

4.4 Appendix D: Calculated Parameters

Calculated parameters are determined by using algorithms within QWDATA. Option 6 in the Support Files menu can be used to view the algorithms for these parameters. The table below contains additional information about the calculated parameters.

[NA, Not applicable]

Calculated parameter	Parameters preferred for calculation	Additional parameters			Result from special cases for parameters used in calculation		
		Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
00301--Dissolved oxygen, water, unfiltered, percent of saturation	00300--Dissolved oxygen 00025--Barometric pressure 00010--Water temperature 00095--Specific cond at 25C	---	---	---	missing	missing	NA
00405--Carbon dioxide, water, unfiltered, milligrams per liter	99440--Bicarbonate, wu, icr, f 00400-- pH 99430--Carbonate, water, unfiltered, incremental titration, field, milligrams per liter as calcium carbonate	---	¹ ---	¹ ---	² ---	³ ---	NA
00435--Acidity, water, unfiltered, milligrams per liter as calcium carbonate	71825--Acidity, heated, wu	---	---	---	missing	missing	NA
00540--Residue, fixed nonfilterable, milligrams per liter	00530--Residue, total 00535--Residue, volatile	---	---	---	missing	missing	0
00600--Total nitrogen, wu	00625--Ammonia plus organic nitrogen, water, unfiltered, milligrams per liter as nitrogen 00630--Nitrite plus nitrate, water, unfiltered, milligrams per liter as nitrogen	---	00630	00631--Nitrite plus nitrate, dissolved	missing	missing	NA
00602--Total nitrogen, wf	00623--Ammonia plus organic nitrogen, water, filtered, milligrams per liter as nitrogen 00631--Nitrite plus nitrate, water, filtered, milligrams per liter as nitrogen	---	---	---	missing	missing	NA

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
00605 --Organic nitrogen, water, unfiltered, milligrams per liter	00625 --Ammonia plus organic nitrogen, water, unfiltered, milligrams per liter as nitrogen 00610 --Ammonia, water, unfiltered, milligrams per liter as nitrogen	---	00610	00608 --Ammonia, water, filtered, milligrams per liter as nitrogen	missing	missing	missing
00607 --Organic nitrogen, water, filtered, milligrams per liter	00623 --Ammonia plus organic nitrogen, water, filtered, milligrams per liter as nitrogen 00608 --Ammonia, water, filtered, milligrams per liter as nitrogen	---	---	---	missing	missing	missing
00618 --Nitrate, water, filtered, milligrams per liter as nitrogen	00631 --Nitrite plus nitrate, water, filtered, milligrams per liter as nitrogen 00613 --Nitrite, water, filtered, milligrams per liter as nitrogen	---	---	---	missing	missing	missing
00620 --Nitrate, water, unfiltered, milligrams per liter as nitrogen	00630 --Nitrite plus nitrate, water, unfiltered, milligrams per liter as nitrogen 00615 --Nitrite, water, unfiltered, milligrams per liter as nitrogen	---	---	---	missing	missing	missing
00621 --Nitrate, bed sediment, total, dry weight, milligrams per kilogram as nitrogen	00633 --Nitrite plus nitrate, bed sediment, total, dry weight, milligrams per kilogram as nitrogen 00616 --Nitrite, bed sediment, total, dry weight, milligrams per kilogram as nitrogen	---	---	---	missing	missing	missing
00650 --Phosphate, water, unfiltered, milligrams per liter	70507 --Orthophosphate, water, unfiltered, milligrams per liter as phosphorus	---	---	---	missing	missing	Negative results not likely
00660 --Orthophosphate, water, filtered, milligrams per liter	00671 --Orthophosphate, water, filtered, milligrams per liter as phosphorus	---	---	---	missing	missing	Negative results not likely
00669 --Hydrolyzable phosphorus, water, unfiltered, milligrams per liter	00678 --Hydrolyzable phosphorus plus orthophosphate, water, unfiltered, milligrams per liter as phosphorus 70507 --Orthophosphate, water, unfiltered, milligrams per liter as phosphorus	---	---	---	missing	missing	If result is negative, the final result is 0

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
00670--Organic phosphorus, water, unfiltered, milligrams per liter	00665--Phosphorus, water, unfiltered, milligrams per liter 00678--Hydrolyzable phosphorus plus orthophosphate, water, unfiltered, milligrams per liter as phosphorus	---	00678	70507--Orthophosphate, water, unfiltered, milligrams per liter as phosphorus 00669--Hydrolyzable phosphorus, water, unfiltered, milligrams per liter	missing	missing	missing
00672--Hydrolyzable phosphorus, water, filtered, milligrams per liter	00677--Hydrolyzable phosphorus plus orthophosphate, water, filtered, milligrams per liter as phosphorus 00671--Orthophosphate, water, filtered, milligrams per liter as phosphorus	---	---	---	missing	missing	missing
00673--Organic phosphorus, water, filtered, milligrams per liter	00666--Phosphorus, water, filtered, milligrams per liter 00677--Hydrolyzable phosphorus plus orthophosphate, water, filtered, milligrams per liter as phosphorus	---	00677	00672--Hydrolyzable phosphorus, water, filtered, milligrams per liter 00671--Orthophosphate, water, filtered, milligrams per liter as phosphorus	missing	missing	missing
00687--Organic carbon, bed sediment, total, dry weight, grams per kilogram	00693--Carbon (inorganic plus organic), bed sediment, total, dry weight, grams per kilogram 00686--Inorganic carbon, bed sediment, total, dry weight, grams per kilogram	---	---	---	missing	missing	missing
00690--Carbon (inorganic plus organic), water, unfiltered, milligrams per liter	00685--Inorganic carbon, water, unfiltered, milligrams per liter 00680--Organic carbon, water, unfiltered, milligrams per liter	---	---	---	missing	missing	NA
00900--Hardness, water, unfiltered, milligrams per liter as calcium carbonate	00915--Calcium, water, filtered, milligrams per liter 00925-- Magnesium, water, filtered, milligrams per liter	01005-- Barium, water, filtered, micrograms per liter 01080-- Strontium, water, filtered, micrograms per liter	---	---	If 00915 or 00925 are missing, the result is missing	If 00915 or 00925 have a remarked result, the result is missing	Negative result not likely

Appendix D: Calculated Parameters

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
00902 -- Noncarbonate hardness, water, unfiltered, field, milligrams per liter as calcium carbonate	00916 -- Calcium, water, unfiltered, recoverable, milligrams per liter 00927 -- Magnesium, water, unfiltered, recoverable, milligrams per liter 00450 -- Bicarbonate, water, unfiltered, incremental titration, field, milligrams per liter	4 ---	4 ---	4 ---	5 ---	6 ---	NA
00903 --Noncarbonate hardness, water, unfiltered, lab, milligrams per liter as calcium carbonate	00916 --Calcium, water, unfiltered, recoverable, milligrams per liter 00927 --Magnesium, water, unfiltered, recoverable, milligrams per liter 00449 --Bicarbonate, water, unfiltered, incremental titration, laboratory, milligrams per liter	7 ---	7 ---	7 ---	8 ---	9 ---	NA
00904 --Noncarbonate hardness, water, filtered, field, milligrams per liter as calcium carbonate	00915 --Calcium, water, filtered, milligrams per liter 00925 --Magnesium, water, filtered, milligrams per liter 00453 --Bicarbonate, water, filtered, incremental titration, field, milligrams per liter	10 ---	10 ---	10 ---	11 ---	12 ---	NA
00905 --Noncarbonate hardness, water, filtered, lab, milligrams per liter as calcium carbonate	00915 --Calcium, water, filtered, milligrams per liter 00925 --Magnesium, water, filtered, milligrams per liter 29806 --Bicarbonate, water, filtered, incremental titration, laboratory, milligrams per liter	13 ---	13 ---	13 ---	14 ---	15 ---	NA
00931 --Sodium adsorption ratio, water, number	00930 --Sodium, water, filtered, milligrams per liter 00915 --Calcium, water, filtered, milligrams per liter 00925 --Magnesium, water, filtered, milligrams per liter	---	---	---	missing	missing	NA

Appendix D: Calculated Parameters

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
00932-Sodium, water, percent in equivalents of major cations	00930-Sodium, water, filtered, milligrams per liter 00915-Calcium, water, filtered, milligrams per liter 00925-Magnesium, water, filtered, milligrams per liter 00935-Potassium, water, filtered, milligrams per liter	---	---	---	missing	missing	NA
30207-Gage height, above datum, meters	00065-Gage height, feet	---	---	---	missing	missing	NA
30208-Discharge, cubic meters per second	00060-Discharge, cubic feet per second	---	---	---	missing	missing	NA
30209-Discharge, instantaneous, cubic meters per second	00061-Discharge, instantaneous, cubic feet per second	---	---	---	missing	missing	NA
30210-Depth to water level, below land surface datum (LSD), meters	72019-Depth to water level, feet below land surface	---	---	---	missing	missing	NA
30211-Elevation above NGVD 1929, meters	72020-Elevation above NGVD 1929, feet	---	---	---	missing	missing	NA
49954-Biomass, periphyton, ash free dry mass, grams per square meter	00573-Biomass, periphyton, dry weight, grams per square meter 00572-Biomass, periphyton, ash weight, grams per square meter	---	---	---	missing	missing	missing
70301-Residue, water, filtered, sum of constituents, milligrams per liter	00453-Bicarbonate, water, filtered, incremental titration, field, milligrams per liter 00915-Calcium, water, filtered, milligrams per liter 00925-Magnesium, water, filtered, milligrams per liter 00930-Sodium, water, filtered, milligrams per liter 00940-Chloride, water, filtered, milligrams per liter 00945-Sulfate, water, filtered, milligrams per liter 00935-Potassium, water, filtered, milligrams per liter	¹⁶ ---	¹⁶ ---	¹⁶ ---	¹⁷ ---	¹⁷ ---	NA

Appendix D: Calculated Parameters

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
70302-Residue, water, filtered, tons per day	70300-Residue on evaporation, dried at 180 degrees Celsius, water, filtered, milligrams per liter 00061--Discharge, instantaneous, cubic feet per second	---	70300 00061	70301-Residue, water, filtered, sum of constituents, milligrams per liter 00060-Discharge, cubic feet per second	If 70300 and 70301 or 00061 and 00060 are missing, the result is missing	If 70300 and 70301 or 00061 and 00060 have remark codes, the result is missing	NA
70303-Residue, water, filtered, tons per acre-foot	70300-Residue on evaporation, dried at 180 degrees Celsius, water, filtered, milligrams per liter	---	70300	70301 (see above)-Residue, water, filtered, sum of constituents, milligrams per liter	If 70300 and 70301 are missing, the result is missing	If 70300 and 70301 have remark values, the result is missing	NA
70949-Biomass-chlorophyll ratio, plankton	81354- Biomass, plankton, dry weight, milligrams per liter 81353- Biomass, plankton, ash weight, milligrams per liter 70953- Chlorophyll a, phytoplankton, chromatographic-fluorometric method, micrograms per liter	---	---	---	missing	missing	missing
70950- Biomass/chlorophyll ratio, periphyton, number	00573- Biomass, periphyton, dry weight, grams per square meter 00572- Biomass, periphyton, ash weight, grams per square meter 70957- Chlorophyll a, periphyton, chromatographic-fluorometric method, milligrams per square meter	---	---	---	missing	missing	missing
71845- Ammonia, water, unfiltered, milligrams per liter as NH4	00610--- Ammonia, water, unfiltered, milligrams per liter as nitrogen	---	---	---	missing	missing	NA
71846- Ammonia, water, filtered, milligrams per liter as NH4	00608-- Ammonia, water, filtered, milligrams per liter as nitrogen	---	---	---	missing	missing	NA
71851- Nitrate, water, filtered, milligrams per liter	00631-- Nitrite plus nitrate, water, filtered, milligrams per liter as nitrogen 00613-- Nitrite, water, filtered, milligrams per liter as nitrogen	---	---	---	missing	missing	0

Appendix D: Calculated Parameters

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
71856-Nitrite, water, filtered, milligrams per liter	00613--Nitrite, water, filtered, milligrams per liter as nitrogen		---	---	missing	missing	NA
71887-Total nitrogen, water, unfiltered, milligrams per liter as nitrate	00625---Ammonia plus organic nitrogen, water, unfiltered, milligrams per liter as nitrogen 00630--Nitrite plus nitrate, water, unfiltered, milligrams per liter as nitrogen	---	---	---	missing	missing	NA
80155-Suspended sediment load, tons per day	80154-Suspended sediment concentration, milligrams per liter 00061-Discharge, instantaneous, cubic feet per second	---	00061	00060-Discharge, cubic feet per second	missing	missing	NA
80156-Total sediment load, tons per day	80180-Total sediment concentration, milligrams per liter 00061-Discharge, instantaneous, cubic feet per second	---	00061	00060-Discharge, cubic feet per second	missing	missing	NA
90851-- Trihalomethanes, water, unfiltered, calculated, micrograms per liter	32106--Trichloromethane, water, unfiltered, recoverable, micrograms per liter 32105--Dibromochloromethane, water, unfiltered, recoverable, micrograms per liter 32101--Bromodichloromethane, water, unfiltered, recoverable, micrograms per liter 32104--Tribromomethane, water, unfiltered, recoverable, micrograms per liter	---	---	---	If 32106, 32105, 32101, and 32104 are missing the result is 0	If any parameter has a remark code, it is not used	NA
90852--DDT plus degradates, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram	49325--o,p'-DDD, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram 49326--p,p'-DDD, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram	---	---	---	If 49325, 49326, 49327, 49329, 49330, and 49328 are missing, the result is 0	If any parameter has a remark code, it is not used	NA

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
<p>90852 --continued --DDT plus degradates, bed sediment smaller than 2 millimeters, wet sieved (native water), recoverable, calculated, dry weight, micrograms per kilogram</p>	<p>49327--o,p'-DDE, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram 49329--o,p'-DDT, sediment, bed material wet sieved, field, < 2mm, recoverable 49330--p,p'-DDT, sediment, bed material wet sieved, field, < 2mm, recoverable 49328--p,p'-DDE, sediment, bed material wet sieved, field, < 2mm, recoverable</p>	---	---	---	<p>If 49325, 49326, 49327, 49329, 49330, and 49328 are missing, the result is 0</p>	<p>If any parameter has a remark code, it is not used</p>	NA
<p>90853-- Chlordane plus degradates, bed sediment, recoverable, calculated, dry weight, micrograms per kilogram</p>	<p>49320--cis-Chlordane, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram 49321--trans-Chlordane, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram 49316--cis-Nonachlor, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram 49317--trans-Nonachlor, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram 49318-Oxychlordane, bed sediment smaller than 2 millimeters, wet sieved (native water), field, recoverable, dry weight, micrograms per kilogram</p>	---	---	---	<p>If 49320, 49321, 49316, 49317, and 49318 are missing, the result is 0</p>	<p>If any parameter has a remark code, it is not used</p>	NA

Appendix D: Calculated Parameters

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	Missing parameters	Replacement parameters used in calculation, if available	Missing values	Remark codes	Negative result
90854-- DDT plus degradates, biota, whole organism, wet weight, calculated, dry weight, micrograms per kilogram	49374--o,p'-DDD, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49375--p,p'-DDD, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49373-o,p'-DDE, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49377--o,p'-DDT, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49376--p,p'-DDT, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49372--p,p'-DDE, biota, whole organism, recoverable, wet weight, micrograms per kilogram	---	---	---	If 49374, 49375, 49373, 49377, 49376, and 49372 are missing, the result is 0	If any parameter has a remark code, it is not used	NA
90855-- Chlordane plus degradates, biota, whole organism, calculated, wet weight, micrograms per kilogram	49380--cis-Chlordane, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49379--trans-Chlordane, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49359--cis-Nonachlor, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49358--trans-Nonachlor, biota, whole organism, recoverable, wet weight, micrograms per kilogram 49357--Oxychlordane, biota, whole organism, recoverable, wet weight, micrograms per kilogram	---	---	---	If 49380, 49379, 49359, 49358, and 49357 are missing, the result is 0	If any parameter has a remark code, it is not used	NA
99019--Water level, depth below land surface, meters	72019--Depth to water level, feet below land surface		These were deleted from use as of 8/25/00.				
99020--Elevation above NGVD 1929, meters	72020--Elevation above NGVD 1929, feet						
99060--Discharge, cubic meters per second	00060-Discharge, cubic feet per second						

Calculated parameter	Parameters preferred for calculation	Parameters used in calculation, if available	These were deleted from use as of 8/25/00.
99061-Discharge, instantaneous, cubic meters per second	00061-Discharge, instantaneous, cubic feet per second		
99065-Gage height, above datum, meters	00065-Gage height, feet		

Footnote #1--

If 99440 is missing then 00440-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as HCO₃ or 90440-Bicarbonate, incremental titration, laboratory as HCO₃ or 95440-Bicarbonate, titration to pH 4.5, laboratory as HCO₃ will be used, if available.
 If 99430 is missing then 00410-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as CaCO₃ or 00430-Acid neutralizing capacity (ANC), unfiltered, carbonate as CaCO₃ or 90430-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory, as CaCO₃ or 90410-Acid neutralizing capacity (ANC), unfiltered, titration to pH 4.5, laboratory, as CaCO₃ or 95430-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory, as CaCO₃ will be used if available.

Footnote #2--

If 99440 and 00440 and 90440 and 95440 are missing then the result is missing.
 If 00400 is missing, the result is missing.
 If 99430 and 00410 and 00430 and 90430 and 95430 are missing, then the result is calculated.

Footnote #3--

If 99440 and 00440 and 90440 and 95440 have remark codes, the result is calculated.
 If 00440 has a remark code, the result is missing.
 If 99430 and 00410 and 00430 and 90430 and 95430 have remark codes, then the result is calculated.

Footnote #4--

If 00916 is missing then 00918-Calcium, total can be used
 If 00927 is missing then 00921-Magnesium, total can be used
 If 00450 is missing then 00440-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as HCO₃ or 99440-Bicarbonate, incremental titration, field will be used, if available
 If 00447-Acid neutralizing capacity (ANC), unfiltered, incremental titration, field, as CO₃ -is present then it is added to 00450 or 00440 or or 99440
 If 00447 is missing then 00445-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as CO₃ or 99445-Carbonate, incremental titration, field as CO₃ will be used, if available
 If 00450, 00440, and 99440 are missing then 00419-Acid neutralizing capacity (ANC), unfiltered, incremental titration, field, as CaCO₃ or 00410-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as CaCO₃ or 29813-Acid neutralizing capacity (ANC), unfiltered, gran titration, field, as CaCO₃ or 99430-Acid neutralizing capacity (ANC), unfiltered, incremental titration, field, as CaCO₃

Footnote #4--(Continued)

or 00431-Acid neutralizing capacity (ANC), unfiltered, as CaCO_3 will be used, if available.
01082-Strontium, total or 01084-Strontium, total recoverable-will be used, if available.
01007-Barium, total or 01009-Barium, total recoverable-will be used if available.

Footnote #5--

If 00916 and 00918; or 00927 and 00921; or 00450 and 00440 and 99440 and 00419 and 00410 and 29813 and 99430 and 00431 are missing then the result is missing.

Footnote #6--

If 00916 or 00918; or 00927 or 00921; or 00450 or 00440 or 99440 or 00419 or 00410 or 29813 or 99430 or 00431 are used and have a remark code then the result is missing.

Footnote #7--

If 00916 is missing then 00918-Calcium, total will be used, if available.
If 00927 is missing then 00921-Magnesium, total will be used, if available.
If 00449 is missing then 00451-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory as HCO_3 or 90440-Bicarbonate, incremental titration, laboratory as HCO_3 or 95440-Bicarbonate, titration to pH 4.5, laboratory as HCO_3 will be used, if available.
If 00446-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory, as CO_3 -is present then it is added to 00449, 00451, 90440, or 95440.
If 00446 is missing 00448-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory as CO_3 or 90445-Carbonate, incremental titration, laboratory as CO_3 or 95445-Carbonate, titration to pH 8.3, laboratory as CO_3 will be used, if available.
If 00449 and 00451 and 90440 and 95440 are missing then 00416-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory, as CaCO_3
or 00417-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory, as CaCO_3
or 00413-Acid neutralizing capacity (ANC), unfiltered, gran titration, laboratory, as CaCO_3
or 00418-Alkalinity, filtered, fixed endpoint titration, field, as CaCO_3
or 00421-Alkalinity, unfiltered, fixed endpoint titration, laboratory as CaCO_3
or 90410-Acid neutralizing capacity (ANC), unfiltered, titration to pH 4.5, laboratory, as CaCO_3
or 90430-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory, as CaCO_3
or 95410-Acid neutralizing capacity (ANC), unfiltered, titration to pH 4.5, laboratory, as CaCO_3
or 95430-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory, as CaCO_3
will be used, if available.
01082-Strontium, total or 01084-Strontium, total recoverable-will be used, if available.
01007-Barium, total or 01009-Barium, total recoverable-will be used, if available.

Footnote #8

If 00916 and 00918; or 00927 and 00921; or 00449 and 00451 and 90440 and 95440 and 00416 and 00417 and 00413 and 00418 and 00421 and 90410 and 90430 and 95410 and 95430 are missing then the result is missing

Footnote #9

If 00916 or 00918; or 00927 or 00921; or 00449 or 00451 or 90440 or 95440 or 00416 or 00417 or 00413 or 00418 or 00421 or 90410 or 90430 or 95410 or 95430 are used and have a remark code then the result is missing.

Footnote #10

If 00453 is missing 29804-Bicarbonate, dissolved, fixed endpoint titration, field as HCO₃ will be used, if available.
If 00452-Carbonate, dissolved, incremental titration, field, as CO₃ -is present then it is added to 00453 or 29804.
If 00452 is missing 29807-Carbonate, dissolved, fixed endpoint titration, field, as CO₃ will be used, if available.
If 00453 and 29804 are missing then 39086-Alkalinity, dissolved, incremental titration, field as CaCO₃
or 39036-Alkalinity, dissolved, fixed endpoint, field as CaCO₃
or 29802-Alkalinity, dissolved, gran titration, field as CaCO₃ will be used, if available.
01080-Strontium, dissolved will be used, if available.
01005-Barium, dissolved will be used, if available.

Footnote #11

If 00915; or 00925; or 00453 and 29804 and 39086 and 39036 and 29802 are missing then the result is missing.

Footnote #12

If 00915; or 00925; or 00453 or 29804 or 39086 or 39036 or 29802 are used and have a remark code then the result is missing.

Footnote #13

If 29806 is missing 29805-Bicarbonate, dissolved, fixed endpoint titration, laboratory as HCO₃ will be used, if available.
If 29809-Carbonate, dissolved, incremental titration, laboratory, as CO₃ -is present then it is added to 29806 or 29805.
If 29809 is missing 29808-Carbonate, dissolved, fixed endpoint titration, laboratory as CO₃ will be used, if available.
If 29806 and 29805 are missing 39087-Alkalinity, dissolved, incremental titration, laboratory as CaCO₃
or 29801-Alkalinity, dissolved, fixed endpoint titration, laboratory as CaCO₃
or 29803-Alkalinity, dissolved, gran titration, laboratory as CaCO₃ will be used, if available.
If 01005-Barium, dissolved will be used, if available.
If 01080--Strontium, dissolved will be used, if available.

Footnote #14

If 00915; or 00925; or 29806 and 29805 and 39087 and 29801 and 29803 are missing then the result is missing.

Footnote #15

If 00915; or 00925; or 29806 or 29805 or 39087 or 29801 or 29803 are used and have a remark code then the result is missing.

Footnote #16

If 00453 is missing 99440-Bicarbonate, incremental titration, field
or 00450--Acid neutralizing capacity (ANC), unfiltered, incremental titration, field, as HCO₃
or 29804-Bicarbonate, dissolved, fixed endpoint titration, field as HCO₃
or 00440-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as HCO₃
or 29806-Bicarbonate, dissolved, oncremental titration, laboratory as HCO₃
or 00449-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory as HCO₃
or 90440-Bicarbonate, incremental titration, laboratory as HCO₃
or 29805-Bicarbonate, dissolved, fixed endpoint titration, laboratory as HCO₃
or 00451-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory as HCO₃
or 95440-Bicarbonate, titration to pH 4.5, laboratory as HCO₃ will be used, if available

Footnote #16 (Continued)

If 00452-Carbonate, dissolved, incremental titration, field, as CO_3 is present then it is added to 00453, 00450, 29804, 00440, 29806, 00449, 90440, 29805, 00451, or 95440.

If 00452 is missing 99445-Carbonate, incremental titration, field as CO_3
 or 00447-Acid neutralizing capacity (ANC), unfiltered, incremental titration, field, as CO_3
 or 29807-Carbonate, dissolved, fixed endpoint titration, field, as CO_3
 or 00445-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as CO_3
 or 29809-Carbonate, dissolved, incremental titration, laboratory, as CO_3
 or 00446-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory, as CO_3
 or 90445-Carbonate, incremental titration, laboratory as CO_3
 or 29808-Carbonate, dissolved, fixed endpoint titration, laboratory as CO_3
 or 00448-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory as CO_3
 or 95445-Carbonate, titration to pH 8.3, laboratory as CO_3 *will be used, if available*

If 00453 and 99440 and 00450 and 29804 and 00440 and 29806 and 00449 and 90440 and 29805 and 00451 and 95440 are missing then 39086-Alkalinity, dissolved, incremental titration, field as CaCO_3
 or 00419-Acid neutralizing capacity (ANC), unfiltered, incremental titration, field, as CaCO_3
 or 99430-Acid neutralizing capacity (ANC), unfiltered, incremental titration, field, as CaCO_3
 or 39036-Alkalinity, dissolved, fixed endpoint, field as CaCO_3
 or 00410-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, field, as CaCO_3
 or 00418-Alkalinity, filtered, fixed endpoint titration, field, as CaCO_3
 or 29802-Alkalinity, dissolved, gran titration, field as CaCO_3
 or 29813-Acid neutralizing capacity (ANC), unfiltered, gran titration, field, as CaCO_3
 or 39087-Alkalinity, dissolved, incremental titration, laboratory as CaCO_3
 or 00416-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory, as CaCO_3
 or 95410-Acid neutralizing capacity (ANC), unfiltered, titration to pH 4.5, laboratory, as CaCO_3
 or 90430-Acid neutralizing capacity (ANC), unfiltered, incremental titration, laboratory, as CaCO_3
 or 00421-Alkalinity, unfiltered, fixed endpoint titration, laboratory as CaCO_3
 or 29801-Alkalinity, dissolved, fixed endpoint titration, laboratory as CaCO_3
 or 90410-Acid neutralizing capacity (ANC), unfiltered, titration to pH 4.5, laboratory, as CaCO_3
 or 00417-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory, as CaCO_3
 or 95430-Acid neutralizing capacity (ANC), unfiltered, fixed endpoint titration, laboratory, as CaCO_3
 or 29803-Alkalinity, dissolved, gran titration, laboratory as CaCO_3
 or 00413-Acid neutralizing capacity (ANC), unfiltered, gran titration, laboratory, as CaCO_3
 or 00425-Acid neutralizing capacity (ANC), unfiltered, bicarbonate as CaCO_3
 or 00430-Acid neutralizing capacity (ANC), unfiltered, carbonate as CaCO_3
 or 00431-Acid neutralizing capacity (ANC), unfiltered, as CaCO_3
 will be used, if available.

If any of the following are present they will be used:

00955-Silica, dissolved

00631-Nitrate plus nitrite, dissolved or

Footnote #16 (Continued)

If 00631 is missing 00618-Nitrate, dissolved plus 00613--Nitrite, dissolved will be used, if available.

00608-Ammonia, dissolved

71870-Bromide, dissolved

00746-Sulfide, dissolved

00723-Cyanide, dissolved

71830-Hydroxide dissolved

71865-Iodide, dissolved

Footnote #16 (Continued)

00950-Fluoride, dissolved

00671-Orthophosphate, dissolved

01000-Arsenic, dissolved

01005-Barium, dissolved

01010-Beryllium, dissolved

01020-Boron, dissolved

01025-Cadmium, dissolved

01030-Chromium, dissolved

01035-Cobalt, dissolved

01040-Copper, dissolved

01046-Iron, dissolved

01049-Lead, dissolved

01056-Manganese, dissolved

01060-Molybdenum, dissolved

01065-Nickel, dissolved

01075-Silver, dissolved

01080-Strontium, dissolved

01085-Vanadium, dissolved

01090-Zinc, dissolved

01100-Tin, dissolved

01106-Aluminum, dissolved

01120-Gallium, dissolved

01125-Germanium, dissolved

01130-Lithium, dissolved

01135-Rubidium, dissolved

01145-Selenium, dissolved

01150-Titanium, dissolved

01160-Zirconium, dissolved

71890-Mercury, dissolved

Footnote #17

If 00453, 99440, 00450, 29804, 00440, 29806, 00449, 90440, 29805, 00451, 95440, 39086, 00419, 99430, 39036, 00410, 00418, 29802, 29813, 39087, 00416, 95410, 90430, 00421, 29801, 90410, 00417, 95430, 29803, 00413, 00425, 00430, and 00431 or 00915 or 00925 or 00930 or 00940 or 00945 or 00935 are missing or have a remark code, the result is missing