BREWSHEET v3.4 (2014-12-14)

user input
calculated

Brew			
Name:	Cascade SMaSH		
Brew Date:	2018 April 2	Collected (gal):	5.50
Rack Date:		Racked (gal):	
Keg/Bottle Date:	2018 April 22	Kegged/Bottled (gal):	5.00
Estimated		**Actual**	
ABV (%):	5.1%	ABV (%):	5.4%
OG (SG):	1.049	OG (SG):	1.051
FG (SG):	1.010	FG (SG):	1.009
IBU:	40.3	IBU:	39.6
SRM:	14.7	SRM:	14.7
IBU/Gravity Ratio:	0.82	IBU/Gravity Ratio:	0.78

Grain	Pounds	Potential	SG Share	Color	% Bill
Munich Malt 10L	10.00	1.035	0.045	10.0	90.91%
British crystal 50-60L	1.00	1.034	0.004	55.0	9.09%

Hop	Type	Ounces	Boil Time	Alpha %	IBU	% Bill
Cascade	P	0.80	fwh	6.6%	18.5	13.79%
Cascade	P	1.00	fwh	4.7%	16.4	17.24%
Cascade	P	1.00	10	4.7%	5.4	17.24%
Cascade	P	2.00	0	4.7%	0.0	34.48%
Cascade	P	1.00	dry	4.7%	0.0	17.24%

Design Notes

Using RO water; so at dough-in, add:
4.5 g CaSO4 (calcium sulfate/gypsum)
2.25 g CaCl2 (calcium chloride)
3.75 g MgSO4 (magnesium sulfate/epsom salt)
2 g NaHCO3 (baking soda)
2.75 g CaCO3 (chalk)
At boil, add:
2.8 g CaSO4 (calcium sulfate/gypsum)
1.4 g CaCl2 (calcium chloride)
2.3 g MgSO4 (magnesium sulfate/epsom salt)
1.2 g NaHCO3 (baking soda)
1.7 g CaCO3 (chalk)
Target is 5.41 mash pH, 140 ppm calcium, 18 ppm magnesium, 25 ppm sodium, 55 ppm chloride, 200 ppm sulfate

Batch Variables and Calculations	
Batch Size (gal):	5.50
Grain Temperature (F):	74
Total Grain Weight (lbs):	11.00
Mash	
Mash Time (min):	60
Desired Mash Temperature (F):	152
Strike Water (gal):	5.23
Strike Temperature (F):	167
Mash Ratio (qts/lb):	1.90
Grain Absorption (gal):	1.38
Mash Volume (gal):	6.11
Mash-out Temperature (F):	168
Estimated First Runnings (gal):	3.71
First Runnings (gal):	3.71
First Runnings Gravity (Brix):	15.50
First Runnings Gravity (SG):	1.060
Sparge	
Desired Sparge Temperature (F):	168
Sparge Water (gal):	3.25
Sparge Water Temperature (F):	172
Estimated Second Runnings (gal):	3.72
Second Runnings (gal):	3.72
Second Runnings Gravity (Brix):	6.40
Second Runnings Gravity (SG):	1.025
Estimated Preboil Volume (gal):	7.43
Estimated Preboil Gravity (Brix):	10.94
Preboil Volume (gal):	7.43
Preboil Gravity (Brix):	10.60
Preboil Gravity (SG):	1.041
Extraction Efficiency (%):	80%
Boil	
Boil Time (min):	60
Estimated Evaporation Loss (gal):	1.00
Hop Absorption (gal):	0.12
Volume Left in Kettle (gal):	0.00
Actual Evaporation Rate (gal/hr):	1.00
Actual Evaporation Loss (gal):	1.00
Original Gravity (Brix):	13.07
Batch Size Efficiency (%):	73%
Actual Efficiency (%):	73%
Fermentation	
Primary Fermentation (days):	14
Primary Fermentation Temperature (F):	62
Gravity After Primary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Secondary Fermentation (days):	3
Secondary Fermentation Temperature (F):	32
Gravity After Secondary Fermentation (SG):	
Temperature of Reading (F):	
Corrected SG:	
Tertiary Fermentation (days):	
Tertiary Fermentation Temperature (F):	
Final Gravity (SG):	1.009
Temperature of Reading (F):	43
Corrected SG:	1.009
Target Fermentation for Diacetyl Rest (%):	
Target Gravity for Diacetyl Rest (SG):	
Calories per Pint:	166
12 oz. Bottles Required:	51
Carbonation	
Bottling Temperature (F):	
Volumes of CO2:	2.45
Priming Sugar (oz):	
DME (oz):	
Forced Carbonation (lbs):	

System Variables	
Brewhouse Efficiency (%):	70%
Volume in Hoses (gal):	0.22
Volume in Wort Chiller (gal):	0.19
Volume in HERMS Coil (gal):	0.25
Mash/Lauter Tun Deadspace (gal):	0.14
Strike to Sparge Volume Ratio (%):	50%
Trub Loss (gal):	0.16
FWH IBU Factor (%):	10%
Strike Temperature Factor (F):	7
Sparge Temperature Factor (F):	4
Estimated Evaporation Rate (gal/hr):	1.00
Leaf Hop Absorption Ratio (qts/oz):	0.40
Pellet Hop Absorption Ratio (qts/ oz):	0.10
Cooling Losses (%):	4%
Hydrometer Correction (SG):	0.001

BJCP Style Guidelines	
Style:	American Pale Ale
Code:	10A
OG:	1.045-1.060
FG:	1.010-1.015
IBU:	30.0-45.0
SRM:	5.0-14.0
ABV:	4.5-6.0%
CO2:	2.2-2.7

Yeast Strain	
Yeast Strain:	Danstar Nottingham (Dry Ale)
Type:	Dry Ale
Attenuation (%):	75-85%
Actual Attenuation (%):	82%
Fermentation Temp (F):	57-70F
Flocculation:	high

Required Amounts	
Cell Count (billions):	188
Vials (White Labs/Wyeast):	
Dry Yeast (g):	9.5
Yeast Starter/Slurry	
Vials (White Labs/Wyeast):	
Date Yeast Produced:	
Yeast Viability (%):	
Yeast Growth Rate:	
Yeast Innoculation Rate (million/ml):	
Starter Volume Required (ml);	
DME Required (oz):	
Yeast slurry concentration (billion/ml):	2.5
Non-yeast Percentage (%):	20%
Yeast Slurry Required (ml):	

User Variables	

Brewing Notes

4/2: first time using RO water and adding minerals!
4/22: kegged. Aroma is malty with a good hint of hops (both piny and citrusy); flavor is malty with an initial citrus hoppiness that fades to mostly malt; nice bitterness; very clean finish with a great finish.

Batch Scaling				
Desired OG:	1.050	Total Weight (lbs):		11.26
Batch Size (gal):	5.50	Total Bill:		100.00%
Brewhouse Efficiency (%):	70%			
Grain	**Pounds**	**Potential**	**Color**	**% Bill**
Munich Malt 10L	10.13	1.035	10.0	90.00%
Caramel/Crystal 60L	1.13	1.034	60.0	10.00%

Poundage		
Goal (lbs):	10.00	
Amount (lbs | oz.f_oz):	2	12.76
Amount (lbs | oz.f_oz):	2	14.31
Amount (lbs | oz.f_oz):	2	14.42
Amount (lbs | oz.f_oz):		
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Amount (lbs | oz.f_oz):		
Needed (lbs | oz.f_oz):	1	6.51

Hydrometer Correction		
SG:	1.049	
Temperature (F):	65	
Corrected SG:	1.051	

Gravity Calculator			
Brix:	12.33	13.07	
Specific Gravity:	1.048	1.051	
Degrees Plato:	11.83	12.50	

Brix Ethanol Correction	
Original Brix:	
Current Brix:	
SG:	