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AWM Program Insights & Tips

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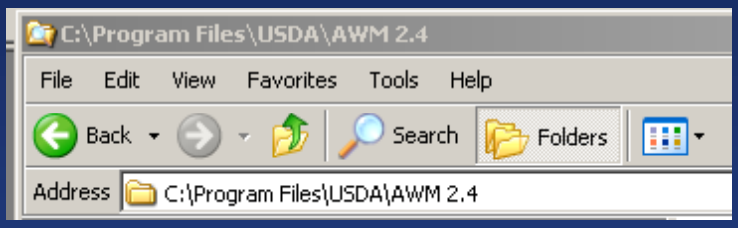
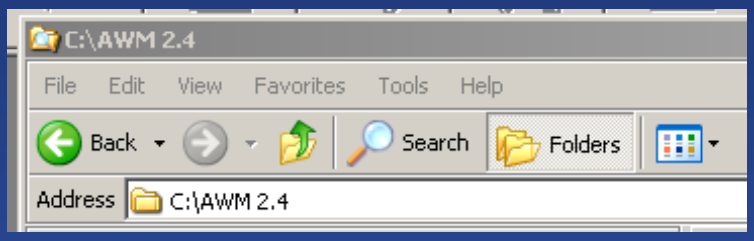
http://www.nrcs.usda.gov/ and perform search for AWM 2.4

NRCS CCE Default Install Location



Recommended Install Location for non-NRCS Computers



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Use "*Help*" – "*About*"

- *to verify Version number and current Database*

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Key to a successful AWM experience –

- Best to have ALL your numbers decided on BEFORE running the program: animals,
  - weights (consider potential increases in animal population for expansion),
  - bedding,
  - extra water,
  - runoff areas, etc.

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Key to a successful AWM experience –

- Save your project file regularly, especially between making data changes. If too many changes are made at a time, bugs may occur causing AWM to close unexpectedly.

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"Start" tab:

- Be sure to select the correct data source from the pull down menu in the "*Data Source"* field. All the animals on the *"Animals"* tab will need to be deleted if the data source needs to be changed after the project file has been created.

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"Start" tab:

- Under the 1-Operating period option, you may use fewer than 12 months for the operating cycle. This situation may apply in a where there is no precipitation, evaporation or runoff entering the system, ie. winter feeding under 100% confinement with covered waste storage.
- 2-Operating periods option requires a full 12 month cycle. Would apply for pasture situations or when animals are moved off-site part of the year and runoff areas contribute to the system.

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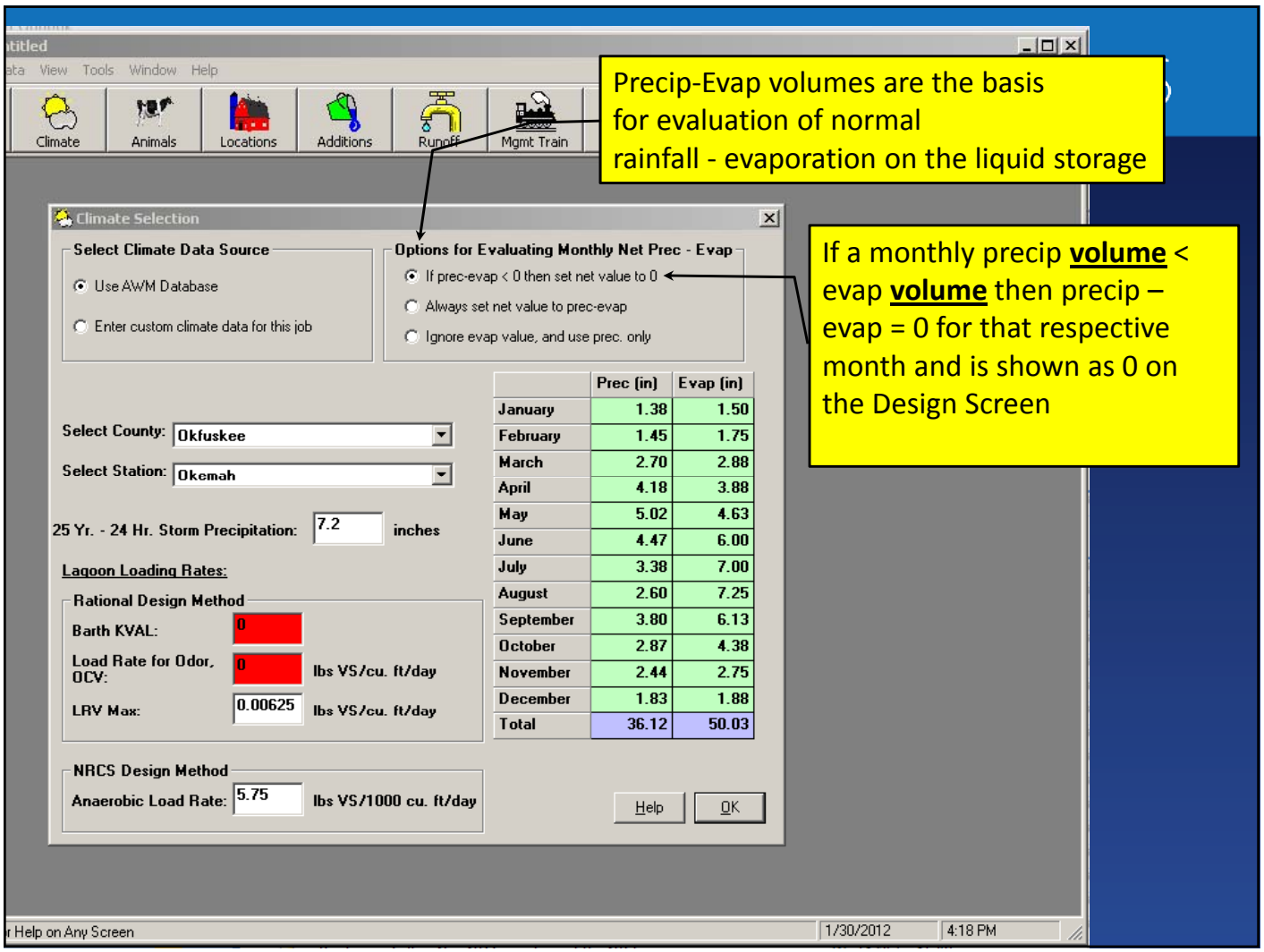
"Climate" tab:

- In the, "*Options of Evaluating Monthly Net Prec-Evap*" box, verify the method of evaluation preferred.
  - AWM will default to the 1st option, "*If precip-evap < 0 then set net value to 0*" when a new design file is initiated.
  - The 2nd selection "*Always set net value to prec-evap*" will result in the least volume of precip-evap on the liquid storage structure.
  - The 3rd option, "*Ignore evap value, and use prec. only*" will result in the largest volume of precip-evap on the liquid storage. This option may apply when evaluating a structure that may develop a significant crust i.e. organic (sawdust etc.) bedded dairy, piston pumped to a slurry store, or a slatted floor pit in an outside lot.



	Prec (in)	Evap (in)
January	1.38	1.50
February	1.45	1.75
March	2.70	2.88
April	4.18	3.88
May	5.02	4.63
June	4.47	6.00
July	3.38	7.00
August	2.60	7.25
September	3.80	6.13
October	2.87	4.38
November	2.44	2.75
December	1.83	1.88
Total	36.12	50.03

Precip-Evap volumes are the basis for evaluation of normal rainfall - evaporation on the liquid storage

If a monthly precip **volume** < evap **volume** then precip – evap = 0 for that respective month and is shown as 0 on the Design Screen

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"Animals" tab:

- AWM assumptions for manure densities:
  - Manure = 60 pcf
  - TS = 55 pcf

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"Additions" tab:

- The bedding input is per location for all the animals designated at the location. Side calculations may be needed for the lbs/day required input. MWPS-18; Section 1 provides density of various bedding materials in lbs per cu.ft.
- Both Wash and Flush Water include calculators to assist with calculating these volumes.

AWM - Untitled

File Edit Data View Tools Window Help

Start | Climate | Animals | Locations | Additions | Runoff | Mgmt Train | Eval | Design | Calculator | ManureMaster

Additions

Additional Waste Stream:

Add

Note: Do not add recycled water. T at has alrea
add newly introduced water to the ystem for w

Waste Streams	Wash Wate		Flush Water		Bedding Type	Eff	Amount	LY Amt	CY Amt
--- Units --->	gal/day		gal/day			Density	lbs/day	cu ft/day	cu ft/day
Barn	0.00	...	0.00	...	Sand				
Pasture	0.00	...	0.00	...					
Waste Water	0.00	...	0.00						

Wash Water Calculator for Barn

Hoses	Amount	Units	Minutes/Day	Total (gal/day)
Hose 1		gal/minute		
Hose 2		gal/minute		
Hose 3		gal/minute		
Hose 4		gal/minute		
Wash Water Total	---------->			0.00

Flush Water Calculator for Pasture

Animal	Quantity	Sug. Flush Volume	Flush Volume	Daily Flush
--- Units -->		gal/head	gal/head	gallons
Gestating Sow	1	25.00		
Grower	1	10.00		
Flush Water Total			N/A	

Help | Cancel | OK

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"Additions" tab:

- Examples of "*Additional Waste Stream" include:*
  - In plate cooler water from a diary that is directed to a storage
  - sileage leachate
  - water from cooling sprinklers
  - drinking water wasted by the animals
  - milk tank rinsate
  - milk from the treated cow barn or hospital that is directed to a storage.

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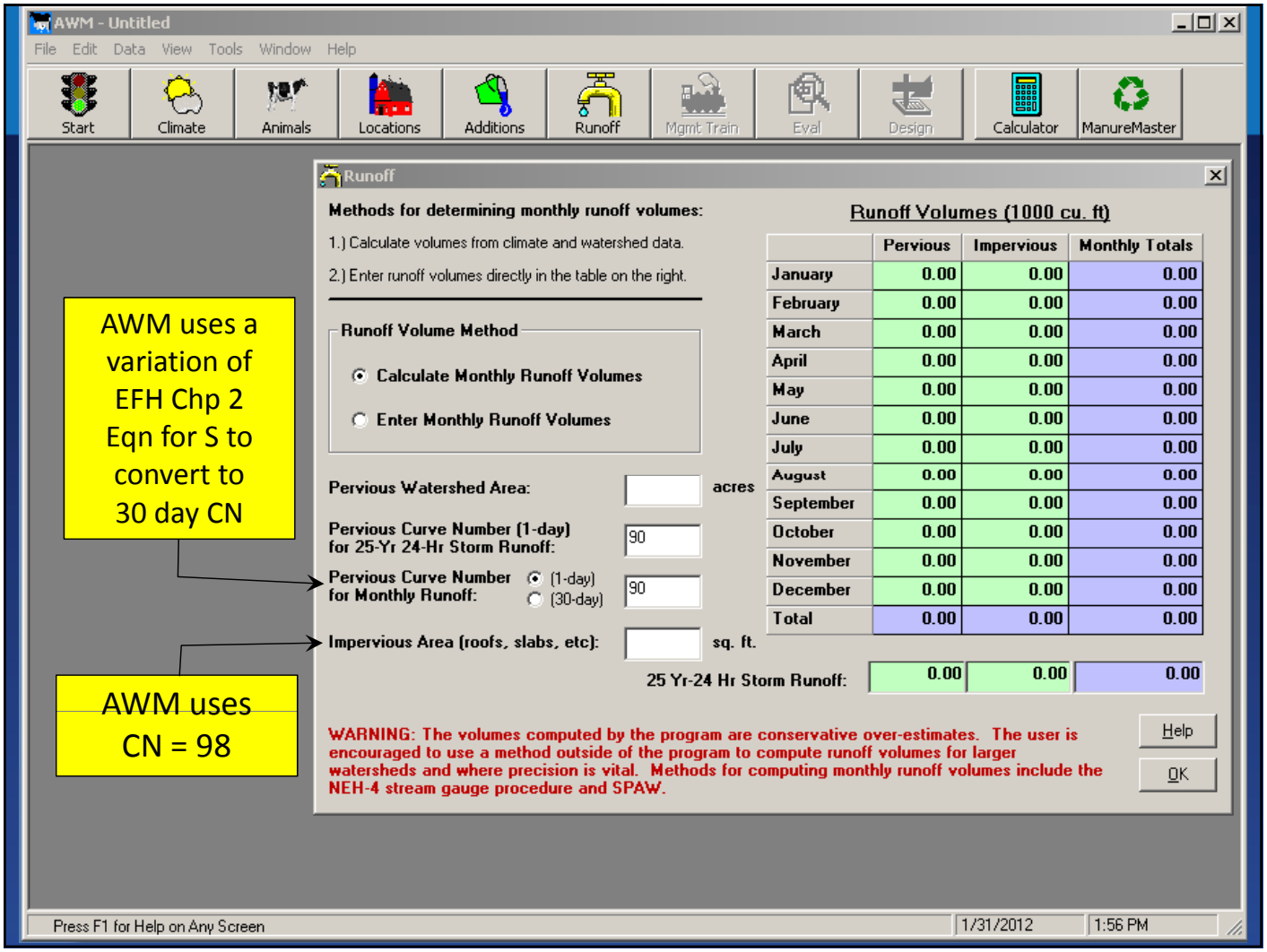
"Runoff" tab:

- AWM cannot separate the runoff volumes. A separate AWM run is required for each drainage area.
- For pervious drainage areas – Use the EFH2 software to calculate the runoff curve number to be used.
- Miscalculating contributing run-off areas may result in an over/under calculation of runoff volume.



AWM uses a variation of EFH Chp 2 Eqn for S to convert to 30 day CN

AWM uses CN = 98

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"Management Train" tab:

- When changing a step in the waste stream, the current facility should be changed to "*None (Clear)"* before adding the new facility.
- The efficiency of Solid Separators can be found by selecting "*Data"* on the toolbar then *"Edit Separator Data".*
- Another facility cannot be added after a "*Dry Stack (Covered)", "Storage Pond", Storage Tank", or "Anaerobic Lagoon".*

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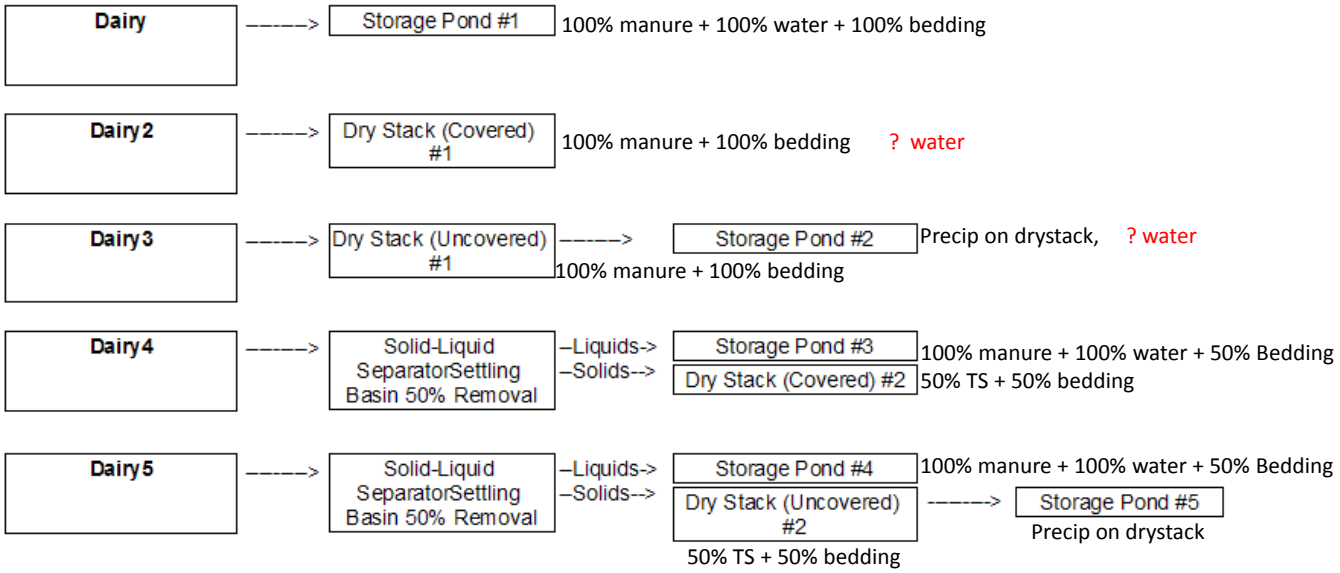
"Management Train" tab:

- When a Solid Separator is used in the Mgt Train, the Manure volume shown on the "*Component Volumes*" table is the volume of Total Solids (TS) removed at the efficiency of the solid separator.
- When a Drystack is used <u>without</u> a solid separator, the volume of any wash or flush water in the waste stream is not accounted for . A solid separation function should be selected to ensure the water is accounted for in the waste stream.

Daily Facility Volumes

	Facility	Manure	Wash Water	Flush Water	Bedding	Total Waste Volume
Dairy	Storage Pond #1	19.00	133.68	0.00	10.00	162.68
Dairy2	Dry Stack (Covered) #1	19.00	0.00	0.00	10.00	29.00
Dariy3	Dry Stack (Uncovered) #1	19.00	0.00	0.00	10.00	29.00
	Storage Pond #2	0.00	0.00	0.00	0.00	0.00
Dairy4	Storage Pond #3	19.00	133.68	0.00	5.00	157.68
	Dry Stack (Covered) #2	1.36	0.00	0.00	5.00	6.36
Dairy5	Storage Pond #4	19.00	133.68	0.00	5.00	157.68
	Dry Stack (Uncovered) #2	1.36	0.00	0.00	5.00	6.36
	Storage Pond #5	0.00	0.00	0.00	0.00	0.00



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"*Eval*" tab:

- The "*Verified*" check box must be checked if the designer intends to design supplemental storage to meet the required storage volume on the "*Design*" tab.

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AWM - C:\Program Files\USDA\AWM 2.4\DairyFarm350.awm

File Edit Data View Tools Window Help

Start | Climate | Animals | Locations | Additions | Runoff | Mgmt Train | Eval | Design | Calculator | ManureMaster

Evaluate Waste Storage Structures

Storage Pond #1 | Dry Stack (Uncovered) #1

Input Data

Shape: Rectangle

Total Depth: 10.0 ft

Top Length 260.0 ft

Top Width 120.0 ft

Permanent Add'l Storage: 0 cu. ft

Freeboard: 1.0 ft

Sideslope Ratio: 3

Max. Storage Volume Method

- Define Withdrawal Months
- Define Storage Period

Storage Period: 6 months

☑ Verified

Cross Section

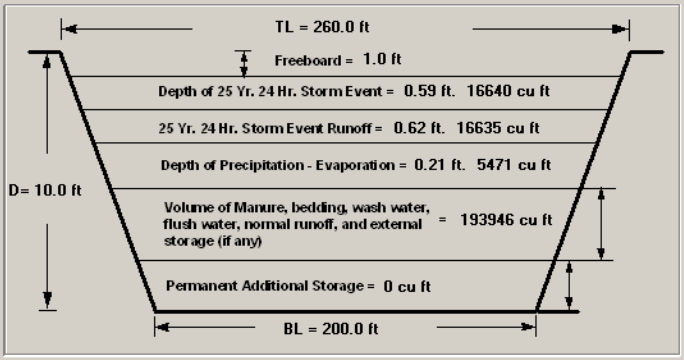
Critical Months: May - Oct Bot W x L.: 60.0 x 200.0 ft Top W x L.: 120.0 x 260.0 ft

Facility Options

☐ Include Ramp

Storage Volumes (1000 cu ft)

Waste generated: 210.6 Existing capacity: 160.4 Additional needed: 50.1



Water Budget (1000 cu ft)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Waste	23.30	21.80	23.30	22.55	23.30	22.55	23.30	23.30	22.55	23.30	22.55	23.30	275.11
Runoff	1.11	1.92	4.77	7.03	10.84	10.55	8.02	8.07	10.10	7.29	5.10	2.60	77.39
Prec-Evap	0.36	0.38	0.00	0.00	0.50	0.22	0.00	0.00	3.32	1.43	2.79	2.00	
Extern Prec	0.03	0.04	0.07	0.10	0.15	0.15	0.11	0.11	0.14	0.11	0.08	0.05	
Storage Volume	24.80	24.14	28.15	29.68	34.79	33.46	31.44	31.49	36.11	32.13	30.52	27.94	

Help OK

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Check box to carry Storage Volumes over to Design screen

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"Design" tab:

- *"Withdrawal Months"* assumes withdrawal will occur at the end of the month. Ex. Selecting April and October is for a storage period of November, December, January, February, March, April (6 months).
- AWM calculates the volume of evaporation on a storage pond at the average liquid storage surface area.

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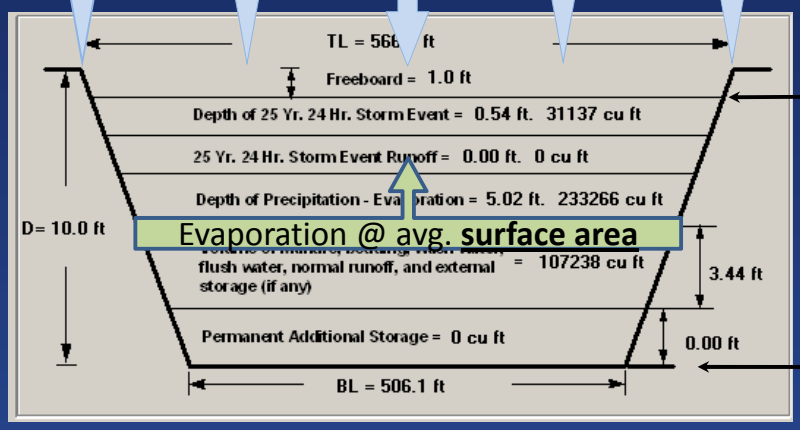
Volume of Precipitation – Evaporation =

Volume of Precipitation over Top Surface Area minus Volume of Evaporation over Average Surface Area

Precipitation over the top **surface area**



Evaporation @ avg. **surface area**

Surface Area @ Top of 25yr Storm Event

Bottom Surface Area

Average Surface Area = (Bott Surface Area + Surface Area @ Top 25yr Storm Event) / 2

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"Design" tab:

- The sum of the interval depths shown for a Storage Pond may not equal the "*Total Depth*" which results in a "*Freeboard*" depth less than the value entered. This should be taken into consideration and the top dimensions increased accordingly if the user-entered freeboard is the minimum required.

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"Design" tab:

- Potential Uses for the "*Permanent Additional Storage*".
  - waste pumped from an existing structure outside the Management Train.
  - anticipated silage leachate volumes (1 ft3 leachate per ton silage) under the "permanent additional storage" entry. Leachate may mainly occur in late October/early November and maybe during the winter storage period.

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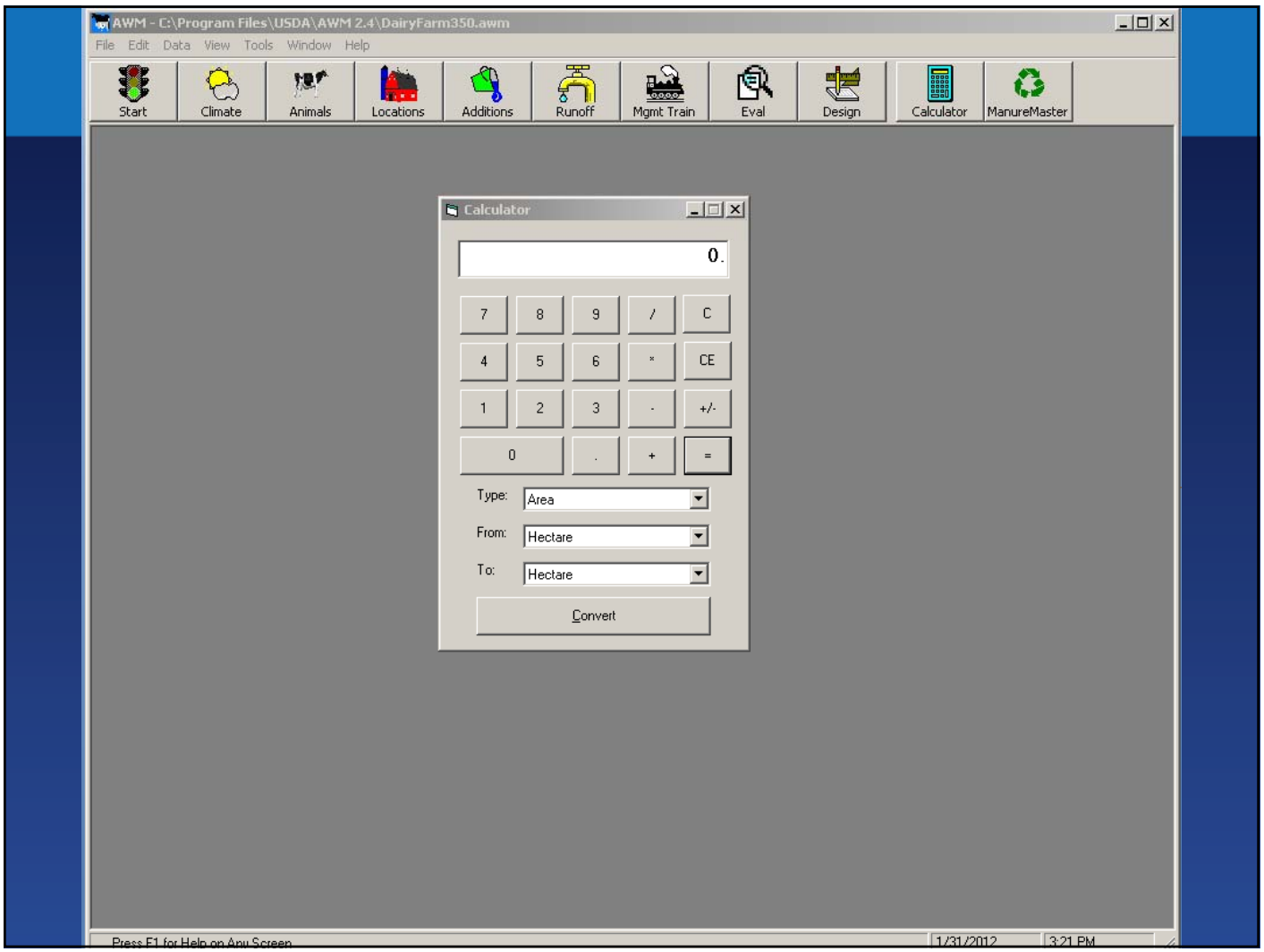
"Design" tab:

- Caution should be used when changing values in cells. The program on every keystroke. Using backspace will cause a recalculation for every key press and a possible division by zero error that could kick you out with a runtime error.


AWM - C:\Program Files\USDA\AWM 2.4\DairyFarm350.awm
File Edit Data View Tools Window Help
Start
Climate
Animals
Locations
Additions
Runoff
Mgmt Train
Eval
Design
Calculator
ManureMaster
Calculator
0.
7 8 9 / C
4 5 6 * CE
1 2 3 - +/-
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To: Hectare
Convert
Press F1 for Help on Any Screen
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Printing and Exporting Reports:

- It is recommend that you save your project file before attempting to preview or print any reports. If the AWM database is not properly closed between previewing reports, a runtime error may occur, causing AWM to close.

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Printing and Exporting Reports:

- The interval depths shown in the reports may not be the same as those shown on the "*Design*" tab.
  - AWM doesn't currently write all calculated values to the dBase report.
  - The effect of ramps prevent the depths from being computed in the dBase.
  - The interval depths shown on the reports are based on ratios of interval volumes to the total volume.

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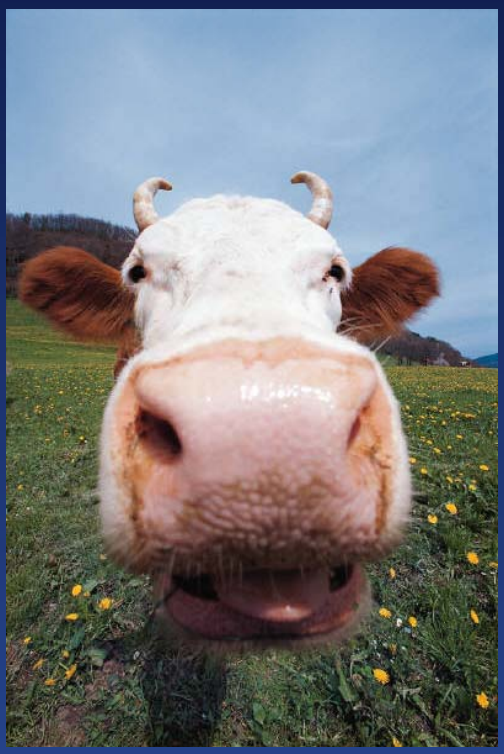
QUESTIONS ??



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