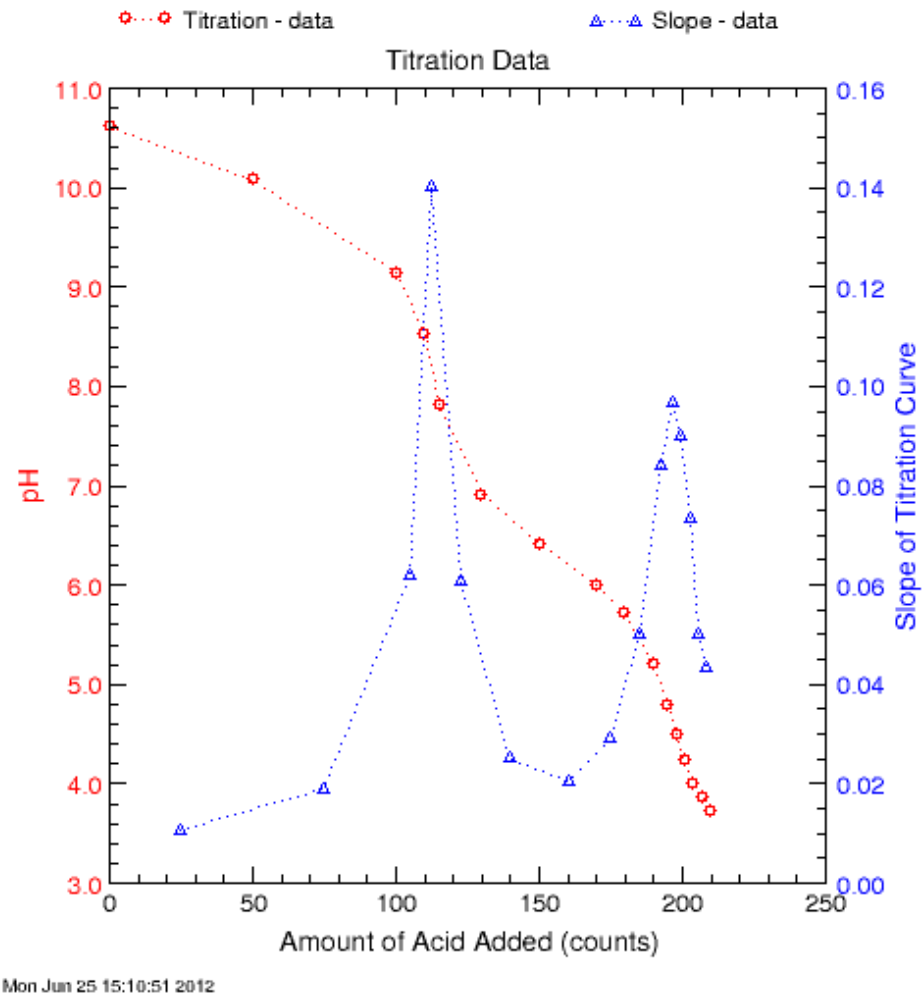
Results of Alkalinity Calculator

Date: Tuesday, 22-May-2012, 16:42 UTC
Version: 2.21 // [22-Mar-2009] <version history>

Site Name: MW01 - Sample 1, Acid Neutralizing Capacity
Site ID: 431525108371901
Collection Date: 4/24/12
Collection Time: 1330
Sample Temperature: 20.50 °C
Sample Conductance: 1642.0 µS/cm
Analyst: Peter McMahon
Analysis Date: 4/24/12
Analysis Time:
Sample Volume: 100 mL
Filtered?: yes
Acid Concentration: 1.60 eq/L
Acid Lot Number: A0321
Acid Correction Factor: 1.010 [help]
Acid Expiration Date: July 2012
Stirring Method: magnetic
Titration Type: digital titration
Comments: Whole water sample

Titration Data:

pH	-d(pH)	Counts	d(Counts)	-d(pH)/d(Counts)
10.61		0		
10.08	0.53	50	50.0	0.010600
9.14	0.94	100	50.0	0.018800
8.52	0.62	110	10.0	0.062000
7.82	0.70	115	5.0	0.140000
6.91	0.91	130	15.0	0.060667
6.41	0.50	150	20.0	0.025000
6.00	0.41	170	20.0	0.020500
5.71	0.29	180	10.0	0.029000
5.21	0.50	190	10.0	0.050000
4.79	0.42	195	5.0	0.084000
4.50	0.29	198	3.0	0.096667
4.23	0.27	201	3.0	0.090000
4.01	0.22	204	3.0	0.073333
3.86	0.15	207	3.0	0.050000
3.73	0.13	210	3.0	0.043333



This is a PNG image. [help]

Results from Inflection Point Method:

Inflection Point Method		
The inflection point method determines endpoints by finding the greatest change in the measured pH per unit volume of acid added. [reporting tips]		
Carbonate endpoint:	pH 8.17	112.5 counts
Bicarbonate endpoint:	pH 4.64	196.5 counts
Alkalinity:	3.97 meq/L	198.6 mg/L as $CaCO_3$
Advanced Speciation (from alkalinity and sample pH)		
Hydroxide:	0.33 meq/L	5.6 mg/L as OH^-
Carbonate:	3.06 meq/L	91.8 mg/L as CO_3^{2-}
Bicarbonate:	0.58 meq/L	35.3 mg/L as HCO_3^-
Warning: The carbonate endpoint found in this titration (112.5 counts) does not agree well with the calculated theoretical carbonate endpoint for this sample (92.1 counts). This is an		

indication that something significant, other than hydroxide, carbonate, and bicarbonate, was neutralized in this titration. **The calculated values for carbonate and bicarbonate may not represent their true concentrations in the sample and should be reported only as estimates. Use the "e" remark code when entering the carbonate and bicarbonate concentrations into NWIS.** [more info]

Equilibrium Dissociation Constants:

Constituent	Symbol	$log_{10}(K)$
Water	K_w'	-14.09
Carbonic acid	K_1'	-6.32
Bicarbonate	K_2'	-10.19

These mixed acid dissociation constants have been corrected for both temperature effects and activity corrections, using the following data as the basis for those corrections:

Temperature:	20.50 °C
Specific conductance:	1642.0 µS/cm
Estimated ionic strength:	2.42e-02 eq/L

If you don't think the inflection point method, either of the theoretical carbonate titration curve methods, or the Gran method found the correct endpoints, hit the ***Back*** button on your browser and try again with one or more user-specified fixed endpoints.

Confused about the methods used? See the methods page.

Thanks for using the **Alkalinity Calculator!**