



## **DIGITAL DATABASE DESCRIPTION FOR SURFICIAL GEOLOGIC MAP OF THE LOOP AND DRUID ARCH QUADRANGLES, CANYONLANDS NATIONAL PARK, UTAH**

*Digital Preparation by* George H. Billingsley<sup>1</sup>, Debra L. Block<sup>1</sup>, and Tracey J. Felger<sup>2</sup>

*Prepared in cooperation with the* National Park Service

Miscellaneous Field Studies Map MF-2411

2002

**U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY**

<sup>1</sup>Western Earth Surface Processes Team, U.S. Geological Survey

<sup>2</sup>Grand Canyon Science Center, National Park Service

## INTRODUCTION

This publication includes, in addition to cartographic and text products, geospatial (GIS) databases and other digital files. The database files are particularly useful because they can be combined with any type of other geospatial data for purposes of display and analysis. The other files include digital files that support the databases, and digital plot files that can be used to display and print the cartographic and text products in this publication.

The digital map database, compiled from previously published and unpublished data and new mapping by the author, represents the general distribution of bedrock and surficial deposits in the map area and provides current information on the geologic structure and stratigraphy of the area. The database delineates map units that are identified by age and lithology following the stratigraphic nomenclature of the U.S. Geological Survey. The scale of the source maps limits the spatial resolution (scale) of the database to 1:24,000 or smaller. The content and character of the database, as well as two methods of obtaining the database, are described below.

## FOR THOSE WHO DON'T USE DIGITAL GEOLOGIC MAP DATABASES

Two sets of plot files containing images of much of the information in the database are available to those who do not use an ARC/INFO compatible Geographic Information System. Each set contains an image of the geologic map sheet and explanation, and the database description. There is a set available in PostScript format, and another in Acrobat PDF format (see sections below). Those who have computer capability can access the plot file packages in either of the two ways described below (see the section "Obtaining the Digital Data"); however, these packages do require gzip or WinZip utilities to access the plot files.

Those without computer capability can obtain plots of the map files through U.S. Geological Survey Information Services. Be sure to request Map MF-2411.

U.S. Geological Survey Information Services  
Box 25286  
Denver, CO 80225

1-888-ASK-USGS  
e-mail:ask@usgs.gov

## DATABASE CONTENTS

This report consists of three digital packages. The first is the PostScript Plotfile Package, which consists of PostScript plot files of the geologic map and map explanation. The second is the PDF Plotfile Package, which contains the same plot files as the first package as well as the database description, but in Portable Document Format (PDF). The third is the Digital Database Package, which contains the geologic map database itself and the supporting data.

### PostScript Plotfile Package

This package contains the PostScript image described below:

mf2411.eps	A PostScript plotfile containing the complete map composition with geology, base map, correlation chart, and geologic description at a scale of 1:24,000
mf2411.ai	An Adobe Illustrator plotfile containing the complete map composition with geology, base map, correlation chart, and geologic description at a scale of 1:24,000

The PostScript image of the geologic map and map explanation is 52 inches high by 33 inches wide, so it requires a large plotter to produce paper copies at the intended scale. The PostScript plotfile of the geologic map was initially produced by the 'postscript' command with compression set to zero in ARC/INFO version 8.0. The geologic description and correlation chart were created in Adobe Illustrator 9.0.

## PDF Plotfile Package

This package contains the PDF images described below:

mf2411.pdf	A PDF file containing the complete map composition with geology, base map, correlation chart, and geologic description at a scale of 1:24,000
readme.pdf	This document

The PDF image of the geologic map and map explanation was created from a PostScript file using Adobe Acrobat Distiller. The PDF image of the pamphlet was produced in Microsoft Word 2000 using the 'Convert to Adobe PDF' option from the Acrobat pulldown. In test plots we have found that paper maps created from PDF files contain almost all the detail of maps created with PostScript plot files. We would, however, recommend that those users with the capability to print the large PostScript plot files use them in preference to the PDF files.

To use PDF files, the user must get and install a copy of Adobe Acrobat Reader. This software is available **free** from the Adobe website (<http://www.adobe.com/>). Please follow the instructions given at the website to download and install this software. Once installed, the Acrobat Reader software contains an on-line manual and tutorial.

## Digital Database Package

The database package includes geologic map database files for the map area. The digital maps, or coverages, and their associated INFO directories have been converted into ARC/INFO export files. These export files are uncompressed and are easily handled and compatible with some Geographic Information Systems other than ARC/INFO. Please refer to your GIS documentation.

ARC export files are converted to ARC/INFO format using the ARC command 'import'. To ease conversion and preserve naming convention, an AML is enclosed that will convert all the export files in the database to coverages and will also create an associated INFO directory. From the ARC command line type *&r import.aml*. The export files included are

<u>ARC/INFO export file</u>	<u>Resultant Coverage</u>	<u>Description</u>
mf2411_poly.e00	mf2411_poly	Polygon and line coverage showing faults, depositional contacts, and rock units
mf2411_point.e00	mf2411_point	Point coverage containing sinkholes
mf2411_anno.e00	mf2411_anno	Annotation coverage containing unit labels, fault names, and fault separation values

The database package also contains the following files:

import.aml	ASCII text file in ARC Macro Language to convert ARC export files to ARC coverages in ARC/INFO
readme.txt	A text-only file containing an unformatted version of readme.pdf
mf2411.met	A parseable text-only file of publication level FGDC metadata for this report
mf2411.rev	A text-only file describing revisions, if any, to this publication
mf2411.tif	Composite hypsography image
mf2411.tfw	World file accompanying mf2411.tif

The following supporting directory is not included in the database package, but is produced in the process of reconvertng the export files into ARC coverages.

info/ INFO directory containing files supporting the database

### Revisions and version numbers

From time to time, new information and mapping, or other improvements, will be integrated into this publication. Rather than releasing an entirely new publication, the USGS has adopted a policy of using version numbers similar to that used in the computer industry. The original version of all publications will be labeled Version 1.0. Subsequent small revisions will be denoted by the increase of the numeral after the decimal, while large changes will be denoted by increasing the numeral before the decimal. Pamphlets and map products will be clearly marked with the appropriate version number. Information about the changes, if any, that have been made since the release of Version 1.0 will be listed in the publication revision file. This file will be available at the publication web site (see below), and will also be included in the digital database package.

### OBTAINING THE DIGITAL DATA

The digital data may be obtained via the web from the Western Region Geologic Information Server. Go to the web page at <http://geopubs.wr.usgs.gov/map-mf/mf-2411> and follow the directions to download the files.

### DATABASE SPECIFICS

#### Digital compilation

A tic file was created in latitude/longitude coordinates and projected into the base map projection (UTM). The geology was digitized on screen over DOQs in ArcView 3.2. The shapefile was converted to a coverage and final editing and attributing was done in ARC/INFO 8.1 using custom pull-down and form menus.

#### Map Projection

<u>Parameter</u>	<u>Description</u>
Projection	UTM
Units	Meters on the ground
Zone	12
Datum	NAD27

#### Database Fields

The content of the geologic database can be described in terms of the lines, points, and areas that compose the map. Each line, point, or area in a map layer or map database (coverage) is associated with a database entry stored in a feature attribute table. Each database entry contains both a number of items generated by ARC/INFO to describe the geometry of the feature and one or more items defined by the authors to describe the geologic information associated with that entry. Each item is defined as to the amount and type of information that can be recorded. Descriptions of the database items use the terms explained below.

<u>Parameter</u>	<u>Description</u>
Item Name	Name of database field
Width	Maximum number of characters or digits stored
Output	Output width
Type	B - binary integer; F - binary floating point number, I - ASCII integer, C - ASCII character string
N.Dec	Number of decimal places maintained for floating point numbers



## LINES

The arcs are recorded as strings of vectors and described in the arc attribute table (AAT). They define the boundaries of the map units, faults, and map boundaries in **mf2411\_poly**. These distinctions and the geologic identities of the boundaries are stored in the LTYPE field according to their line type.

### Arc Attribute Table Definition

<u>Item Name</u>	<u>Width</u>	<u>Output</u>	<u>Type</u>	<u>N.Dec</u>	<u>Description</u>
FNODE#	4	5	B	-	Starting node of the arc
TNODE#	4	5	B	-	Ending node of the arc
LPOLY#	4	5	B	-	Polygon to the left of the arc
RPOLY#	4	5	B	-	Polygon to the right of the arc
LENGTH	8	18	F	5	Length of the arc in meters
<COVERAGE>#	4	5	B	-	Unique internal number
<COVERAGE>-ID	4	5	B	-	Unique identification number
LTYPE	35	35	C	-	Line type
PTTYPE	35	35	C	-	Point type for arcmarkers

### Line Types recorded in the LTYPE field

#### mf2411\_poly

-----

contact\_certain  
facies\_change  
fault\_certain  
fault\_concealed  
map\_boundary

### Arcmarkers recorded in the PTTYPE field

#### mf2411\_poly

-----

fault\_ball\_fill  
xx

Arcs with PTTYPE value 'xx' indicate that there is no symbol attached to the arc.

## POLYGONS

Map units (polygons) are described in the polygon attribute table (PAT). This identifies the map units recorded in the PTYPE, PTYPE2, PTYPE3, and PTYPE4 fields by map label. There are multiple deposit labels for some polygons to more fully describe the surficial geology. Surficial geologic units may exist as thin (< 2m) veneers over older units. In areas where this relationship is common the unit designators are shown on the map as being separated by a slash (/). The younger, or overlying, unit is indicated first. Thus, Qed/Qes indicates an area where a veneer of sand dune deposits overlies sand sheet deposits. Not all composite units are shown on the map or in the database. For polygons where an underlying unit either does not exist or is not recorded there is a placeholder 'xx' in the database field.

### Definition of Polygon Attribute Table

<u>Item Name</u>	<u>Width</u>	<u>Output</u>	<u>Type</u>	<u>N.Dec</u>	<u>Description</u>
AREA	8	18	F	5	Area of polygon in square meters

PERIMETER	8	18	F	5	Length of perimeter in meters
<COVERAGE>#	4	5	B	-	Unique internal number
<COVERAGE>-ID	4	5	B	-	Unique identification number
PTYPE	5	5	C	-	Unit label for surface exposure
PTYPE2	5	5	C	-	Unit label. Underlying unit, with thin veneer of PTYPE on top.
PTYPE3	5	5	C	-	Unit label. Underlying unit, with thin veneer of PTYPE and PTYPE2 on top.
PTYPE4	12	12	C	-	Unit label. Composite unit, indicated with slashes between deposits.

#### Unit labels recorded in the PTYPE field

##### mf2411\_poly

-----

PPe	PPh	Pc	Pcu	Po	Qae
Qaf	Qal	Qed	Qes	Qf1	Qf2
Qfp	Qp	Qr	Qrf	Qs	Qt1
Qt2	Qt3	water			

Plain text is substituted for conventional geologic age symbols (PP for Pennsylvanian) shown on map.

#### POINTS

Points represent geographic features that have no area or length, or features that are too small for their boundaries to be apparent for the given input scale. A single x, y coordinate describes each point. A point attribute table (PAT) is used to hold the attribute data about points. ARC/INFO coverages cannot hold both point and polygon information.

#### Definition of Point Attribute Table

<u>Item Name</u>	<u>Width</u>	<u>Output</u>	<u>Type</u>	<u>N.Dec</u>	<u>Description</u>
AREA	8	18	F	5	Area (degenerative)
PERIMETER	8	18	F	5	Perimeter (degenerative)
<COVERAGE>#	4	5	B	-	Unique internal number
<COVERAGE>-ID	4	5	B	-	Unique identification number
PTTYPE	35	35	C	-	Point type

#### Point types recorded in the PTTYPE field

##### mf2411\_point

-----

sinkhole

#### ANNOTATION

The coverage **mf2411\_anno** contains all annotation for the polygon coverage. It is defined somewhat differently from the polygon and dip coverages. The arc attribute table is of negligible importance. Arcs in this coverage are merely leaders from a unit annotation to the related polygon. The coverage contains annotation with unit labels and

fault separation. Annotation directly related to unit labeling is contained in subclass “anno.unit” and annotation including fault separation values is contained in subclass “anno.structure”.

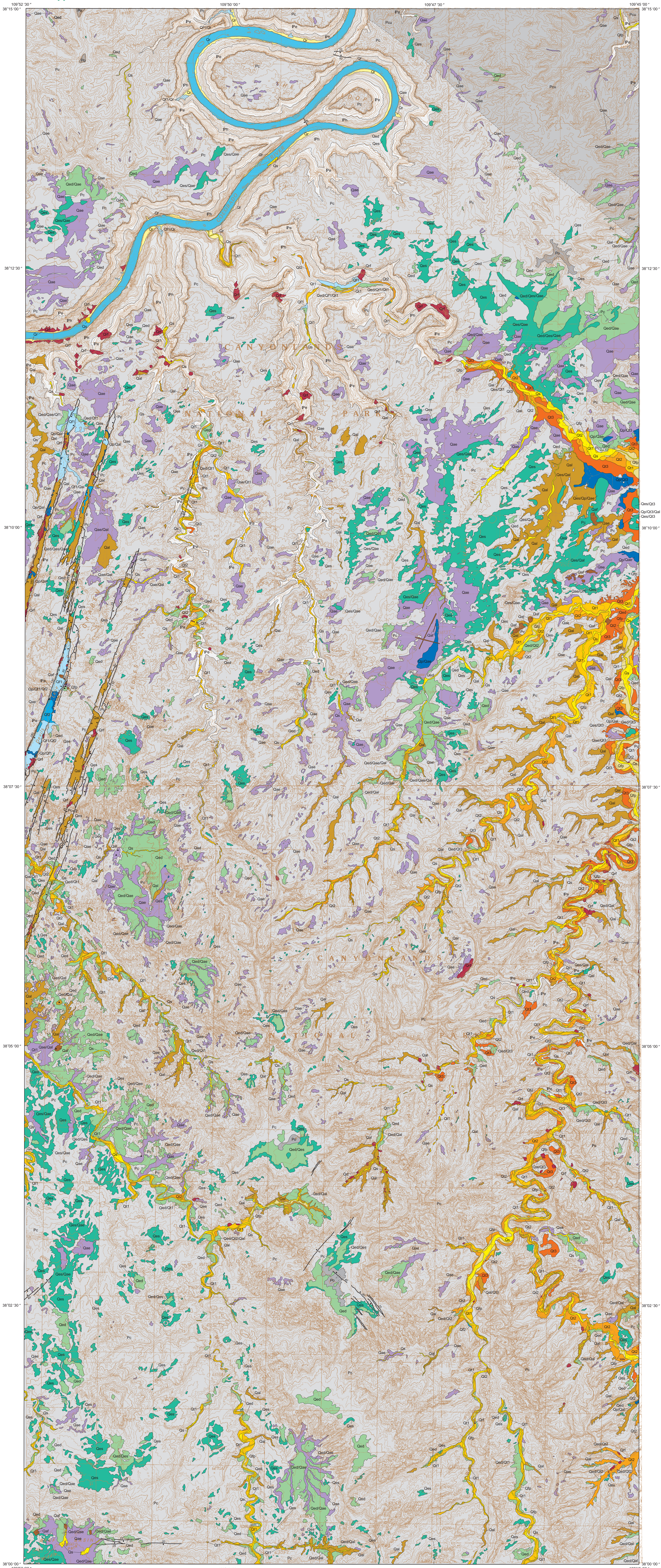
#### BASE MAP PROCEDURE

The base map was prepared from two 1:24,000 DRGs that had been converted to ARC/INFO grids. Any color fill on the grids was deleted, the collars were stripped, and the images were mosaiced before reconverting to a monochrome TIFF.

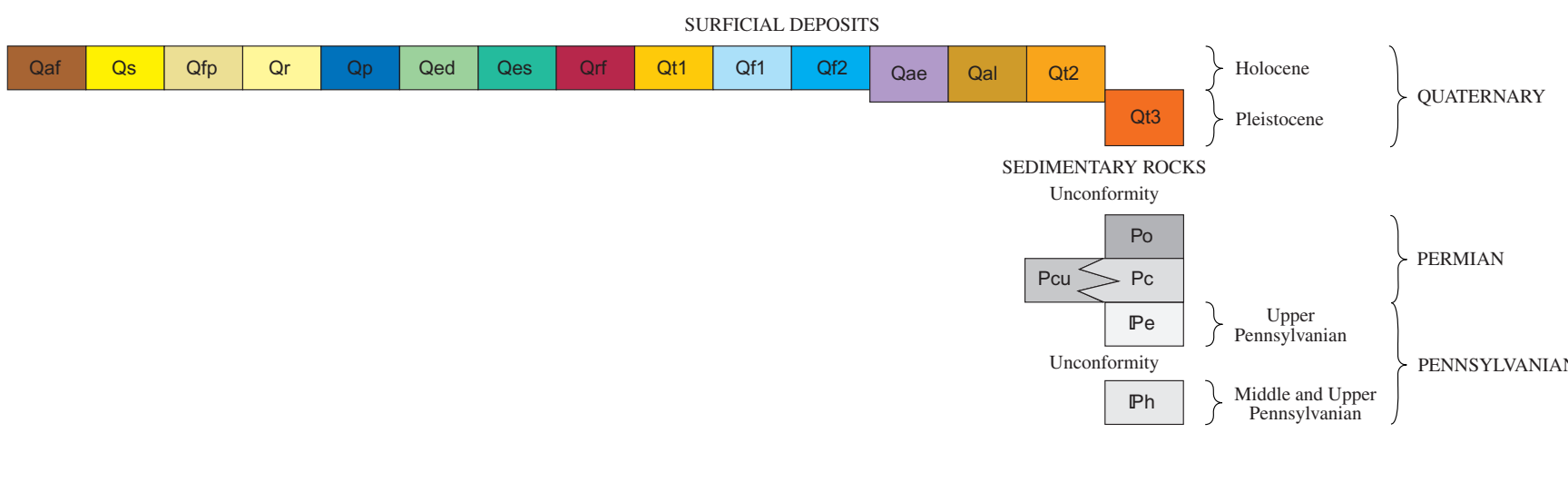
#### SPATIAL RESOLUTION

Use of this digital geologic map database should not violate the spatial resolution of the data. Although the digital form of the data removes the constraint imposed by the scale of a paper map, the detail and accuracy inherent in map scale are also present in the digital data. Although this database was created and consistently edited at a scale of 1:4,000 over digital orthophotos it is presented at a scale of 1:24,000 over a topographic base of that scale. Plotting at scales larger than 1:24,000 will not yield greater real detail, but may reveal fine-scale irregularities below the intended resolution.





## CORRELATION OF MAP UNITS



## DESCRIPTION OF MAP UNITS

(Units shown with dashes indicate thin deposits of the first unit over the second and sometimes third unit. Not all composite units are shown. Some unit exposures on the printed map are too small to distinguish the color for unit identification. These units are labeled where possible, and unlabeled units are attributed in the database.)

## SURFICIAL DEPOSITS

Surficial deposits are differentiated from one another chiefly on the basis of difference in morphologic character and physiographic position illustrated on aerial photographs and field observations. Older alluvial and aeolian deposits generally exhibit extensive erosion, whereas younger deposits are actively accumulating material or are lightly eroded as observed on 1995 color aerial photographs. Salt is a common constituent in all alluvial deposits and, to a lesser degree, in aeolian deposits.

**Artificial fill and quarries (Holocene)**—Alluvium and (or) bedrock material removed from human-pile and machine to build stock tanks, drainage diversion dams, roads, and other construction projects other than modern highways. No distinction on map between cut or fill excavations. Areas generally disturbed by construction projects or quarrying.

**Stream-channel alluvium (Holocene)**—Interfingering silt, sand, gravel, and pebbles; unconsolidated and poorly sorted. Locally overlies or erodes into young and intermediate alluvial terrace deposits (Q1, Q2) and floodplain (Q3) deposits. Generally inset against young, intermediate, and old alluvial terrace (Q1, Q2, and Q3) deposits. Gradational contact with floodplains (Q3) deposits. Stream channels subject to intermittent high-energy flows and flash floods producing sediment accumulation on floodplains or lateral erosion into young, intermediate, and old terrace deposits. Little or no vegetation growing in stream channels except for local tamarisk, willow, juniper, or oak trees due to close proximity to bedrock where ground water is shallow. Thickness, 3 to 6 ft.

**Floodplain deposits (Holocene)**—Light gray to white silt, fine- to coarse-grained sand, and interbedded pebble gravel lenses; unconsolidated. Gravel locally contains red, subrounded to subangular chert fragments and gray-blue, rounded limestone pebbles 0.25 to 0.75 in. in diameter. Seasonal floods may produce fresh deposits that generally accumulate on the inside bends (concave bars) of drainages and locally erode into or overlie young alluvial terrace (Q1) deposits. Subject to stream-channel erosion or overbank flooding. Gradational and arbitrary contacts between stream-channel (Q1) and floodplain (Q3) deposits both laterally and vertically. Support thick growths of tamarisk trees and other water-dependent plants where stream bedrock is very shallow, usually less than 10 ft in depth. These growths of tamarisk often help to trap and accumulate sediment to form floodplain deposits. Deposits are generally 3 to 6 ft above stream-channel deposits and are gray laterally into stream-channel (Q1) deposits where stream is not eroding. Thickness, 3 to 10 ft.

**Colorado River terrace deposits (Holocene)**—Gray and brown clay, silt, and sand; unconsolidated. Form terrace deposits along banks of the Colorado River consisting of thin bedded to laminated beds of all fine-grained sand and interbedded coarse-grained lenses of small pebble gravel. Include interbedded thin beds of gray and red mud and clay. Support heavy vegetation over of tamarisk trees and sagebrush. Thickness, 15 to 40 ft.

**Ponded deposits (Holocene)**—Light gray to white clay, silt, and fine-grained sand. Locally include matrix red chert fragments and small, gray-blue, rounded limestone pebbles. Sediments accumulate in temporary ponded areas on intermediate and old alluvial terrace (Q2 and Q3) deposits along Salt Creek due to temporary natural sand dune accumulation or flood overbank sand levee deposits that prevent sediments from reaching Salt Creek for as extended, unknown amount of time. Some deposit areas have been breached by low gradient outflow drainage due to gradual headward erosion from Salt Creek. Include ponded deposits in Checker Park and other areas where widespread sand sheet and dunes accumulate and form temporary internal ponded areas that eventually become subject to erosion. In The Grabens area, ponded deposits either have no external drainage or accumulate in lowland areas where drainage is blocked by young faulting. Desiccation cracks often form on dry, barren surface that restricts plant growth. Thickness, 1 to 6 ft.

**Sand dune deposits (Holocene)**—Light red to white silt and fine- to coarse-grained aeolian sand. From climbing dunes that ramp upward toward top or cliff topography and falling dunes on steep down-sloping topography. A few minor beach dunes present, no parabolic dunes observed. Arbitrary and gradational contact between sand-sheet (Q1) and alluvium and sand-sheet (Q1) deposits based on topography, aerial photography, or relative to stream channel. Dune surfaces are commonly active in large open valley areas that support sparse growths of grass or small shrubs. Units are highly stabilized by grass vegetation or by cryogenic growths in small, nearly enclosed basins or in some reaches of local canyon drainage areas. Thickness, 12 to 30 ft.

**Sand-sheet deposits (Holocene)**—Light red to white silt and fine- to coarse-grained aeolian sand on flat-topped ridges and mesas derived from the Cedar Mesa Sandstone (P1). Deposit also accumulates downwind of local surficial (Q1, Q2, Q3, Q4, Q5, Q6, Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q49, Q50, Q51, Q52, Q53, Q54, Q55, Q56, Q57, Q58, Q59, Q60, Q61, Q62, Q63, Q64, Q65, Q66, Q67, Q68, Q69, Q70, Q71, Q72, Q73, Q74, Q75, Q76, Q77, Q78, Q79, Q80, Q81, Q82, Q83, Q84, Q85, Q86, Q87, Q88, Q89, Q90, Q91, Q92, Q93, Q94, Q95, Q96, Q97, Q98, Q99, Q100, Q101, Q102, Q103, Q104, Q105, Q106, Q107, Q108, Q109, Q110, Q111, Q112, Q113, Q114, Q115, Q116, Q117, Q118, Q119, Q120, Q121, Q122, Q123, Q124, Q125, Q126, Q127, Q128, Q129, Q130, Q131, Q132, Q133, Q134, Q135, Q136, Q137, Q138, Q139, Q140, Q141, Q142, Q143, Q144, Q145, Q146, Q147, Q148, Q149, Q150, Q151, Q152, Q153, Q154, Q155, Q156, Q157, Q158, Q159, Q160, Q161, Q162, Q163, Q164, Q165, Q166, Q167, Q168, Q169, Q170, Q171, Q172, Q173, Q174, Q175, Q176, Q177, Q178, Q179, Q180, Q181, Q182, Q183, Q184, Q185, Q186, Q187, Q188, Q189, Q190, Q191, Q192, Q193, Q194, Q195, Q196, Q197, Q198, Q199, Q200, Q201, Q202, Q203, Q204, Q205, Q206, Q207, Q208, Q209, Q210, Q211, Q212, Q213, Q214, Q215, Q216, Q217, Q218, Q219, Q220, Q221, Q222, Q223, Q224, Q225, Q226, Q227, Q228, Q229, Q230, Q231, Q232, Q233, Q234, Q235, Q236, Q237, Q238, Q239, Q240, Q241, Q242, Q243, Q244, Q245, Q246, Q247, Q248, Q249, Q250, Q251, Q252, Q253, Q254, Q255, Q256, Q257, Q258, Q259, Q260, Q261, Q262, Q263, Q264, Q265, Q266, Q267, Q268, Q269, Q270, Q271, Q272, Q273, Q274, Q275, Q276, Q277, Q278, Q279, Q280, Q281, Q282, Q283, Q284, Q285, Q286, Q287, Q288, Q289, Q290, Q291, Q292, Q293, Q294, Q295, Q296, Q297, Q298, Q299, Q300, Q301, Q302, Q303, Q304, Q305, Q306, Q307, Q308, Q309, Q310, Q311, Q312, Q313, Q314, Q315, Q316, Q317, Q318, Q319, Q320, Q321, Q322, Q323, Q324, Q325, Q326, Q327, Q328, Q329, Q330, Q331, Q332, Q333, Q334, Q335, Q336, Q337, Q338, Q339, Q340, Q341, Q342, Q343, Q344, Q345, Q346, Q347, Q348, Q349, Q350, Q351, Q352, Q353, Q354, Q355, Q356, Q357, Q358, Q359, Q360, Q361, Q362, Q363, Q364, Q365, Q366, Q367, Q368, Q369, Q370, Q371, Q372, Q373, Q374, Q375, Q376, Q377, Q378, Q379, Q380, Q381, Q382, Q383, Q384, Q385, Q386, Q387, Q388, Q389, Q390, Q391, Q392, Q393, Q394, Q395, Q396, Q397, Q398, Q399, Q400, Q401, Q402, Q403, Q404, Q405, Q406, Q407, Q408, Q409, Q410, Q411, Q412, Q413, Q414, Q415, Q416, Q417, Q418, Q419, Q420, Q421, Q422, Q423, Q424, Q425, Q426, Q427, Q428, Q429, Q430, Q431, Q432, Q433, Q434, Q435, Q436, Q437, Q438, Q439, Q440, Q441, Q442, Q443, Q444, Q445, Q446, Q447, Q448, Q449, Q450, Q451, Q452, Q453, Q454, Q455, Q456, Q457, Q458, Q459, Q460, Q461, Q462, Q463, Q464, Q465, Q466, Q467, Q468, Q469, Q470, Q471, Q472, Q473, Q474, Q475, Q476, Q477, Q478, Q479, Q480, Q481, Q482, Q483, Q484, Q485, Q486, Q487, Q488, Q489, Q490, Q491, Q492, Q493, Q494, Q495, Q496, Q497, Q498, Q499, Q500, Q501, Q502, Q503, Q504, Q505, Q506, Q507, Q508, Q509, Q510, Q511, Q512, Q513, Q514, Q515, Q516, Q517, Q518, Q519, Q520, Q521, Q522, Q523, Q524, Q525, Q526, Q527, Q528, Q529, Q530, Q531, Q532, Q533, Q534, Q535, Q536, Q537, Q538, Q539, Q540, Q541, Q542, Q543, Q544, Q545, Q546, Q547, Q548, Q549, Q550, Q551, Q552, Q553, Q554, Q555, Q556, Q557, Q558, Q559, Q560, Q561, Q562, Q563, Q564, Q565, Q566, Q567, Q568, Q569, Q570, Q571, Q572, Q573, Q574, Q575, Q576, Q577, Q578, Q579, Q580, Q581, Q582, Q583, Q584, Q585, Q586, Q587, Q588, Q589, Q590, Q591, Q592, Q593, Q594, Q595, Q596, Q597, Q598, Q599, Q600, Q601, Q602, Q603, Q604, Q605, Q606, Q607, Q608, Q609, Q610, Q611, Q612, Q613, Q614, Q615, Q616, Q617, Q618, Q619, Q620, Q621, Q622, Q623, Q624, Q625, Q626, Q627, Q628, Q629, Q630, Q631, Q632, Q633, Q634, Q635, Q636, Q637, Q638, Q639, Q640, Q641, Q642, Q643, Q644, Q645, Q646, Q647, Q648, Q649, Q650, Q651, Q652, Q653, Q654, Q655, Q656, Q657, Q658, Q659, Q660, Q661, Q662, Q663, Q664, Q665, Q666, Q667, Q668, Q669, Q670, Q671, Q672, Q673, Q674, Q675, Q676, Q677, Q678, Q679, Q680, Q681, Q682, Q683, Q684, Q685, Q686, Q687, Q688, Q689, Q690, Q691, Q692, Q693, Q694, Q695, Q696, Q697, Q698, Q699, Q700, Q701, Q702, Q703, Q704, Q705, Q706, Q707, Q708, Q709, Q710, Q711, Q712, Q713, Q714, Q715, Q716, Q717, Q718, Q719, Q720, Q721, Q722, Q723, Q724, Q725, Q726, Q727, Q728, Q729, Q730, Q731, Q732, Q733, Q734, Q735, Q736, Q737, Q738, Q739, Q740, Q741, Q742, Q743, Q744, Q745, Q746, Q747, Q748, Q749, Q750, Q751, Q752, Q753, Q754, Q755, Q756, Q757, Q758, Q759, Q760, Q761, Q762, Q763, Q764, Q765, Q766, Q767, Q768, Q769, Q770, Q771, Q772, Q773, Q774, Q775, Q776, Q777, Q778, Q779, Q780, Q781, Q782, Q783, Q784, Q785, Q786, Q787, Q788, Q789, Q790, Q791, Q792, Q793, Q794, Q795, Q796, Q797, Q798, Q799, Q800, Q801, Q802, Q803, Q804, Q805, Q806, Q807, Q808, Q809, Q810, Q811, Q812, Q813, Q814, Q815, Q816, Q817, Q818, Q819, Q820, Q821, Q822, Q823, Q824, Q825, Q826, Q827, Q828, Q829, Q830, Q831, Q832, Q833, Q834, Q835, Q836, Q837, Q838, Q839, Q840, Q841, Q842, Q843, Q844, Q845, Q846, Q847, Q848, Q849, Q850, Q851, Q852, Q853, Q854, Q855, Q856, Q857, Q858, Q859, Q860, Q861, Q862, Q863, Q864, Q865, Q866, Q867, Q868, Q869, Q870, Q871, Q872, Q873, Q874, Q875, Q876, Q877, Q878, Q879, Q880, Q881, Q882, Q883, Q884, Q885, Q886, Q887, Q888, Q889, Q890, Q891, Q892, Q893, Q894, Q895, Q896, Q897, Q898, Q899, Q900, Q901, Q902, Q903, Q904, Q905, Q906, Q907, Q908, Q909, Q910, Q911, Q912, Q913, Q914, Q915, Q916, Q917, Q918, Q919, Q920, Q921, Q922, Q923, Q924, Q925, Q926, Q927, Q928, Q929, Q930, Q931, Q932, Q933, Q934, Q935, Q936, Q937, Q938, Q939, Q940, Q941, Q942, Q943, Q944, Q945, Q946, Q947, Q948, Q949, Q950, Q951, Q952, Q953, Q954, Q955, Q956, Q957, Q958, Q959, Q960, Q961, Q962, Q963, Q964, Q965, Q966, Q967, Q968, Q969, Q970, Q971, Q972, Q973, Q974, Q975, Q976, Q977, Q978, Q979, Q980, Q981, Q982, Q983, Q984, Q985, Q986, Q987, Q988, Q989, Q990, Q991, Q992, Q993, Q994, Q995, Q996, Q997, Q998, Q999, Q1000, Q1001, Q1002, Q1003, Q1004, Q1005, Q1006, Q1007, Q1008, Q1009, Q1010, Q1011, Q1012, Q1013, Q1014, Q1015, Q1016, Q1017, Q1018, Q1019, Q1020, Q1021, Q1022, Q1023, Q1024, Q1025, Q1026, Q1027, Q1028, Q1029, Q1030, Q1031, Q1032, Q1033, Q1034, Q1035, Q1036, Q1037, Q1038, Q1039, Q1040, Q1041, Q1042, Q1043, Q1044, Q1045, Q1046, Q1047, Q1048, Q1049, Q1050, Q1051, Q1052, Q1053, Q1054, Q1055, Q1056, Q1057, Q1058, Q1059, Q1060, Q1061, Q1062, Q1063, Q1064, Q1065, Q1066, Q1067, Q1068, Q1069, Q1070, Q1071, Q1072, Q1073, Q1074, Q1075, Q1076, Q1077, Q1078, Q1079, Q1080, Q1081, Q1082, Q1083, Q1084, Q1085, Q1086, Q1087, Q1088, Q1089, Q1090, Q1091, Q1092, Q1093, Q1094, Q1095, Q1096, Q1097, Q1098, Q1099, Q1100, Q1101, Q1102, Q1103, Q1104, Q1105, Q1106, Q1107, Q1108, Q1109, Q1110, Q1111, Q1112, Q1113, Q1114, Q1115, Q1116, Q1117, Q1118, Q1119, Q1120, Q1121, Q1122, Q1123, Q1124, Q1125, Q1126, Q1127, Q1128, Q1129, Q1130, Q1131, Q1132, Q1133, Q1134, Q1135, Q1136, Q1137, Q1138, Q1139, Q1140, Q1141, Q1142, Q1143, Q1144, Q1145, Q1146, Q1147, Q1148, Q1149, Q1150, Q1151, Q1152, Q1153, Q1154, Q1155, Q1156, Q1157, Q1158, Q1159, Q1160, Q1161, Q1162, Q1163, Q1164, Q1165, Q1166, Q1167, Q1168, Q1169, Q1170, Q1171, Q1172, Q1173, Q1174, Q1175, Q1176, Q1177, Q1178, Q1179, Q1180, Q1181, Q1182, Q1183, Q1184, Q1185, Q1186, Q1187, Q1188, Q1189, Q1190, Q1191, Q1192, Q1193, Q1194, Q1195, Q1196, Q1197, Q1198, Q1199, Q1200, Q1201, Q1202, Q1203, Q1204, Q1205, Q1206, Q1207, Q1208, Q1209, Q1210, Q1211, Q1212, Q1213, Q1214, Q1215, Q1216, Q1217, Q1218, Q1219, Q1220, Q1221, Q1222, Q1223, Q1224, Q1225, Q1226, Q1227, Q1228, Q1229, Q1230, Q1231, Q1232, Q1233, Q1234, Q1235, Q1236, Q1237, Q1238, Q1239, Q1240, Q1241, Q1242, Q1243, Q1244, Q1245, Q1246, Q1247, Q1248, Q1249, Q1250, Q1251, Q1252, Q1253, Q1254, Q1255, Q1256, Q1257, Q1258, Q1259, Q1260, Q1261, Q1262, Q1263, Q1264, Q1265, Q1266, Q1267, Q1268, Q1269, Q1270, Q1271, Q1272, Q1273, Q1274, Q1275, Q1276, Q1277, Q1278, Q1279, Q1280, Q1281, Q1282, Q1283, Q1284, Q1285, Q1286, Q1287, Q1288, Q1289, Q1290, Q1291, Q1292, Q1293, Q1294, Q1295, Q1296, Q1297, Q1298, Q1299, Q1300, Q1301, Q1302, Q1303, Q1304, Q1305, Q1306, Q1307, Q1308, Q1309, Q1310, Q1311, Q1312, Q1313, Q1314, Q1315, Q1316, Q1317, Q1318, Q1319, Q1320, Q1321, Q1322, Q1323, Q1324, Q1325, Q1326, Q1327, Q1328, Q1329, Q1330, Q1331, Q1332, Q1333, Q1334, Q1335, Q1336, Q1337, Q1338, Q1339, Q1340, Q1341, Q1342, Q1343, Q1344, Q1345, Q1346, Q1347, Q1348, Q1349, Q1350, Q1351, Q1352, Q1353, Q1354, Q1355, Q1356, Q1357, Q1358, Q1359, Q1360, Q1361, Q1362, Q1363, Q1364, Q1365, Q1366, Q1367, Q1368, Q1369, Q1370, Q1371, Q1372, Q1373, Q1374, Q1375, Q1376, Q1377, Q1378, Q1379, Q1380, Q1381, Q1382, Q1383, Q1384, Q1385, Q1386, Q1387, Q1388, Q1389, Q1390, Q1391, Q1392, Q1393, Q1394, Q1395, Q1396, Q1397, Q1398, Q1399, Q1400, Q1401, Q1402, Q1403, Q1404, Q1405, Q1406, Q1407, Q1408, Q1409, Q1410, Q1411, Q1412, Q1413, Q1414, Q1415, Q1416, Q1417, Q1418, Q1419, Q1420, Q1421, Q1422, Q1423, Q1424, Q1425, Q1426, Q1427, Q1428, Q1429, Q1430, Q1431, Q1432, Q1433, Q1434, Q1435, Q1436, Q1437, Q1438, Q1439, Q1440, Q1441, Q1442, Q1443, Q1444, Q1445, Q1446, Q1447, Q1448, Q1449, Q1450, Q1451, Q1452, Q1453, Q1454, Q1455, Q1456, Q1457, Q1458, Q1459, Q1460, Q1461, Q1462, Q1463, Q1464, Q1465, Q1466, Q1467, Q1468, Q1469, Q1470, Q1471, Q1472, Q1473, Q1474, Q1475, Q1476, Q1477, Q1478, Q1479, Q1480, Q1481, Q1482, Q1483, Q1484, Q1485, Q1486, Q1487, Q1488, Q1489, Q1490, Q1491, Q1492, Q1493, Q1494, Q1495, Q1496, Q1497, Q1498, Q1499, Q1500, Q1501, Q1502, Q1503, Q1504, Q1505, Q1506, Q1507, Q1508, Q1509, Q1510, Q1511, Q1512, Q1513, Q1514, Q1515, Q1516, Q1517, Q1518, Q1519, Q1520, Q1521, Q1522, Q1523, Q1524, Q1525, Q1526, Q1527, Q1528, Q1529, Q1530, Q1531, Q1532, Q1533, Q1534, Q1535, Q1536, Q1537, Q1538, Q1539, Q1540, Q1541, Q1542, Q1543, Q1544, Q1545, Q1546, Q1547, Q1548, Q1549, Q1550, Q1551, Q1552, Q1553, Q1554, Q1555, Q1556, Q1557, Q1558, Q1559, Q1560, Q1561, Q1562, Q1563, Q1564, Q1565, Q1566, Q1567, Q1568, Q1569, Q1570, Q1571, Q1572, Q1573, Q1574, Q1575, Q1576, Q1577, Q1578, Q1579, Q1580, Q1581, Q1582, Q1583, Q1584, Q1585, Q1586, Q1587, Q1588, Q1589, Q1590, Q1591, Q1592, Q1593, Q1594, Q1595, Q1596, Q1597, Q1598, Q1599, Q1600, Q1601, Q1602, Q1603, Q1604, Q1605, Q1606, Q1607, Q1608, Q1609, Q1610, Q1611, Q1612, Q1613, Q1614, Q1615, Q1616, Q1617, Q1618, Q1619, Q1620, Q1621, Q1622, Q1623, Q1624, Q1625, Q1626, Q1627, Q1628, Q1629, Q1630, Q1631, Q1632, Q1633, Q1634, Q1635, Q1636, Q1637, Q1638, Q1639, Q1640, Q1641, Q1642, Q1643, Q1644, Q1645, Q1646, Q1647, Q1648, Q1649, Q1650, Q1651, Q1652, Q1653, Q1654, Q1655, Q1656, Q1657, Q1658, Q1659, Q1660, Q1661, Q1662, Q1663, Q1664, Q1665, Q1666, Q1667, Q1668, Q1669, Q1670, Q1671, Q1672, Q1673, Q1674, Q1675, Q1676, Q1677, Q1678, Q1679, Q1680, Q1681, Q1682, Q1683, Q1684, Q1685, Q1686, Q1687, Q1688, Q1689, Q1690, Q1691, Q1692, Q1693, Q1694, Q1695, Q1696, Q1697, Q1698, Q1699, Q1700, Q1701, Q1702, Q1703, Q1704, Q1705, Q1706, Q1707, Q1708, Q1709, Q1710, Q1711, Q1712, Q1713, Q1714, Q1715, Q1716, Q1717, Q1718, Q1719, Q1720, Q1721, Q1722, Q1723, Q1724, Q1725, Q1726, Q1727, Q1728, Q1729, Q1730, Q1731, Q1732, Q1733, Q1734, Q1735, Q1736, Q1737, Q1738, Q1739, Q1740, Q1741, Q1742, Q1743, Q1744, Q1745, Q1746, Q1747, Q1748, Q1749, Q1750, Q1751, Q1752, Q1753, Q1754, Q1755, Q1756, Q1757, Q1758, Q1759, Q1760, Q1761, Q1762, Q1763, Q1764, Q1765, Q1766, Q1767, Q1768, Q1769, Q1770, Q1771, Q1772, Q1773, Q1774, Q1775, Q1776, Q1777, Q1778, Q1779, Q1780, Q1781, Q1782, Q1783, Q1784, Q1785, Q1786, Q1787, Q1788, Q1789, Q1790, Q1791, Q1792, Q1793, Q1794, Q1795, Q1796, Q1797, Q1798, Q1799, Q1800, Q1801, Q1802, Q1803, Q1804, Q1805, Q1806, Q1807, Q1808, Q1809, Q1810, Q1811, Q1812, Q1813, Q1814, Q1815, Q1816, Q1817, Q1818, Q1819, Q1820, Q1821, Q1822, Q1823, Q1824, Q1825, Q1826, Q1827, Q1828, Q1829, Q1830, Q1831, Q1832, Q1833, Q1834, Q1835, Q1836, Q1837, Q1838, Q1839, Q1840, Q1841, Q1842, Q1843, Q1844, Q1845, Q1846, Q1847, Q1848, Q1849, Q1850, Q1851, Q1852, Q1853, Q1854, Q1855, Q1856, Q1857, Q1858, Q1859, Q1860, Q1861, Q1862, Q1863, Q1864, Q1865, Q1866, Q1867, Q1868, Q1869, Q1870, Q1871, Q1872, Q1873, Q1874, Q1875, Q1876, Q1877, Q1878, Q1879, Q1880, Q1881, Q1882, Q1883, Q1884, Q1885, Q1886, Q1887, Q1888, Q1889, Q1890, Q1891, Q1892, Q1893, Q1894, Q1895, Q1896, Q1897, Q1898, Q1899, Q1900, Q1901, Q1902, Q1903, Q1904, Q1905, Q1906, Q1907, Q1908, Q1909, Q1910, Q1911, Q1912, Q1913, Q1914, Q1915, Q1916, Q1917, Q1918, Q1919, Q1920, Q1921, Q1922, Q1923, Q1