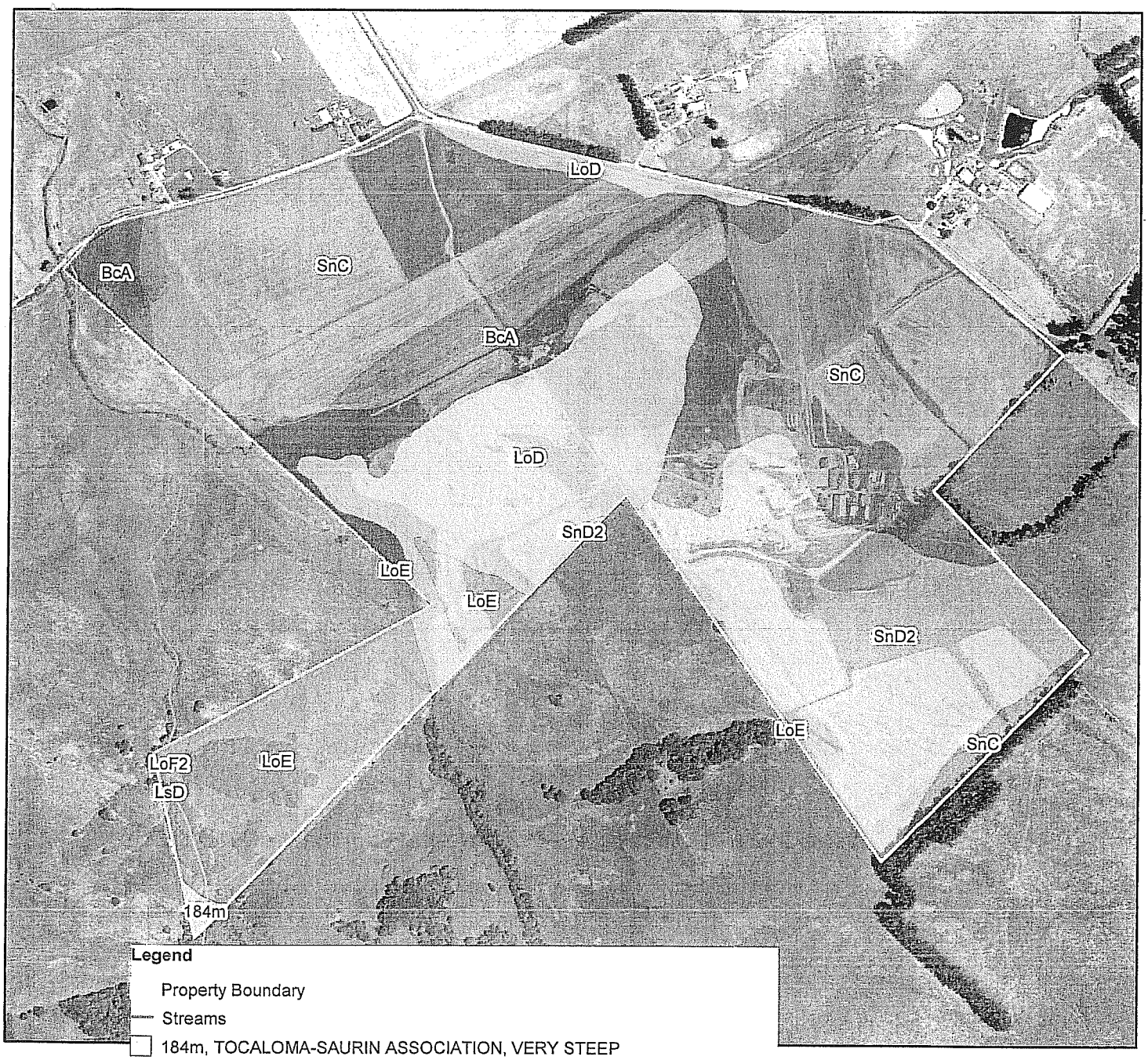
Image: naip_1-1_1n_s_ca097_2005_1.sid

Soils Map

Date: 1/19/2007

Customer(s): LARRY PETER
District: SSCRCD
Approximate Acres: 313

Field Office: PETALUMA
Agency: USDA-NRCS
Assisted By: L. Hilkert
State and County: CA, SONOMA



Legend

- Property Boundary
- Streams
- 184m, TOCALOMA-SAURIN ASSOCIATION, VERY STEEP
- BcA, BLUCHER FINE SANDY LOAM, OVERWASH, 0 TO 2 PERCENT SLOPES
- LoD, LOS OSOS CLAY LOAM, 2 TO 15 PERCENT SLOPES
- LoE, LOS OSOS CLAY LOAM, 15 TO 30 PERCENT SLOPES
- LoF2, LOS OSOS CLAY LOAM, 30 TO 50 PERCENT SLOPES, ERODED
- LsD, LOS OSOS CLAY LOAM, THIN SOLUM, 5 TO 15 PERCENT SLOPES
- SnC, STEINBECK LOAM, 2 TO 9 PERCENT SLOPES
- SnD2, STEINBECK LOAM, 9 TO 15 PERCENT SLOPES, ERODED

Image: naip_1-1_1n_s_ca097_2005_1.sid

500 0 500 1,000 1,500 2,000 Feet

N

Soils Inventory Report

LARRY PETER

Map Unit Symbol	Map Unit Name	Acres	Percent
184m	TOCALOMA-SAURIN ASSOCIATION, VERY STEEP	0.8	0%
BcA	BLUCHER FINE SANDY LOAM, OVERWASH, 0 TO 2 PERCENT SLOPES	37.9	12%
LoD	LOS OSOS CLAY LOAM, 2 TO 15 PERCENT SLOPES	52.5	16%
LoE	LOS OSOS CLAY LOAM, 15 TO 30 PERCENT SLOPES	32.2	10%
LoF2	LOS OSOS CLAY LOAM, 30 TO 50 PERCENT SLOPES, ERODED	0.9	0%
LsD	LOS OSOS CLAY LOAM, THIN SOLUM, 5 TO 15 PERCENT SLOPES	0.2	0%
SnC	STEINBECK LOAM, 2 TO 9 PERCENT SLOPES	134	42%
SnD2	STEINBECK LOAM, 9 TO 15 PERCENT SLOPES, ERODED	62.4	19%
	Total:	320.9	

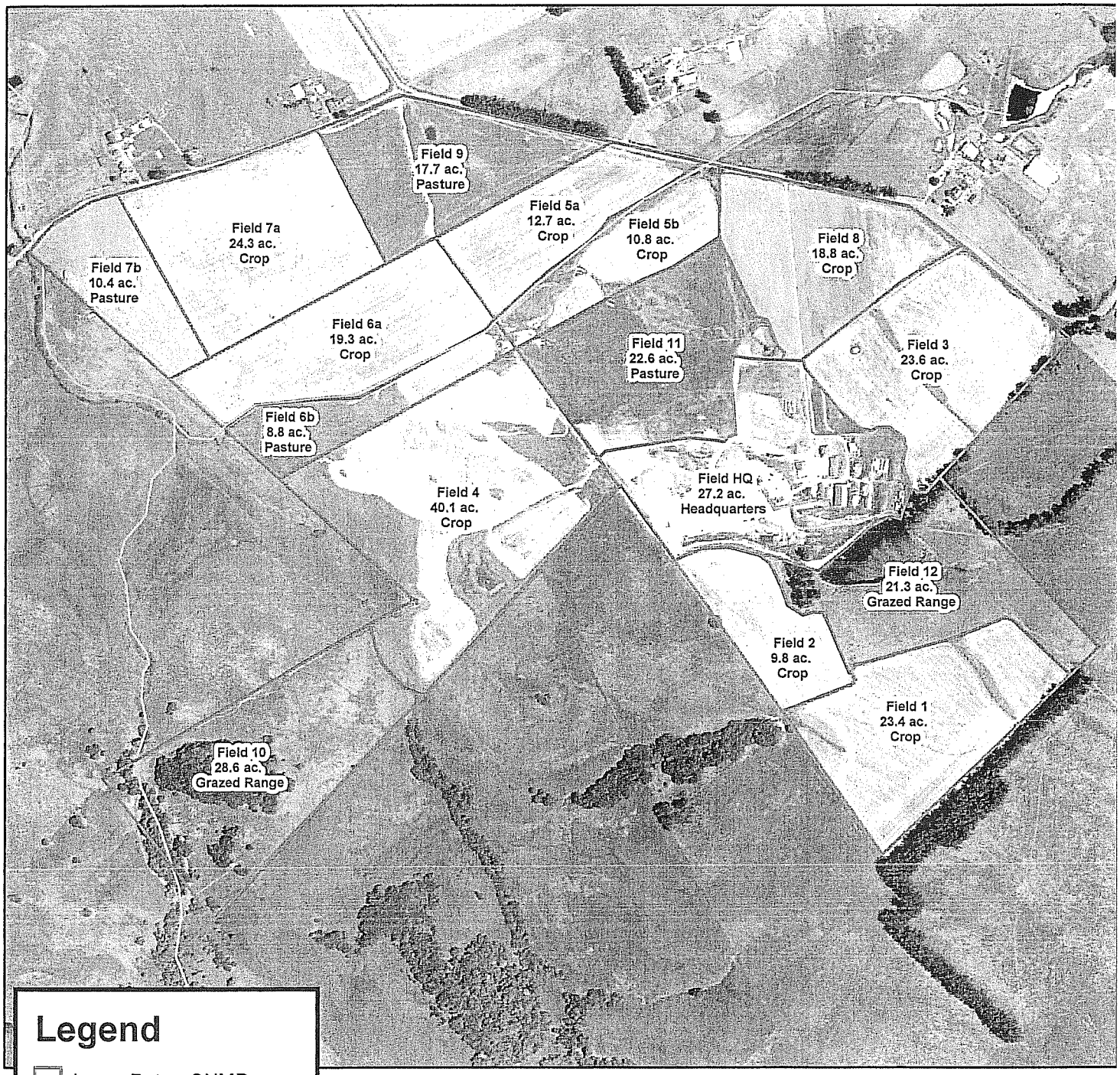
PROPERTY MAP

Date: 1/22/200

Customer(s): LARRY PETER

Approximate Acres: 320

Field Office: PETALUMA SERVICE CENTER
Agency: USDA-NRCS
Assisted By: Jessica M Sternfels
State and County: CA, SONOMA



Legend

- Larry_Peter_CNMP_map
- Creek
- Stream

N

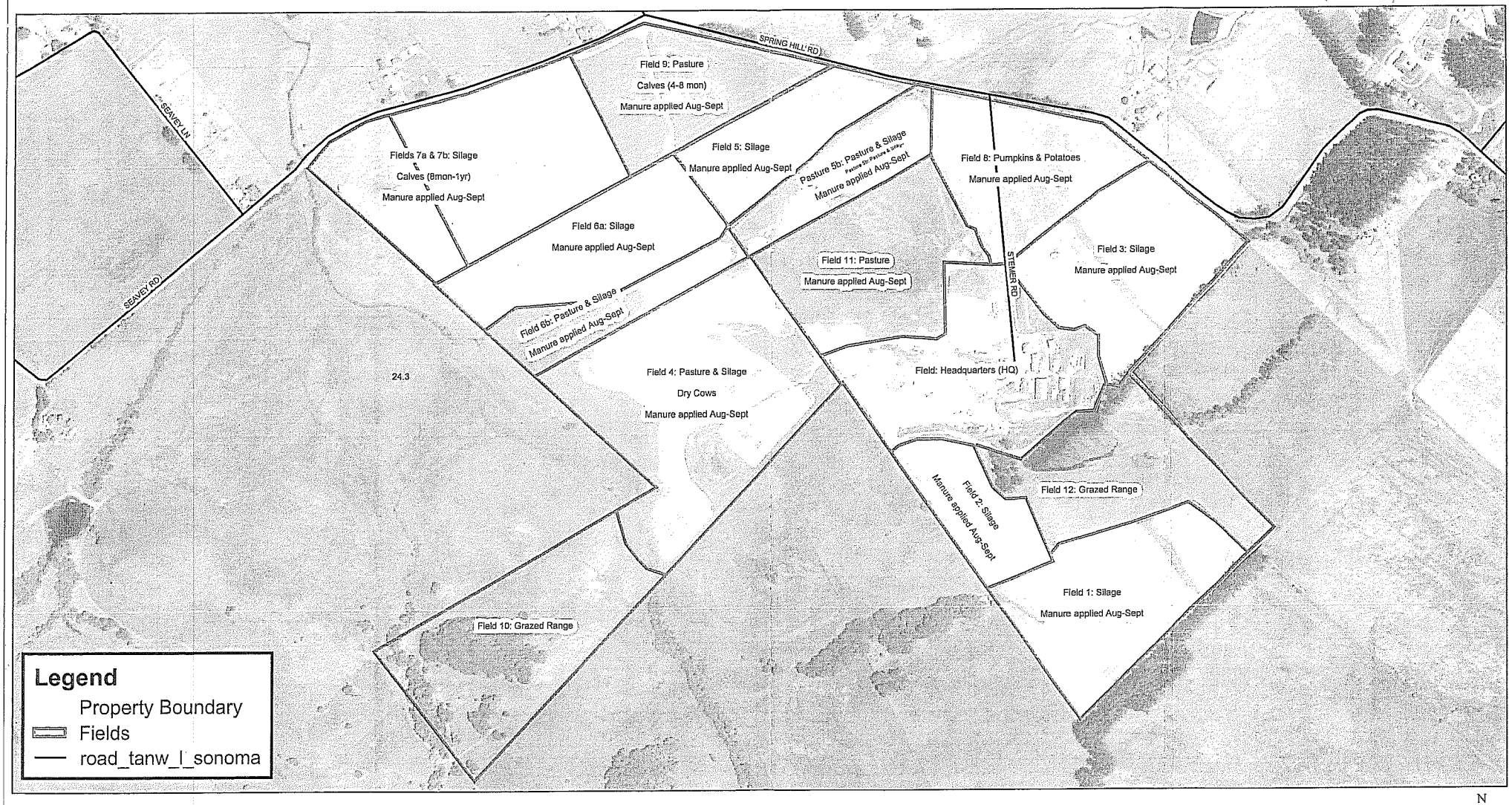
880 0 880 1,760 2,640 3,520 Feet

Customer(s): LARRY PETER

Approximate Acres: 320

FIELDS DESCRIPTION MAP

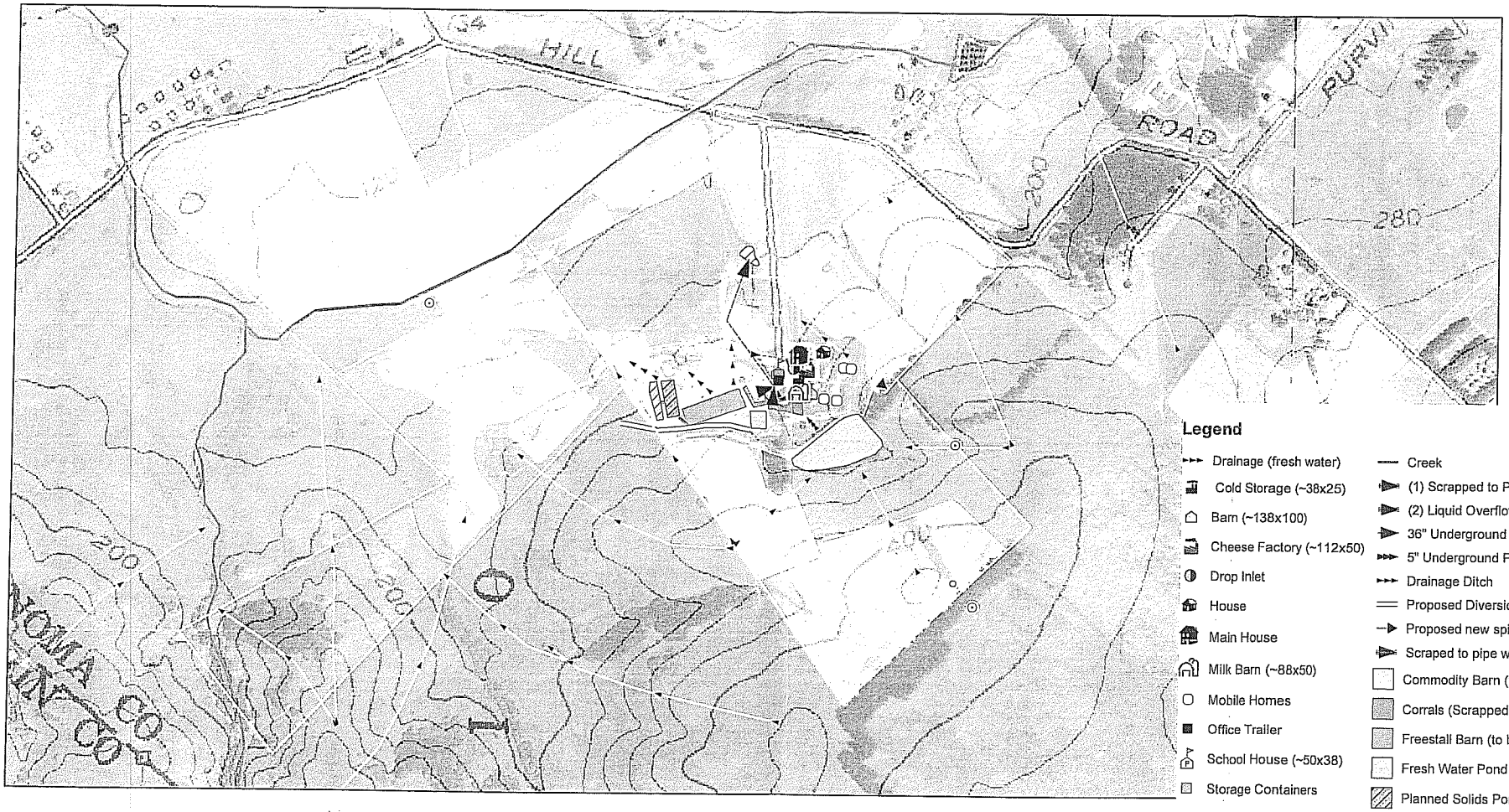
Field Office: PETALUMA SERVICE CENTER
Agency: USDA-NRCS
Assisted By: Jessica M Sternfels
State and County: CA, SONOMA



Property Map - Drainage

Customer(s): LARRY PETER
District: Southern Sonoma County
Approximate Acres: 320

Date: 1/22/2007
Field Office: PETALUMA SERVICE CENTER
Agency: USDA-NRCS
Assisted By: L. Hilkert and J. Sternfels
State and County: CA, SONOMA



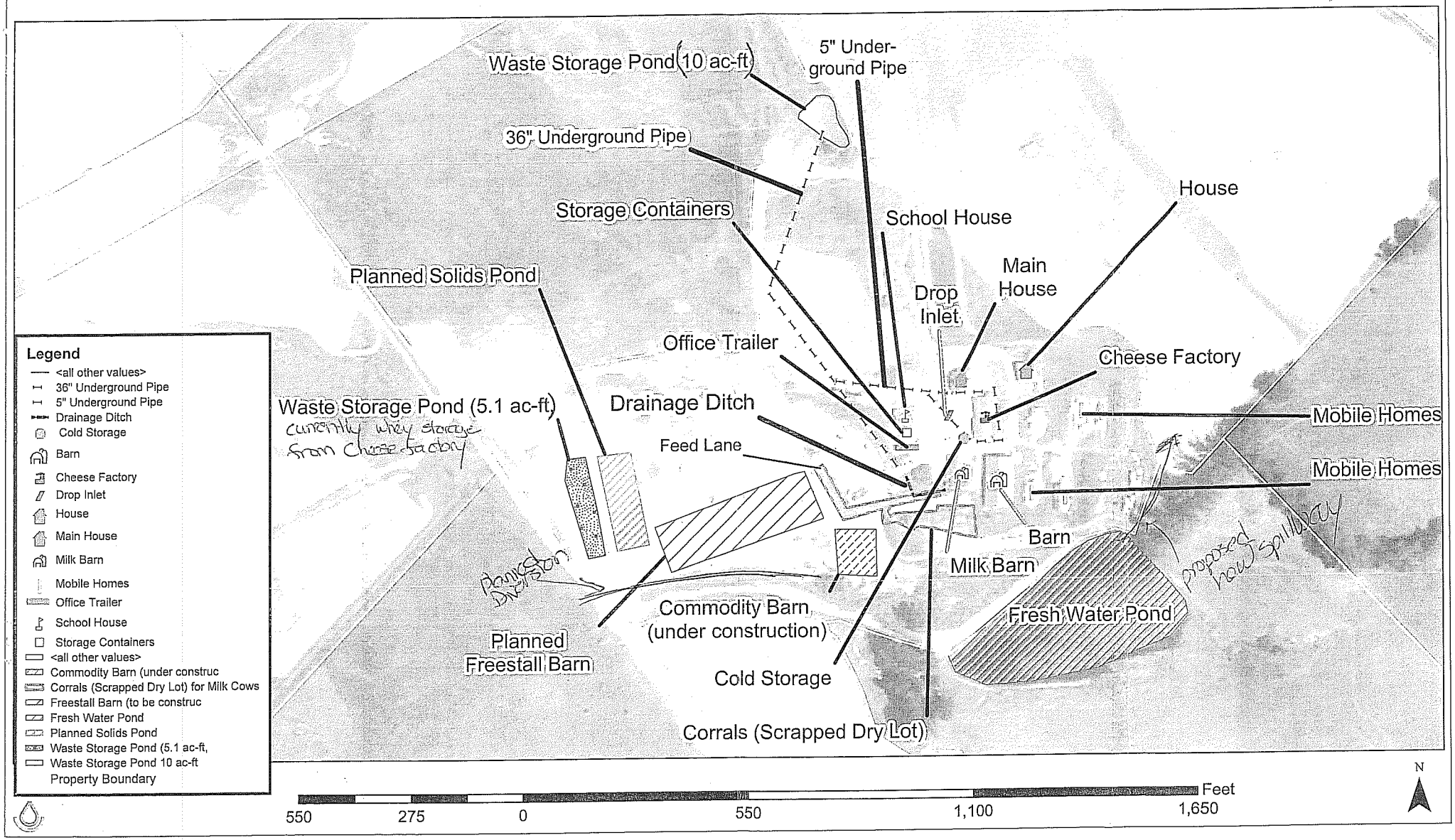
Date: 1/22/2007

FACILITIES MAP

Customer(s): LARRY PETER

Approximate Acres: 320

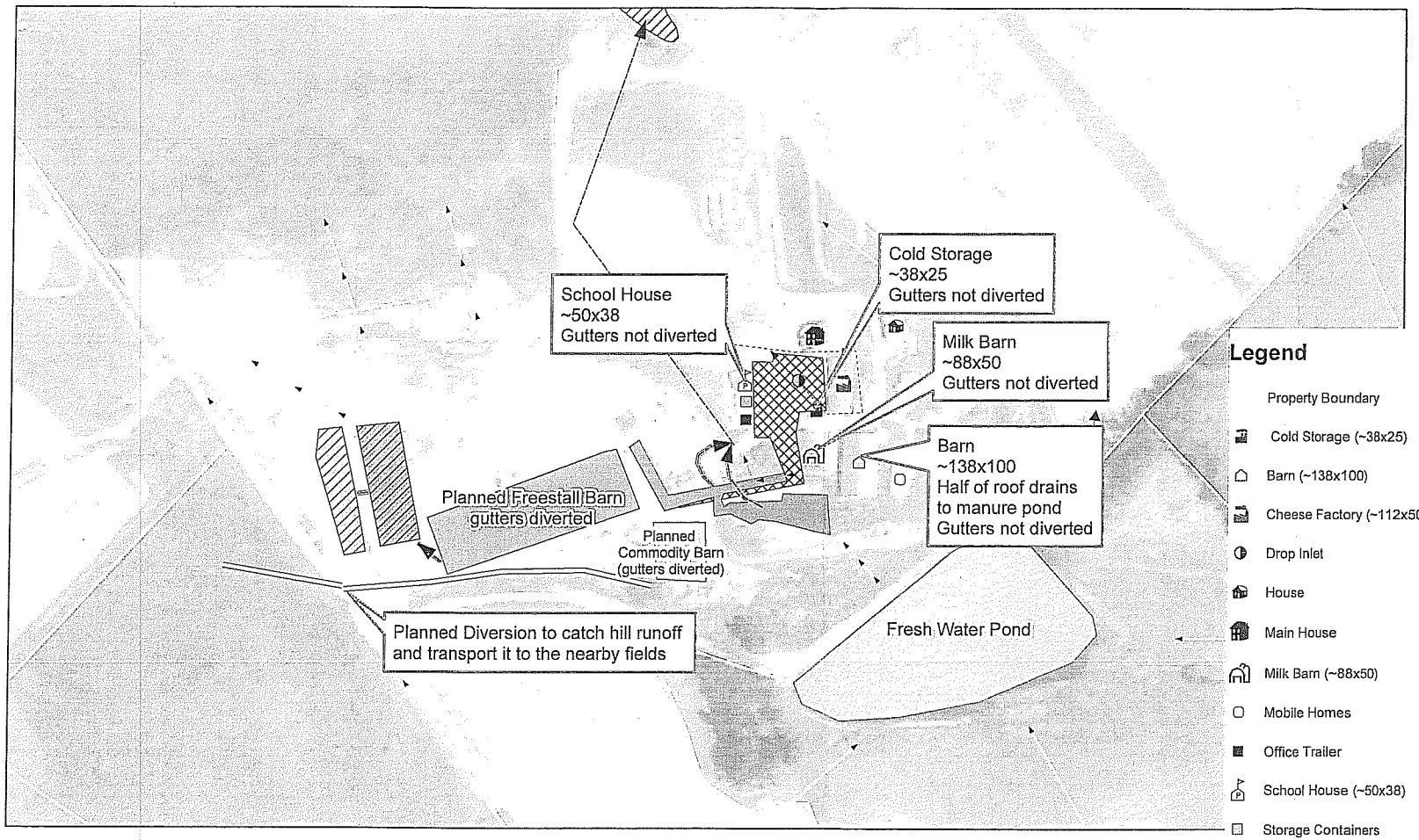
Field Office: PETALUMA SERVICE CENTER
Agency: USDA-NRCS
Assisted By: Jessica M Sternfels
State and County: CA, SONOMA



Facilities Map - Fresh Water

Customer(s): LARRY PETER
District: Southern Sonoma County
Approximate Acres: 319.4

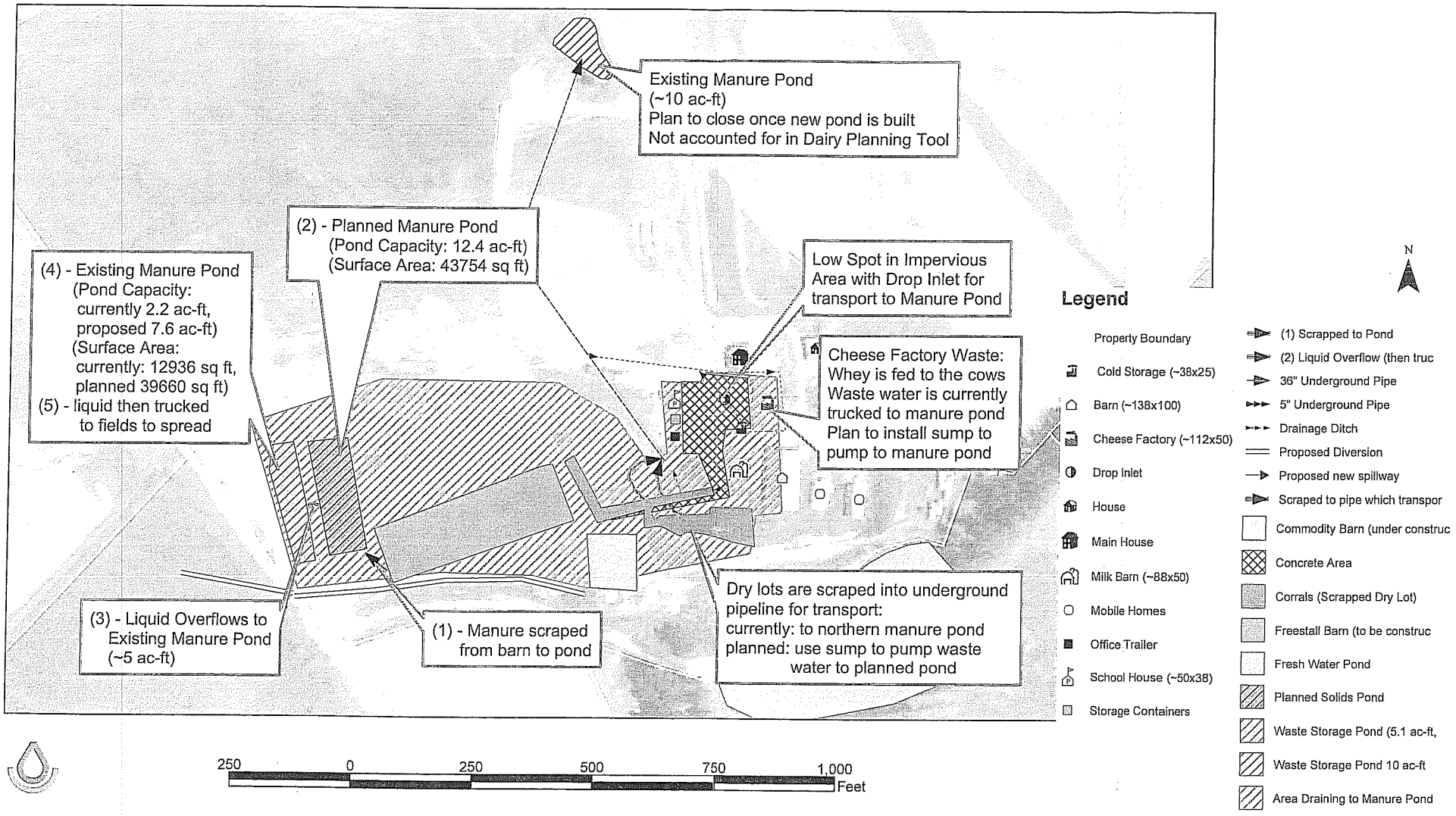
Date: 3/7/2007
Field Office: PETALUMA SERVICE CENTER
Agency: USDA-NRCS
Assisted By: L. Hilkert and J. Sternfels
State and County: CA, SONOMA



Facilities Map - Manured Water

Customer(s): LARRY PETER
District: Southern Sonoma County
Approximate Acres: 319.4

Date: 3/7/2007
Field Office: PETALUMA SERVICE CENTER
Agency: USDA-NRCS
Assisted By: L. Hilkert and J. Sternfels
State and County: CA, SONOMA



SITE ASSESSMENT CHECKLIST
NORTH COAST REGION WATER QUALITY CONTROL BOARD
2012 DAIRY COMPLIANCE ASSESSMENTS

A. General Information

Facility Name: Spring Hill Dairy			
Date: 03/27/2012	Time In: 8:10 AM	Time Out: 10:40 AM	
Facility Owner: Larry Peter			
Facility Operator: Larry Peter			
Physical Address:	Street: 4235 Spring Hill Road		
	City: Petaluma	State: CA	ZIP: 94952
Latitude: 38.243681°	Longitude: -122.763056°		
Mailing Address:	Street: 4235 Spring Hill Road		
	City: Petaluma	State: CA	ZIP: 94952
Phone: (707) 889-7189 (Michael Brook)	☐ Owner ☐ Operator? ☐ Office ☒ Cell ☐ Home?		
Email: springhillcheese@yahoo.com; mbrooklaw@gmail.com			

Assessment and Facility Description

An assessment of Spring Hill Dairy (facility) was conducted on March 27, 2012 at approximately 8:10 AM. The purpose of the assessment was to determine the facility's compliance status relative to the requirements of the dairy program adopted by the North Coast Regional Water Quality Control Board (Regional Water Board) and to assist the facility representatives in 1) determining which part of the program (NPDES wastewater discharge permit, General Waste Discharge Requirements (GWDRs), or Conditional Waiver of WDRs) applies to the facility and, 2) identifying corrective actions that may be needed to comply with the program requirements.

The following individuals were present during the assessment:

- Facility Representatives: Jeremy Dutra and Michael Brook
- Assessors and Regulatory Agency Staff: Cherie Blatt, Paul Keiran, and Scott Gergus (Regional Water Board); Jennifer Ferrando (Tetra Tech)

The assessor and Regional Board 1 staff met with Larry Peter and Michael Brook at the Spring Hill Creamery after leaving the dairy.

Spring Hill Dairy is an organic milking operation that maintains milking cows, heifers, and calves on pasture. At the time of the assessment, the facility operators were in the process of constructing a large loafing barn and redesigning the site for improved runoff control. Two ponds (called the North Pond and South Pond, for purposes of this report) were used to contain and manage process water (e.g., milk barn wash water) and stormwater runoff at the facility, as described in Section B below. The redesigned site will also use these two ponds, although the South Pond will be enlarged. The ponds, pastures, and other site features (existing and proposed) are labeled on the site maps provided in Attachment A. The schedule for completion of barn construction and other site improvements depends on the availability of Environmental Quality Incentives Program (EQIP) funding.

At the time of the assessment, there were no housing facilities for cows at Spring Hill Dairy. Cows were maintained on pasture and fed in a portion of the pasture near the commodities storage area. Process water from the milk barn, located at the east end of the production area, is piped underground west to an open pit (Photos 2 and 4) that collects runoff from the solid manure storage area in the southeast portion of the production area (Photo 4) and a portion of the commodities storage area (Photo 7). The pit is drained by another pipe that conveys liquid manure underground north to the

North Pond (Photos 7, 20, and 21). Liquid manure can be pumped from the North Pond to the South Pond as needed using portable pipes or a tank truck.

The western portion of the site includes the commodities and silage storage area, calf hutches (Photos 3 and 8), and the South Pond (Photo 11). Runoff from the calf hutches flows down the adjacent vegetated slope (Photos 3 and 5) and eventually into the pastures. Runoff from a portion of the commodities storage area and runoff and leachate from the silage area enters a diversion ditch that conveys the runoff west to a pipe inlet located south of the South Pond (Photos 9 and 10). The pipe conveys runoff north, underground, along the west side of the South Pond to an outlet in the pasture north of the South Pond (Photos 13 and 16). Several drop inlets allow additional runoff from the vegetated areas surrounding the pond to enter the underground drainage system (Photo 15) which flows to the pastures(?-cab).

As mentioned above, a large loafing barn with an adjacent exercise pen will be constructed in the western portion of the production area, east of the South Pond. Manure from the loafing barn will be scraped to the South Pond. The western portion of the site will be graded so that all runoff from the production area will flow to the South Pond and the existing diversion ditch (Photos 9 and 10) will divert clean runoff to the diversion drainage system.

All liquid manure (process water and storm runoff) and solid manure are applied to the surrounding pasture and crop fields owned by Spring Hill Dairy and at an adjacent ranch.

B. Production Area Information

1. Animals in confinement *Please note these numbers are approximate and can be changed at the time of permit enrollment at a later date.*		i. Mature Cows (milking + dry)	ii. Other Cattle
a. Facility Capacity	The facility has structures and pens for approximately:	0	60 (calf hutches)
b. Maximum Confined	At any one time, the facility confines a maximum of:	0	60
c. Current Confined	The number of dairy cattle on site today is:	260 milking	90 dry cows and heifers
Cows are currently maintained entirely on pasture. The planned loafing barn will have space for approximately 300 cows.			
d. Describe solid manure storage area(s): During the summer months, solid manure from the feeding area is scraped and stacked near the feeding area (Photo 6). In the winter, some solid manure is stored in the open area west of the milk barn and north of the summer manure storage area (Photo 4). Runoff from this area flows to the open pit (Photos 2 and 4) to be conveyed to the North Pond. Some solid manure is also stored on the concrete areas between the calf hutches (Photo 8). Runoff from this area is not contained. Manure was also stockpiled in a pasture northeast of the production area (Photos 14 and 17). As part of the site construction, the facility operators are considering construction of a designated manure stockpile area in the western portion of the site that will drain to the South Pond.			

2. Retention ponds and manure impoundments			
a. Impoundment ID	b. Drainage Area(s)	c. Other Liquid and Solid Manure Source(s)	d. Volume (or approx. dimensions*)
North Pond	Winter manure storage area west of the milk barn; portion of commodity storage area	Milk barn wash water	Approx. 170' x 70' x 25' deep (~297,500 ft^3 or 2,225,455 gal.)
South Pond	Areas around the proposed location of the new loafing barn	Liquid manure pumped from the North Pond	Approx. 230' x 50' x 15' deep (~ 172,500 ft^3 or 1,290,390 gal.)
* Approximate pond depths were provided by the facility operator. Approximate dimensions were determined using Google Earth (imagery dated 10/24/2009)			

B. Production Area Information (cont.)

e. Total liquid manure storage capacity: Approx. 3,515,845 gallons

f. Annual volume of process water generated (if known): unknown

g. Annual volume of runoff generated (if known): unknown

h. Runoff and precipitation from a 25-year, 24-hour storm (if known): unknown

i. *Title 27 compliance (§22562(a)):* Is the facility designed and constructed to retain all facility wastewater generated, all precipitation on, and drainage through manured areas during a 25-year, 24-hour storm? (e ≥ f + g + h?) ☐ Yes ☐ No ☒ Unknown

3. Other production area characteristics

a. All process water and runoff contained in an impoundment? ☐ Yes ☒ No

If no, describe uncontained areas: Runoff from the areas surrounding the calf hutches (Photos 3 and 8) and a portion of the commodities storage area as well as leachate and runoff from the silage storage area (Photos 9 and 10) are not contained. The facility representatives indicated that runoff from these areas would be contained as part of the planned construction. It was not clear whether runoff from the summer manure storage area (Photos 4 and 6) was contained; however, the facility representatives indicated that this area is scraped and cleaned prior to the rainy season.

b. *Title 27 compliance (§22562(b)):* Is clean runoff diverted away from manured areas or, if not, is it fully retained? ☒ Yes ☐ No

Describe: Typically a ditch is cut to divert runoff from the south pastures around the production area. The facility operators explained that extenuating circumstances had prevented them from cutting the ditch and that clean runoff was entering the drainage area for the ponds. The assessor did not view the location of the proposed ditch. Roof runoff from the new loafing barn will be guttered and diverted to the pastures.

c. Production area discharge location(s) (e.g., overflows from impoundments or uncontained runoff):
Overflows from the North or South Pond as well as uncontained runoff from the commodities and silage areas would flow north to Stemple Creek. A ditch on the west side of the North Pond contained water at the time of the assessment (Photo 22). The facility operators explained that the ditch marked the location of an old spillway from the North Pond that had been filled in. The ditch appeared to terminate just west of the pond.

Operator measures to prevent overflows and/or uncontained runoff:
The liquid manure level in the North Pond is monitored and liquid manure is pumped to the South Pond as needed to prevent overflows. Uncontained runoff will be addressed as part of the ongoing construction in the western portion of the site and the South Pond will be enlarged to provide additional storage capacity.

d. Nearest surface water: Stemple Creek flows through the facility's northern pastures (Photos 16 and 17), approximately 0.2 miles northwest of the North Pond. The facility is located in the Bodega Hydrologic Unit, Estero de San Antonio Hydrologic Area, Stemple Creek and Estero de San Antonio watershed. The watershed has listed impairments for nutrients and sediment.

B. Production Area Information (cont.)

e. Is any part of the production area in a floodplain? ☐ Yes ☒ No ☐ Unknown

If yes, complete the following: N/A. The facility representatives indicated that Spring Hill Dairy is not located in a floodplain. The following questions (i – iv) are not applicable to facilities not located in a floodplain.

i. For facilities in operation on or before November 27, 1984: Are retention ponds and manured areas protected from inundation or washout from 20-year peak stream flows? ☐ Yes ☐ No ☐ Unknown ☒ N/A

ii. For facilities in operation on or before November 27, 1984: Are retention ponds and manured areas protected from inundation or washout from 100-year peak stream flows? ☐ Yes ☐ No ☐ Unknown ☒ N/A

iii. If "No" to ii, was the facility protected against 100-year peak flows as of November 27, 1984? ☐ Yes ☐ No ☐ Unknown ☒ N/A

iv. *Title 27 compliance (§22562(c))?* ("Yes" to i or ii, or "No" to ii and iii) ☐ Yes ☐ No ☐ Unknown ☒ N/A

f. *Title 27 compliance (§22562(d)):* Are retention ponds lined with, or underlain by soils that contain at least 10% clay and not more than 10% gravel (or equivalent artificial materials)? ☒ Yes ☐ No ☐ Unknown

The facility representatives indicated that the native soils contain more than 10% clay. The NRCS Web Soil Survey shows facility soils to be primarily Steinbeck loams containing approximately 22 percent clay. In addition, the facility representatives are considering installing a synthetic liner in the South Pond when it is expanded.

g. *Title 27 compliance (§22564):* Are manured areas managed to minimize infiltration of water into underlying soils? ☒ Yes ☐ No ☐ Unknown

The manure storage area is graded and cleaned before winter. The pens that will be constructed adjacent to the near loafing barn will be compacted to minimize infiltration.

C. Land Application/Manure Use or Disposal Information

1. Is liquid or solid manure applied to land owned or operated by this facility? ☒ Yes ☐ No

2. If yes, available acres of land application area:

a. Crops:	b. Pasture:	c. Other:
approx. 20 acres of pasture in pumpkins and potatoes in the summer	600 acres	n/a

The pumpkin and potato fields north of the production area are planted in rye and used as pasture during the winter. The facility pastures milking cows, dry cows, and heifers on approximately 600 acres at Spring Hill Dairy and an adjacent ranch.

3. Dewatering/liquid manure application frequency: Ponds are dewatered during the winter if the fields are dry enough. In the summer, the ponds are emptied beginning in June and again late in October if any liquid manure is left.

4. Solid and liquid manure application methods: Solids are removed from the ponds annually when they are emptied and spread with the liquid. Solid manure is spread with a box spreader operated by a contractor; liquids are spread with a tank truck and traveling gun.

5. If flood/furrow irrigation, describe tailwater management: N/A

C. Land Application/Manure Use or Disposal Information (cont.)

6. Nutrient management plan? ☐ Yes ☒ No		
Yes	*No*	
X		a. Conservation practices to control nutrient transport? (describe) The facility uses rotational grazing and no-till seeding in the pastures. The pumpkin fields are seeded with rye after harvest. Diversions are used to route clean runoff through pastures. The riparian areas around Stemple Creek in the pastures generally appeared to be well vegetated with the exception of a few eroded areas (Photos 16 and 17). (Note, however, that the creek was viewed from the production area; the assessor did not closely review the stream banks.)
	X	b. Solid and liquid manure and soil testing? i. Solid and liquid manure testing frequency: not performed ii. Constituents: n/a iii. Soil testing frequency: the pumpkin and potato fields are tested annually iv. Constituents: the facility representatives were unsure of the constituents
	X	c. Protocols to ensure appropriate agricultural utilization of nutrients? (describe) The facility implements all pasture management practices required to maintain its organic certification, including use of an organic consultant to sample soils and recommend nutrient applications. Manure is applied to pastures after grazing (rotational). The facility operators rely on farming experience to determine appropriate rates of application. It was not clear whether the organic consultant calculates application rates in a manner that minimizes nutrient loss from the fields; however, manure nutrient content is not analyzed for consideration in determination of application rates. i. *Title 27 compliance (§22563(a)):* Application of manure and wastewater shall be at rates which are reasonable for the crop, soil, climate, special local situations, management system, and type of manure. Describe *(anything not addressed above)*: Nothing additional ii. *Title 27 compliance (§22563(b))*: Discharges of facility wastewater to the disposal fields shall not result in surface runoff… and shall be managed to minimize percolation to ground water. Describe *(anything not addressed above)*: The operators cover each field evenly with one pass of the sprayer to avoid applying liquid manure too heavily. Manure is not applied during wet weather.
X		d. Records of the above? (describe) The facility maintains records of the dates and amounts of manure application and the results of soil testing.
7. Describe any other manure use or disposal practices: None		
8. Is solid or liquid manure transferred to third parties? ☐ Yes ☒ No If yes: Liquid manure transferred annually (if known)? 0 gallons Solid manure transferred annually (if known)? 0 tons Compost transferred annually (if known)? 0 tons		

D. Title 27 Compliance and Other Comments

1. Title 27 compliance? ("Yes" to B.2.i, B.3.b, B.3.e.iv, B.3.f, B.3.g, and C.6.c above)
   ☐ Yes ☒ No ☐ Unknown

   Information was not available to document that the facility is designed and constructed to retain all process water generated and all precipitation on, and drainage through manured areas during a 25-year, 24-hour storm. Specifically, the following had not been calculated or was not available:
   - total liquid manure storage capacity
   - volume of process water generated
   - volume of runoff generated
   - volume of precipitation on manured areas during a 25-year, 24-hour storm
   - volume of runoff from manured areas during a 25-year, 24-hour storm

In addition, although manure application rates are based on the results of soil testing, manure is not analyzed to determine the nutrient content and the operators do not maintain records to document that manure application rates are reasonable for the crop, soil, climate, special local situations, management system, and type of manure or that liquid manure is applied at rates that do not result in surface runoff and minimize percolation to ground water.

2. Other Comments:
   - Historic information for the facility maintained by the Regional Board indicated that whey from the creamery associated with the dairy may have been spread on the fields at Spring Hill Dairy. The facility operators indicated that whey had not been spread on the fields and that a white-colored substance observed in the South Pond (Photo 11) was not whey residue.
   - The vegetation on the north (down gradient) slope of the South Pond was thicker and greener than the surrounding vegetation, indicating that this area receives more nutrients than the surrounding vegetation – a sign of potential leaking or seepage from the pond. The facility operators stated that there may have been leakage or spills during pumping from this area but that there was no seepage from the pond.
   - The location of the septic tank and leach field for the primary residence at the site is marked on the site map in Attachment A. The facility representatives indicated that additional septic systems are present at the site but were unsure of the locations.
   - The majority of the information in this report was provided by the facility representatives; the assessment did not include a comprehensive review of on-site records and documentation.

E. Recommendations

1. As part of the facility upgrades including construction of a loafing barn, consider designating a permanent solid manure storage area. Ensure that the runoff from this area drains to the South Pond and is considered when calculating the South Pond storage capacity requirements. In addition, ensure that the area is compacted, concrete-lined, or otherwise managed to minimize infiltration of water into underlying soils.
2. Estimate the following for the storage period used at the facility to demonstrate that the facility has sufficient capacity to retain all process water generated, runoff from all normal precipitation on manured areas, and all precipitation on and drainage through manured areas during a 25-year, 24-hour storm:
   - volume of process water and runoff generated during the critical storage period (the period of time between emptying events that will result in the maximum amount of process water and runoff generated during that period)
   - volume of precipitation on manured areas during a 25-year, 24-hour storm
   - volume of runoff from manured areas during a 25-year, 24-hour storm

   Such documentation will be needed to demonstrate compliance with Title 27 requirements, which will apply to dairies under all three elements of the dairy program.
3. Calculate the facility's actual liquid manure storage capacity and ensure that the storage capacity is expanded, as needed, as part of the ongoing facility upgrades to provide adequate storage for the above components to meet the requirements of Title 27.

E. Recommendations (cont.)

4. Control vegetation growth around the pond embankments to allow for regular inspections to identify rodent damage, erosion, or other deficiencies that could allow leakage or compromise the structural integrity of the embankments. Regular inspections should also be conducted to identify and address any signs of pond seepage.
5. Consider practices (e.g., berms, grading) to direct runoff from the areas surrounding the calf hutches and silage and commodities storage areas, as well as silage leachate, to the South Pond or otherwise ensure this runoff and leachate cannot flow to surface water. As discussed during the assessment, consider construction of a designated manure storage area that drains to the South Pond to preclude the need to store solid manure in uncontained portions of the production area or pastures.
6. Ensure that all manure is removed from the summer manure storage area prior to the rainy season to ensure that runoff from this area will not be discharged to surface water, even as the result of an unexpected rain event.
7. Ensure that clean water from the south pastures is diverted away from the production area to minimize contaminated runoff storage requirements.
8. Consider conservation practices to minimize erosion of the riparian areas along Stemple Creek in the facility's pastures and to minimize delivery of sediment in storm runoff to the creek.
9. Consider working with NRCS, WUD, or other appropriate technical assistance provider to develop a nutrient management plan that reflects the conservation practices and land application protocols used at this facility to ensure that manure application rates are reasonable and appropriate for the pastures at the facility and comply with the Title 27 land application requirements. Once the plan is developed, become familiar with the plan and train all responsible facility operators and employees on how to implement the plan. Maintain appropriate records to document plan implementation and demonstrate that manure application rates are reasonable for the crop, soil, climate, special local situations, management system, and type of manure and that liquid manure is applied at rates that do not result in surface runoff and minimize percolation to ground water. Such documentation will be needed to demonstrate compliance with Title 27 requirements, which will apply to dairies under all three of the dairy program permit types.
10. Please note, the dairy permits were adopted by the Regional Water Board on January 19, 2012 (http://www.waterboards.ca.gov/northcoast/water_issues/programs/dairies/).

    A Notice of Intent (NOI) for one of the NPDES permit, GWDRs, or Conditional Waiver of WDRs must be submitted to the Regional Water Board by April 30, 2012 to begin the permit enrollment process.

    This dairy may be enrolled under the Waiver only if:
    1. Compliance with Title 27 regulations is documented at the dairy site at the time of Waiver enrollment (discussed in recommendations above),
    2. All other Waiver conditions are met at the time of permit enrollment such as control of nutrients to surface and groundwaters, and
    3. Waiver compliance continues throughout the permit coverage period.

    If the Waiver conditions cannot be met by the time of the April 30, 2012, enrollment deadline, then the dairy should apply for a GWDR by submitting a NOI for the GWDR by April 30, 2012. Please note that under the GWDR, Nutrient Management Plan implementation is due by January 19, 2013. If this date for Nutrient Management Plan implementation cannot be met, then the Regional Water Board will work with you under a Time Schedule Order (Porter Cologne Water Quality Control Act, Section 13300).