JOHN FARMER SAMPLE PLAN

Landscape Agricultural Energy Management SAMPLE Plan

Farm Town, USA

EQIP #12345678901

July 2013

Agriculture Energy Management Plan, Landscape Conservation Activity Plan (124)

Owner(s) Name(s):	John Farmer	
Owner(s) Mailing Address(is):	111 Farmer Lane Farm Town, USA	
Owner(s) Phone Number(s):	123-456-7890	
Owner(s) Email(s):	JohnFarmer@email.com	
	Owner(s) Signature(s)	
Plan Developed by:		
Planner's Mailing Address:		
Planner's Phone Number:		
Planner's Email:		
	Planner's Signature	
Plan Date:	July 2013	
Total Acres in Plan:	412.3	
Producer's Objectives or Goals	Reduce energy through operations and irrigation efficiencies.	
Attachments:	Conservation Plan Map Soils Map Soils Descriptions Practice Plans or Job sheets (list) Energy Printouts Showing Before and After Energy Use (Savings) (list)	

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Agriculture Energy Management Plan, Landscape Conservation Activity Plan (124)

Background and Site information:

A landscape Agricultural Energy Management Plan (Landscape AgEMP) contains the strategy by which the producer will explore and address producer/grower on-farm energy savings and opportunities on the working land. A landscape Agricultural Energy Plan conservation activity plan will meet NRCS quality criteria for identified resource concerns, comply with federal, state, tribal and local laws, regulations and permit requirements, and satisfy the operator's objectives.

Farm Office Location: 123 Farmington Drive, Farm Town, USA

Farmland:

Tract	Field	Acres	Description
1234	1	8.3	Irrigated Cropland
1234	2	110.5	Irrigated Cropland
1234	4	4.6	Irrigated Cropland
1235	1	288.9	Irrigated Cropland

Farm Description:

There are a total of 412.3 acres of irrigated cropland that is conventionally farmed row crops. See attached plan and soils maps. Producer objectives at this time are to reduce energy consumption by reduction of fuel usage from tillage equipment and improvements in irrigation efficiencies. No other resource concerns aside from energy were identified by the producer.

Energy Resource Assessment for Cropland:

Benchmark Conditions

1. Field Equipment Operations: The producer is currently running a continuous conventional crop of corn. Current field prep includes disking, manure application followed by disking, a cultivator operation with spike points followed by a spike tooth harrow, additional fertilizer shanked in and later rolled with a cultipacker and planted with a double disk opening on 18 in. rows. The producer uses a 500 hp Case-IH Quad Trac tractor for some operations and seeding. He also uses a 300 HP Challenger 65C for all other operations. Combines for harvesting the corn are Case IH 8120.
2. Embedded energy in synthetic nitrogen used: John Farmer uses one representative yearly soil test to determine nutrient applications. Currently he uses manure compost (3 ton/ac) and ammonium sulfate (300lb/ac) fertilizers for his nitrogen sources.
3. Growing/producing legume nitrogen: Currently John Farmer does not grow legume crops or cover crops in his rotation.
4. Irrigation energy: There are 4 center pivots on this farm. The age over the pivots varied but the sprinklers were all on drops and rotators. The sprinklers are all over 7 yrs old and should

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be replaced. The nozzles wear and uniformity decreases, reducing crop yield.

Pumping plants: T1234 field 2 – this is an older 50 hp motor and pump on this field. A pump test was done on this system and the overall efficiency is 65%. The other pumps and motors were evaluated and all were found to be 75-80% efficient.

The pipeline to T1235 Field 1, is 10" when all the pivots are operating. The water velocity is over 5 ft/sec and the friction is over 20 psi.

Recommendations: Recommendations include all energy savings identified on the farm. Producer has selected to implement only a select few at this time (see planned conservations practices table). Job sheets for eligible practices recommended are attached.

1. Field Equipment Operations: Moving to a reduced tillage farming operation will greatly improve energy efficiencies. For John Farmer a (329) Residue and Tillage Management, Strip Till will work with his rotation and dramatically reduce fuel usage. Eliminating all disking operations he can use a single pass strip tiller which only tills small strips where the seed can then be drilled in and later harvest. There would be no full width tillage and no other soil disturbing operations. (See Attached CEET tool).
2. It is recommended that John advance his current nutrient management techniques to a (590) Nutrient Management precision application strategy allowing for variable application of nitrogen. By utilizing technologies such as NDVI, yield monitoring, or grid sampling a variable rate applicator could be utilized to reduce synthetic nitrogen inputs by 8% (suggested savings by industry representatives).
3. Additions of a legume (340) cover crop are recommended. If a legume cover crop is grown 20-40 lb. N/ac (400,000 – 800,000 BTU savings) can be added to the soil for use by the following crop. Use of a legume crop in the (328) crop rotation can at a add 20 lb. N/ac (400,000 BTU savings) for a nitrogen credit to the following crop.
4. Irrigation: All irrigation is from center pivots systems. The pivot sprinkler packages are over 7 yr. old and should be replaced.
   Irrigation Water Management has not been implemented on this farm. Advanced IWM would show when and how much water is needed to meet the crop needs. Saving one inch of water/ acre would save XX kwh of energy.
   The pumping plant on T1234, field 2 should be replaced with a new super-premium motor, pump and VFD.
   Replace the 10" pipeline to T1235, field 1 with 12" dia. PVC

Additional Recommendations

- Use of GPS auto steer for nutrient and chemical applications can reduce overlap by 5% of the application rate and a corresponding reduction in fuel use.

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- Development and use of an integrated pest management plan and precision pest management application technologies can also reduce applied amounts of pesticides/herbicides and/or fungicides by optimizing and target applications.
- Use of appropriate equipment matching horsepower to the implement will be the most efficient.
- Upgrading to new equipment to replace older less efficient models. Look for the most energy efficient when replacing old.
- Properly inflated tires and appropriate RPM usage will increase efficiency.

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Agriculture Energy Management Plan, Landscape Conservation Activity Plan (124)

Resource Concern Assessment				
Resource Concern	**Minimum Treatment Level**	**Does this meet the minimum treatment Before Plan? Describe or attach evaluation**	**Does this meet the minimum treatment After Plan Implementation? Describe or attach evaluation**	**Comments**
SOIL EROSION - Sheet, rill,	Soil loss per RUSLE2 is ≤ T + 1 ton	Attach RUSLE2 Printout for each field	Attach RUSLE2 Printout for each field	No resource concerns identified by the producer
SOIL EROSION - Wind erosion	Soil Loss per WEPS is ≤ T + 1 ton	Attach WEPS Printout for each field	Attach WEPS Printout for each field	No resource concerns identified by the producer
SOIL EROSION – Concentrated flow erosion	Concentrated flow erosion is stabilized.	Describe fields with the problem:	Describe fields with the problem:	No resource concerns identified by the producer
INSUFFICIENT WATER –Inefficient moisture management	Runoff and evapotranspiration are minimized to meet Client objectives, consistent with land capability.	Describe:	Describe:	No resource concerns identified by the producer
INEFFICIENT ENERGY USE – Farming/ranching practices and field operations	Field operations and practices meet energy efficiency objectives and are addressed by planner using an energy assessment - e.g. On-Line Energy Self-Assessment tool, RUSLE2, or WEPS as appropriate	Describe and attach Energy assessments	Describe and attach Energy assessments	NRCS WA Cropland Energy Estimation Tool
Other resource concerns (Describe):		Describe:	Describe:	None Identified

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Agriculture Energy Management Plan, Landscape Conservation Activity Plan (124)

For Energy Saving due to nitrogen credits from grass/legumes:

Planned Crop	Acres	Grass/Legume Nitrogen Source	Nitrogen Credit N Lbs./AC	Total Energy Saving in BTU's 20,000 BTU's/Lb. N
None Planned	N/A	N/A	N/A	N/A

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Agriculture Energy Management Plan, Landscape Conservation Activity Plan (124)

Planned Conservation Practices

Fields(s)	Acres	Planned Application Year	**Planned Practice(s) – Prepare Narratives for all practices. When planned, prepare Job sheets or Implementation Requirements for:** 328 - Conservation Crop Rotation, 330 - Contour Farming, 340 - Cover Crop, 345 - Residue and Tillage Management, Mulch Till, 329 - Residue and Tillage Management, No Till/Strip Till/Direct Seed, 346 - Residue and Tillage Management, Ridge Till, 380 - Windbreak/Shelterbelt Establishment, 528 - Prescribed Grazing.	**Job sheet or Practice Specifications Attached (Yes or NO)**
T-1234 (F-1,2,4); T-1235 (F-1)	412.3	2013+	329-Residue Management, No Till/Strip Till/Direct Seed: Will be implementing a strip till system on irrigated corn annual starting in 2013.	Yes
T-1234 (F-2)	N/A	2013	533-Pumping Plant: Installation of pump, motor and VFD	N/A
T-1234 (F-2); T-1235 (F-1)	399.4	2014	449-Irrigation Water Management: Will be implementing advanced irrigation water mng techniques on irrigated pivot systems only.	Yes
			(Practice Code:) – Narrative	
			(Practice Code:) – Narrative	
			(Practice Code:) – Narrative	
			(Practice Code:) – Narrative	
			(Practice Code:) – Narrative	
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			(Practice Code:) – Narrative	
			(Practice Code:) – Narrative	
			(Practice Code:) – Narrative:	

All practices will need to meet current Washington State NRCS practice standards to be eligible for cost share programs.

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NRCS - CROPLAND ENERGY TOOL

ENERGY SUMMARY FOR ALTERNATIVE FIELD ROTATIONS

Landowner: john farmer
Field Location: Grant Co., WA

Field Area: 117 ac
Field ID:

Date:
Latitude:
Longitude:

	ALTERNATIVES	
Alternative Description	BENCHMARK	PLANNED
Crop Rotation	Corn	Corn
Length of Rotation	1.00 yrs	1.00 yrs
Irrigation Method	0	0
Energy Input (added) to Field [MMBTU/Ac/Yr]	**41.3**	**39.6**
	Savings 3.9%	**1.6 MMBTU/ac/yr**
Energy Harvest [MMBTU/Ac/Yr]	**99.2**	**99.2**
	Gain 0%	**0 MMBTU/ac/yr**
Energy Remaining [MMBTU/Ac/Yr]	**100.7**	**100.7**
	Gain 0%	**0 MMBTU/ac/yr**
Total Energy Yield [MMBTU/Ac/Yr]	**158.6**	**160.3**
	Gain 1%	**1.6 MMBTU/ac/yr**
Energy Gain Index	**4.85**	**5.04**
Output Index	**0.50**	**0.50**
Energy Harvest Index	**2.41**	**2.50**

NRCS - CROPLAND ENERGY TOOL

DETAILED ENERGY SUMMARY FOR ALTERNATIVE FIELD ROTATIONS

Landowner: john farmer Field Area: 117 ac Date:
Field Location: Grant Co., WA Field ID: Latitude:
Longitude:

Alternatives	Alternative Description	BENCHMARK	PLANNED
	Crop Rotation	Corn	Corn
	Length of Rotation	1.00 yrs	1.00 yrs
	Irrigation Method	0	0

Units	(MMBTU = Million British Thermal Units)	[MMBTU/ac/yr]	Percent	[MMBTU/ac/yr]	Percent
Energy Input (added) to Field	Harvest Operations Energy Input	0.2	0.5%	0.2	0.5%
	Field Operations Energy Input	0.8	1.9%	0.3	0.9%
	Irrigation and Delivery Energy	3.1	7.5%	1.8	4.5%
	Other Delivery Energy	0.0	0.0%	0.0	0.0%
	Agrichemicals/Fertilizers	3.0	7.3%	3.1	7.9%
	Soil Amendments	34.2	82.8%	34.2	86.2%
	Labor	0.002	0.0%	0.001	0.0%
Savings 3.9%	Total	**41.3**		**39.6**	
Energy Harvest	Crop Harvest Removed	99.2	100.0%	99.2	100.0%
	Post Harvest Grazing Yield	0.0	0.0%	0.0	0.0%
	Post Harvest Crop Residue Removed	0.0	0.0%	0.0	0.0%
Gain 0%	Total	**99.2**		**99.2**	
Energy Remaining	Rootmass	12.0	11.9%	12.0	11.9%
	Surface Residue	88.7	88.1%	88.7	88.1%
Gain 0%	Total	**100.7**		**100.7**	
Total Energy Yield	Total	**158.6**		**160.3**	
	Gain/Loss	**Gain 1%**	**1.6 MMBTU/ac/yr**		
Energy Index Values	**Energy Gain Index**	**4.85**		**5.04**	
	Output Index	**0.50**		**0.50**	
	Energy Harvest Index	**2.41**		**2.50**	

NRCS - CROPLAND ENERGY TOOL

COST ANALYSIS SUMMARY FOR ALTERNATIVE FIELD ROTATIONS

Landowner: john farmer
Field Location: Grant Co., WA

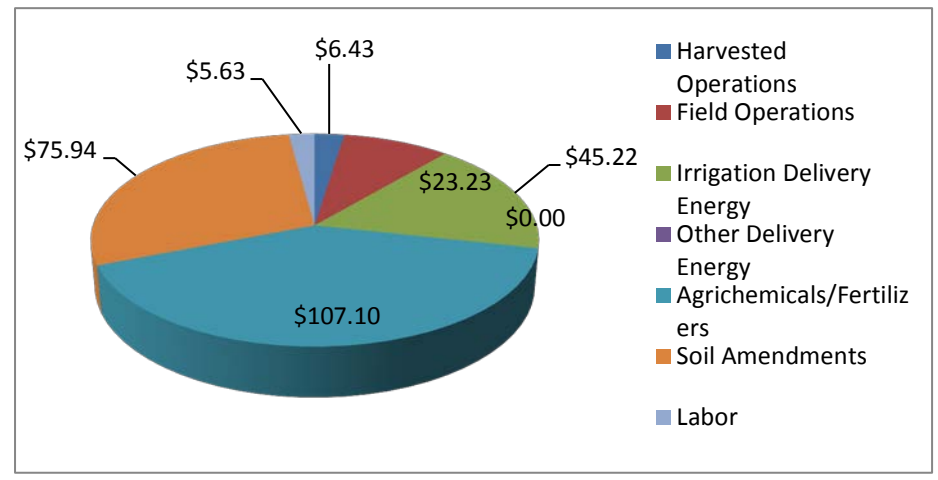
Field Area: 117 ac
Field ID:

Date:
Latitude:
Longitude:

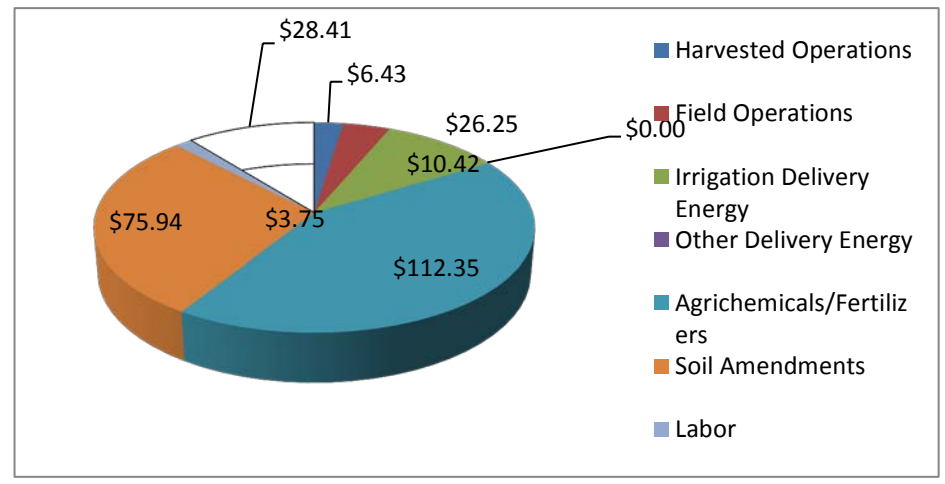
Energy Input - Fuel Types and Unit Costs

Fuel Type	Units	Unit Price	BTU/Unit	Unit Conversion to MMBTU	Cost per MMBTU
Diesel	Gal	$4.20	139,000	7.19	$30.22
Gasoline (E10)	Gal	$3.70	120,000	8.33	$30.83
BioDiesel B2	Gal	$4.00	138,600	7.22	$28.86
BioDiesel B5	Gal	$4.00	138,000	7.25	$28.99
BioDiesel B10	Gal	$4.00	136,900	7.30	$29.22
BioDiesel B20	Gal	$4.00	134,900	7.41	$29.65
BioDiesel B100	Gal	$4.00	118,300	8.45	$33.81
SVO	Gal	$4.00	123,140	8.12	$32.48
Heating Oil	Gal	$4.00	140,000	7.14	$28.57
Propane	Gal	$4.00	91,600	10.92	$43.67
Natural Gas	CCF	$0.86	103,000	9.71	$8.35
CNG	CCF	$4.00	100,000	10.00	$40.00
Ethanol	Gal	$3.00	84,400	11.85	$35.55
Electricity	KWH	$0.05	3,412	293.08	$14.65
Hydro Elec.	KWH	$0.00	3,412	293.08	$0.00
Solar	KWH	$0.00	3,412	293.08	$0.00
Wind	KWH	$0.00	3,412	293.08	$0.00
Soil Amend	ton	$25.00	11,250,000	0.09	$2.22
Labor	day	$30.00	11,900	84.03	$2,521.01
Nitrogen	lb	$0.70	20,000	50.00	$35.00
Phosphorus	lb	$0.65	7,000	142.86	$92.86
Potassium	lb	$0.55	5,500	181.82	$100.00
Sulfur	lb	$0.21	2,000	500.00	$105.00
Herbicide	oz	$0.35	6,250	160.00	$56.00
Pesticide	oz	$3.50	6,250	160.00	$560.00
Agrichemicals	lb	Varies	Varies	Varies	Varies

BENCHMARK COSTS PER ACRE



PLANNED COSTS PER ACRE



Per Acre Costs

Energy Inputs (Added) to the Field	BENCHMARK Corn 1.00 yr				PLANNED Corn 1.00 yr				Difference
	Amount MMBTU/ac/yr	Energy Type	Amount Used [Unit/ac]	Cost [$/ac/yr]	Amount MMBTU/ac/yr	Energy Type	Amount Used [Unit/ac]	Cost [$/ac/yr]	Cost Change [$/ac/yr]
Harvested Operations	0.21	Diesel	1.53 Gal	$6.43	0.21	Diesel	1.53 Gal	$6.43	$0.00
Field Operations	0.77	Diesel	5.53 Gal	$23.23	0.34	Diesel	2.48 Gal	$10.42	$12.81
Irrigation Delivery Energy	3.09	Electricity	904 KWH	$45.22	1.79	Electricity	525 KWH	$26.25	$18.97
Other Delivery Energy	0.00	Electricity	0 KWH	$0.00	0.00	Electricity	0 KWH	$0.00	$0.00
Agrichemicals/Fertilizers	3.02	Agrichemicals	160 lb	$107.10	3.11	Agrichemicals	160.9 lb	$112.35	($5.25)
Soil Amendments	34.17	Soil Amend	3.04 ton	$75.94	34.17	Soil Amend	3.04 ton	$75.94	$0.00
Labor	0.00	Labor	0.19 day	$5.63	0.00	Labor	0.13 day	$3.75	$1.88
Total:	**41.26**			**$263.54**	**39.64**			**$235.13**	**$28.41**

Total Field Costs

Energy Inputs (Added) to the Field	BENCHMARK Corn 1.00 yr				PLANNED Corn 1.00 yr				Difference
	Amount MMBTU/yr	Energy Type	Amount Used [Unit]	Cost [$/yr]	Amount MMBTU/yr	Energy Type	Amount Used [Unit]	Cost [$/yr]	Cost Change [$/yr]
Harvested Operations	24.88	Diesel	179 Gal	$751.84	24.88	Diesel	179 Gal	$751.84	$0.00
Field Operations	89.93	Diesel	647 Gal	$2,717.44	40.33	Diesel	290 Gal	$1,218.67	$1,498.77
Irrigation Delivery Energy	361.04	Electricity	105813 KWH	$5,290.67	209.58	Electricity	61425 KWH	$3,071.23	$2,219.44
Other Delivery Energy	0.00	Electricity	0 KWH	$0.00	0.00	Electricity	0 KWH	$0.00	$0.00
Agrichemicals/Fertilizers	353.34	Agrichemicals	18720 lb	$12,531	364.31	Agrichemicals	18829.7 lb	$13,145	($614)
Soil Amendments	3998.11	Soil Amend	355.39 ton	$8,885	3998.11	Soil Amend	355.39 ton	$8,885	$0
Labor	0.26	Labor	22 day	$658.39	0.17	Labor	15 day	$438.93	$219.46
Total:	**4827.56**			**$30,834**	**4637.39**			**$27,510**	**$3,323**

NRCS - CROPLAND ENERGY TOOL

INPUT SUMMARY WORKSHEET

Date:

Landowner: john farmer | Field Area: 117 ac | Latitude:

Field Location: Grant Co., WA | Field ID: | Longitude:

BENCHMARK

Crop Yields

Crop Name	Year [yr]	Labor [hr/ac]	Crop Harvest Moisture [%]	Crop Yield [yld/ac]	Yield Unit	Post Harvest Forage Removed [DM lb/ac]	Post Harvest Grazing AUD [DM lb/ac]
Corn	2013	1.5	15	278.0	bu/acre		

Soil Amendments

Crop Name	Applied Stored Manure [DM lb/ac]	Compost [DM lb/ac]	Seed, transplnt, sprig, etc. [DM lb/ac]	Animal Feed O. M. [DM lb/ac]	Other Applied O. M. [DM lb/ac]
Corn	0	6000	75	0	0

Agrichemicals/Fertilizers

Crop Name	N Nitrogen [lbs/acre]	P Phosphorus [lbs/acre]	K Potassium [lbs/acre]	S Sulfur [lbs/acre]	H_{rb} Herbicide [oz/acre]	P_{st} Pesticide [oz/acre]
Corn	150	0	0	10	0	0

PLANNED

Crop Yields

Crop Name	Year [yr]	Labor [hr/ac]	Crop Harvest Moisture [%]	Crop Yield [yld/ac]	Yield Unit	Post Harvest Forage Removed [DM lb/ac]	Post Harvest Grazing AUD [DM lb/ac]
Corn	2013	1.0	15	278.0	bu/acre		

Soil Amendments

Crop Name	Applied Stored Manure [DM lb/ac]	Compost [DM lb/ac]	Seed, transplnt, sprig, etc. [DM lb/ac]	Animal Feed O. M. [DM lb/ac]	Other Applied O. M. [DM lb/ac]
Corn	0	6000	75	0	0

Agrichemicals/Fertilizers

Crop Name	N Nitrogen [lbs/acre]	P Phosphorus [lbs/acre]	K Potassium [lbs/acre]	S Sulfur [lbs/acre]	H_{rb} Herbicide [oz/acre]	P_{st} Pesticide [oz/acre]
Corn	150	0	0	10	15	0

NRCS - CROPLAND ENERGY TOOL

INPUT SUMMARY WORKSHEET

Date:

Landowner: john farmer | Field Area: 117 ac | Latitude:

Field Location: Grant Co., WA | Field ID: | Longitude:

BENCHMARK

Diesel Use

Crop Name	Operation Description	No. Times	Diesel Use [gal/ac]
Corn	Disk, offset, heavy	1	0.90
	Manure spreader, solid and semi-solid	1	1.23
	Disk, offset, heavy	1	0.90
	Cultivator, field with spike points	1	0.74
	Harrow, spike tooth	1	0.34
	Fert applic. surface broadcast	1	0.16
	Cultipacker, roller	1	0.62
	Planter, double disk opnr, 18 in rows	1	0.64
	Harvest, killing crop 50pct standing stubble	1	1.53
		Total:	7.06

Irrigation

Method	Op. Pressure [psi]	Pump plant Efficiency [%]	Operating Hours [hr]	Power Req [BTU/gal]	Ave. Amt Applied [in]	Ave. Amt Pumped [Mgal]
Irrigation Delivery	70	80%	24	2.2	52.5	166.8
Other Delivery 1						
Other Delivery 2						
Other Delivery 3						

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Diesel Use

Crop Name	Operation Description	No. Times	Diesel Use [gal/ac]
Corn	Fert applic. surface broadcast	1	0.16
	Manure spreader, solid and semi-solid	1	1.23
	Strip till bed conditioner	1	0.32
	Planter, double disk opnr, 18 in rows	1	0.64
	Sprayer, post emergence	1	0.13
	Harvest, killing crop 50pct standing stubble	1	1.53
		Total:	4.01

Irrigation

Method	Op. Pressure [psi]	Pump plant Efficiency [%]	Operating Hours [hr]	Power Req [BTU/gal]	Ave. Amt Applied [in]	Ave. Amt Pumped [Mgal]
Irrigation Delivery	70	84%	24	2.1	32.0	101.7
Other Delivery 1						
Other Delivery 2						
Other Delivery 3						

NRCS - CROPLAND ENERGY TOOL

INPUTS FOR COMPUTING GREENHOUSE GAS EMISSIONS

Landowner: john farmer
Field Area: 117 ac
Date:
Field Location: Grant Co., WA
Field ID:
Latitude:
Longitude:

	Per Acre Inputs		
Annual Energy Input (Fuel)	BENCHMARK	PLANNED	DIFFERENCE
Liquid			
Diesel	7.06 Gal	4.01 Gal	3.05 Gal
Gasoline (E10)	0 Gal	0 Gal	0 Gal
BioDiesel B2	0 Gal	0 Gal	0 Gal
BioDiesel B5	0 Gal	0 Gal	0 Gal
BioDiesel B10	0 Gal	0 Gal	0 Gal
BioDiesel B20	0 Gal	0 Gal	0 Gal
BioDiesel B100	0 Gal	0 Gal	0 Gal
SVO	0 Gal	0 Gal	0 Gal
Gas			
Propane	0 Gal	0 Gal	0 Gal
Natural Gas	0 CCF	0 CCF	0 CCF
CNG	0 CCF	0 CCF	0 CCF
Electricity			
Electricity	904.39 KWH	525 KWH	379.39 KWH
Other Energy Input			
Soil Amendments	3.04 ton	3.04 ton	0 ton
Agrichemicals & Fertilizers	160 lb	160.94 lb	39999999999998
Labor	0.19 day	0.13 day	0.06 day

NRCS - CROPLAND ENERGY TOOL

BENCHMARK GREENHOUSE GAS EMISSIONS FROM FIELD INPUTS

Landowner: john farmer
Field Location: Grant Co., WA

Field Area: 117 ac
Field ID:

Date:
Latitude:
Longitude:

Total Field Inputs

Energy Input	Units	Value	CO_2 [lb]	N_2O [lb]	CH_4 [lb]	Total CO_2 [lb]	SO_2 [lb]	NO_x [lb]
Liquid								
Diesel	Gal	826.0	18,483.3	0.40	2.29	18,655.7	0.24	14.87
Gasoline (E10)	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B2	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B5	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B10	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B20	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B100	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
SVO	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Gas								
Propane	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Natural Gas	CCF	0.0	0.0	0.00	0.00	0.0	0.00	0.00
CNG	CCF	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Electricity								
Electricity	KWH	105,813	27,425.7	0.45	1.05	27,427.2	13.19	32.19
Other Energy Input								
Soil Amendments	Ton	355	0.0	0.00	0.00	0.0	0.00	0.00
Agrichemicals/Fert.	lb	0	0.0	0.00	0.00	0.0	0.00	0.00
Labor	Day	22.00	0.0	0.00	0.00	0.0	0.00	0.00
TOTAL	**4828 [MMBTU]**		**45,909.0**	**0.9**	**3.3**	**46,082.9**	**13.4**	**47.1**

NRCS - CROPLAND ENERGY TOOL

PLANNED GREENHOUSE GAS EMISSIONS FROM FIELD INPUTS

Landowner: john farmer
Field Area: 117 ac
Date:
Field Location: Grant Co., WA
Field ID:
Latitude:
Longitude:

Total Field Inputs

Energy Input	Units	Value	CO_2 [lb]	N_2O [lb]	CH_4 [lb]	Total CO_2 [lb]	SO_2 [lb]	NO_x [lb]
Liquid								
Diesel	Gal	469.0	10,494.8	0.23	1.30	10,592.6	0.13	8.44
Gasoline (E10)	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B2	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B5	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B10	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B20	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B100	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
SVO	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Gas								
Propane	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Natural Gas	CCF	0.0	0.0	0.00	0.00	0.0	0.00	0.00
CNG	CCF	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Electricity								
Electricity	KWH	61,425	15,920.7	0.26	0.61	16,016.1	7.66	18.69
Other Energy Input								
Soil Amendments	Ton	355	0.0	0.00	0.00	0.0	0.00	0.00
Agrichemicals/Fert.	lb	0	0.0	0.00	0.00	0.0	0.00	0.00
Labor	Day	15.00	0.0	0.00	0.00	0.0	0.00	0.00
TOTAL	**4637 [MMBTU]**		**26,415.5**	**0.49**	**1.91**	**26,608.7**	**7.79**	**27.13**

NRCS - CROPLAND ENERGY TOOL

GREENHOUSE GAS EMISSION CHANGES FROM FIELD INPUTS

Landowner: john farmer | Field Area: 117 ac | Date:
Field Location: Grant Co., WA | Field ID: | Latitude:
Longitude:

Total Field Inputs

Energy Input	Units	Value	CO_2 [lb]	N_2O [lb]	CH_4 [lb]	Total CO_2 [lb]	SO_2 [lb]	NO_x [lb]
Liquid								
Diesel	Gal	357.0	7,988.6	0.17	0.99	8,063.1	0.10	6.43
Gasoline (E10)	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B2	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B5	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B10	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B20	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
BioDiesel B100	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
SVO	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Gas								
Propane	Gal	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Natural Gas	CCF	0.0	0.0	0.00	0.00	0.0	0.00	0.00
CNG	CCF	0.0	0.0	0.00	0.00	0.0	0.00	0.00
Electricity								
Electricity	KWH	44,388	11,504.9	0.19	0.44	11,573.8	5.54	13.50
Other Energy Input								
Soil Amendments	Ton	0	0.0	0.00	0.00	0.0	0.00	0.00
Agrichemicals/Fert.	lb	0	0.0	0.00	0.00	0.0	0.00	0.00
Labor	Day	7.00	0.0	0.00	0.00	0.0	0.00	0.00
TOTAL	**190 [MMBTU]**		**19,493.5**	**0.36**	**1.43**	**19,636.9**	**5.64**	**19.93**

NRCS - CROPLAND ENERGY TOOL

ENERGY SUMMARY BY PRACTICE STANDARD

Date:

Landowner: john farmer | Field Area: 117 ac | Latitude:

Field Location: Grant Co., WA | Field ID: | Longitude:

Energy Change Distribution by Practice

Benchmark Energy [MMBTU]	Energy Input to the Field			Energy Harvest			Energy Remaining			Energy Gain (Loss)		
	41.26			99.25			100.67			158.65		
Practice Standard	Number	Percent		Number	Percent		Number	Percent		Number	Percent	
	[MMBTU]	Change	Total	[MMBTU]	Change	Total	[MMBTU]	Change	Total	[MMBTU]	Change	Total
329 Residue Management, No-Till/Strip Till/Direct Seed	(0.33)	20.3%	(0.8%)	0.00		0.0%	0.00		0.0%	0.33	20.3%	0.2%
533 Pumping Plant	(0.65)	39.8%	(1.6%)	0.00		0.0%	0.00		0.0%	0.65	39.8%	0.4%
449 Irrigation Water Management	(0.65)	39.8%	(1.6%)	0.00		0.0%	0.00		0.0%	0.65	39.8%	0.4%
Energy not accounted for in a practice standard	0.00	0.0%	0.0%	0.00		0.0%	0.00		0.0%	0.00	0.0%	0.0%
Energy Change [MMBTU]	(1.63)	100.0%	(3.9%)	0.00		0.0%	0.00		0.0%	1.63	100.0%	1.0%
Planned Energy [MMBTU]	39.64			99.25			100.67			160.28		

NRCS - CROPLAND ENERGY TOOL

GREENHOUSE GAS CHANGE BY PRACTICE STANDARD

Date:

Landowner: john farmer | Field Area: 117 ac | Latitude:

Field Location: Grant Co., WA | Field ID: Washington | Longitude:

Total Field Practice Standard	Energy Savings [MMBTU]	Reduced Greenhouse Gas Emissions CO_2 [lb]	N_2O [lb]	CH_4 [lb]	SO_2 [lb]	NO_x [lb]
329 Residue Management, No-Till/Strip Till/Direct Seed	38.70	6,625.6	0.127	0.759	0.090	5.261
533 Pumping Plant	75.73	5,752.6	0.095	0.220	2.768	6.752
449 Irrigation Water Management	75.75	5,752.6	0.095	0.220	2.768	6.752
Energy percentage not accounted for in a practice standard	0.00	0.0	0.000	0.000	0.000	0.000

Practice Standard (Summary)	Energy Savings [MMBTU]	Reduced Greenhouse Gas Emissions CO_2 [lb]	N_2O [lb]	CH_4 [lb]	SO_2 [lb]	NO_x [lb]
Energy Practice Standards	190.18	18,130.8	0.317	1.198	5.625	18.764
Non-Energy Practice Standards	0.00	0.0	0.000	0.000	0.000	0.000
Energy percentage not accounted for in a practice standard	0.00	0.0	0.000	0.000	0.000	0.000
Total	190.18	18,130.8	0.317	1.198	5.625	18.764

Customer(s): John Farmer
Corn County, USA

2012 EQIP Energy

1:10,000

Date: 6/11/2012

Approximate Acres: 301.8

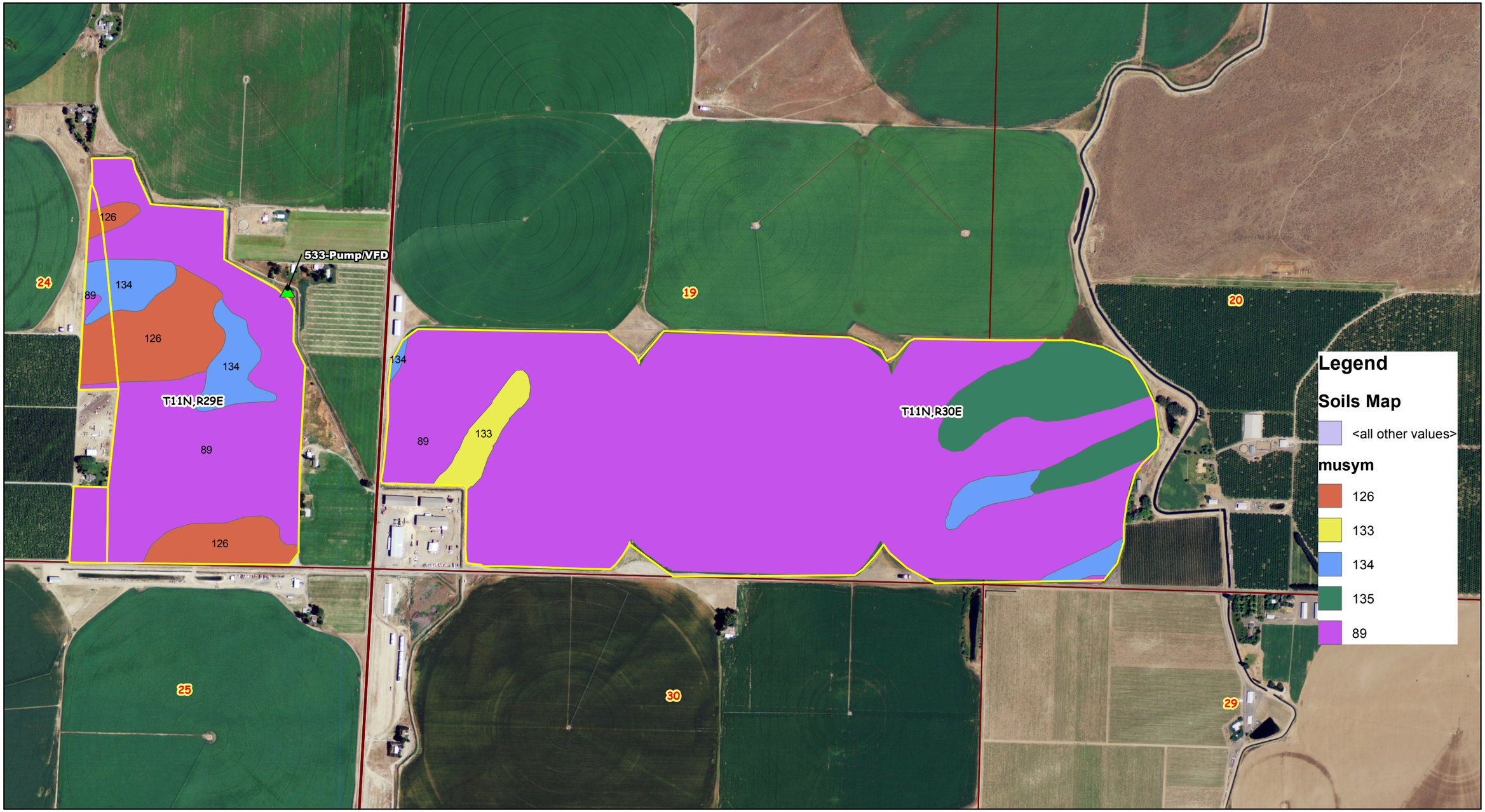
Customer(s): John Farmer
Corn County, USA

2012 EQIP Energy

1:10,000

Date: 6/11/2012

Approximate Acres: 301.8



740 0 740 1,480 2,220 2,960 Feet

N

Map Unit Description

Franklin County, Washington

[Minor map unit components are excluded from this report]

Map unit: 89 - Quincy loamy fine sand, 0 to 15 percent slopes

Component: Quincy (85%)

The Quincy component makes up 85 percent of the map unit. Slopes are 0 to 15 percent. This component is on terraces. The parent material consists of mixed eolian sands. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R007XY502WA Sands 6-10 Pz ecological site. Nonirrigated land capability classification is 7e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 2 percent.

Map unit: 126 - Royal loamy fine sand, 0 to 10 percent slopes

Component: Royal (85%)

The Royal component makes up 85 percent of the map unit. Slopes are 0 to 10 percent. This component is on terraces. The parent material consists of sandy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R007XY502WA Sands 6-10 Pz ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map unit: 133 - Sagehill very fine sandy loam, 0 to 2 percent slopes

Component: Sagehill (75%)

The Sagehill component makes up 75 percent of the map unit. Slopes are 0 to 2 percent. This component is on terraces. The parent material consists of lacustrine deposits with a mantle of loess or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R007XY102WA Loamy 6-10 Pz ecological site. Nonirrigated land capability classification is 6c. Irrigated land capability classification is 1 This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 11 percent.

Map unit: 134 - Sagehill very fine sandy loam, 2 to 5 percent slopes

Component: Sagehill (75%)

The Sagehill component makes up 75 percent of the map unit. Slopes are 2 to 5 percent. This component is on terraces. The parent material consists of lacustrine deposits with a mantle of loess or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R007XY102WA Loamy 6-10 Pz ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 11 percent.

Map unit: 135 - Sagehill very fine sandy loam, 5 to 10 percent slopes

Component: Sagehill (75%)

The Sagehill component makes up 75 percent of the map unit. Slopes are 5 to 10 percent. This component is on terraces. The parent material consists of lacustrine deposits with a mantle of loess or eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R007XY102WA

Map Unit Description

Franklin County, Washington

Map unit: 135 - Sagehill very fine sandy loam, 5 to 10 percent slopes

Component: Sagehill (75%)

Loamy 6-10 Pz ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 11 percent.

Map Unit Description

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

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

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

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