U.S. Department of Agriculture
Forest Service

National Mapping Program Technical Instructions

Part 2
Hydrography

Standards for USGS and USDA Forest Service Single Edition Quadrangle Maps

U.S. Department of the Interior
U.S. Geological Survey

CONTENTS

2. HYDROGRAPHY

This part of the standard provides a description of the Hydrography features shown on USGS and USDA Forest Service single edition quadrangle maps.

ANCHORAGE - An area where a vessel anchors or may anchor, either because of suitability or designation.

Characteristics

Show the following ANCHORAGES:

Seaplane Anchorage — Area designated for the anchoring of seaplanes.

Show the names of ANCHORAGES if they are known.

Delineation

The limit of an ANCHORAGE is the extent of the area suitable for or designated for anchoring.

Depiction Conditions

If an ANCHORAGE is a seaplane anchorage that is associated with a logging camp or small community and its existence can be verified,
Then show.

Source Interpretation Guidelines

All

N/A

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
Seaplane Anchorage	512.168	N/L; Show name if known

AREA OF COMPLEX CHANNELS - An area where a stream or river flows in an intricate network of interlacing channels.

Characteristics

Show the names of AREAS OF COMPLEX CHANNELS if they are known.

Delineation

The limit of an AREA OF COMPLEX CHANNELS is the outer bank of the outermost channel.

Depiction Conditions

If an AREA OF COMPLEX CHANNELS contains at least five subchannels, is ≥ 0.88" (1,760 feet at 1:24,000 scale) along the shortest axis, and is ≥ 2.64" (1 mile at 1:24,000 scale) along the longest axis,
Then show.

Source Interpretation Guidelines

All

AREA OF COMPLEX CHANNELS have also been referred to as "braided streams" in older standards.

If an AREA OF COMPLEX CHANNELS coincides with a SWAMP/MARSH, show the AREA OF COMPLEX CHANNELS and the SWAMP/MARSH.

If an AREA OF COMPLEX CHANNELS coincides with a double-line STREAM/RIVER, show the STREAM/RIVER but do not show the AREA OF COMPLEX CHANNELS.

If an underpass occurs where an AREA OF COMPLEX CHANNELS, CANAL/DITCH, FLUME, PIPELINE (siphon, aqueduct, or water), STREAM/RIVER, or WASH cross over each other at different levels, break the lower feature to indicate the vertical relationship.

A triple level stacking of features requires two underpasses; one on the middle feature, and the other on the bottom feature.

Do not show an underpass between a RAILWAY or ROAD and a hydrographic feature, even if there is no separating structure. A RAILWAY or ROAD is always assumed to be above the water body, never below it. (See the Transportation theme for RAILWAY and ROAD.)

AREA OF COMPLEX CHANNELS

Graphic

Depict all the brown sand areas that are shown within AREAS OF COMPLEX CHANNELS on previously published maps as BARREN LAND (Nonvegetative Surface Cover theme).

Symbolization

Characteristics	Symbol	Label
N/A	541.6	N/L; Show name if known

AREA TO BE SUBMERGED

AREA TO BE SUBMERGED - The known extent of the intended lake that will be created behind a dam under construction.

Characteristics

Show the intended elevations and names of AREAS TO BE SUBMERGED if they are known.

Delineation

The limit of an AREA TO BE SUBMERGED is the line corresponding to the average water elevation of the intended lake.

Depiction Conditions

If an AREA TO BE SUBMERGED is ≥ 0.5" (1,000 feet at 1:24,000 scale) along the shortest axis and the perimeter coincides with a DAM/WEIR that also meets depiction conditions,
Then show.

Source Interpretation Guidelines

All

Show all the features within AREAS TO BE SUBMERGED as they normally would be depicted.

If a DAM/WEIR that is under construction meets depiction conditions, show the intended lake as an AREA TO BE SUBMERGED.

Graphic

Show all the areas to be submerged that are on previously published maps, if the depiction conditions are met. Areas that have subsequently been submerged do not meet the definition for AREAS TO BE SUBMERGED. See LAKE/POND.

Symbolization

Characteristics	Symbol	Label
N/A	541.57 outline 547.2 fill	N/L; Show intended elevation and name if known

BAY/INLET - A water area that is an opening of the sea/ocean into the land, or of an estuary, lake, or river into its shore.

Characteristics

Show the names of BAY/INLETS.

Delineation

The limit of a BAY/INLET is the SHORELINE of an ESTUARY, LAKE/POND, SEA/OCEAN, or STREAM/RIVER and the extension of the shoreline across the mouth of the BAY/INLET and across any area where a river enters the BAY/INLET.

Depiction Conditions

If a BAY/INLET is named,
Then show the name.

Source Interpretation Guidelines

All

The feature BAY/INLET is included in the Geographic Names Information System (GNIS) feature class "bay". According to GNIS, bays can be described by about 40 generics. GNIS maintains a list of feature classes and related generics. Contact GNIS for more information.

The minimum size for islands within BAY/INLETS is ≥ 0.03" (60 feet at 1:24,000 scale).

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	N/A	N/L; Show name

BRIDGE - A structure spanning and providing passage over a waterway, railroad, or other obstacle.

Characteristics

Show the names of BRIDGES if they are known.

Delineation

The limit of a BRIDGE is the extent of the span as defined by the edges of the deck and the end abutments.

Depiction Conditions

If a BRIDGE is ≥ 0.12" (240 feet at 1:24,000 scale) along the longest axis and carries a hydrographic feature,
Then show.

Source Interpretation Guidelines

All

If a BRIDGE carries a CANAL/DITCH, show the BRIDGE and the CANAL/DITCH.

If a bridge that does not meet depiction conditions carries a CANAL/DITCH over another CANAL/DITCH, break the lower feature to indicate an underpass but do not show a BRIDGE.

Do not show an underpass between a RAILWAY or ROAD and a hydrographic feature, even if there is no separating structure. A RAILWAY or ROAD is always assumed to be above the water body, never below it. (See the Transportation theme for RAILWAY and ROAD.)

If a BRIDGE carries a transportation feature, depict it in the Transportation theme.

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	541.36	N/L; Show name if known

CANAL/DITCH - An artificial open waterway constructed to transport water, to irrigate or drain land, to connect two or more bodies of water, or to serve as a waterway for water craft.

Characteristics

Show the following CANAL/DITCHES:

Aqueduct	A structure designed to transport domestic or industrial water from a supply source to a distribution point, often by gravity.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the normal pool elevations of CANAL/DITCHES controlled for navigation by lock GATES if they are known and the CANAL/DITCH is ≥ 0.025" wide (50 feet at 1:24,000 scale), ≥ 0.5" long (1,000 feet at 1:24,000 scale), and not coincident with a LOCK CHAMBER. The normal pool elevation is the stage of an artificially impounded perennial water body that prevails for the greater part of the year.

Show the names of CANAL/DITCHES if they are known.

Delineation

The limit of a CANAL/DITCH is the top of the banks of the artificial waterway.

Depiction Conditions

If a CANAL/DITCH is named,
Or
If a CANAL/DITCH is ≥ 0.005" (10 feet at 1:24,000 scale) along the shortest axis,
Then show.

Source Interpretation Guidelines

All

If a CANAL/DITCH coincides with a BRIDGE or LOCK CHAMBER, show the CANAL/DITCH and the other feature.

If a CANAL/DITCH coincides with a TUNNEL, show the TUNNEL but do not show the CANAL/DITCH.

Do not depict an underground aqueduct that is not in a TUNNEL as a

CANAL/DITCH

CANAL/DITCH. See PIPELINE (underground water aqueduct).

Do not depict a river that has been channelized to control flooding or erosion, or to maintain flow for navigation as a CANAL/DITCH. See STREAM/RIVER.

Depict channelized rivers that are inland navigation waterways as CANAL/DITCHES if they have been cut through land to bypass outcrops or rapids, or to connect two bodies of water.

Refer to the feature's SHORELINE, NONEARTHEN SHORE, or WALL to determine how to depict the perimeter of the CANAL/DITCH.

Do not show ditches associated with cranberry bogs or the internal separations of salt evaporators, soda evaporators, and duck ponds.

CANAL/DITCHES can be carried over or under other features by BRIDGES, FLUMES, PIPELINES (siphons), and TUNNELS.

If a CANAL/DITCH coincides with a structure, such as a bridge, flume, siphon, or tunnel, but that structure does not meet the depiction conditions for that feature, show the CANAL/DITCH but do not show the other feature.

If a CANAL/DITCH is raised by an EMBANKMENT and the space between the CANAL/DITCH symbol and the adjacent LAKE/POND, RAILROAD, or ROAD is $\geq$ 0.011" (22 feet at 1:24,000 scale), show an EMBANKMENT on both sides of the CANAL/DITCH; otherwise, turn back the CONTOURS and drop them at the CANAL/DITCH. (See the Built-up theme for EMBANKMENT. See the transportation theme for RAILROAD and ROAD. See the Hypsography theme for CONTOUR.)

If an underpass occurs where an AREA OF COMPLEX CHANNELS, CANAL/DITCH, FLUME, PIPELINE (siphon, aqueduct, or water), STREAM/RIVER, or WASH cross over each other at different levels, break the lower feature to indicate the vertical relationship.

A triple level stacking of features requires two underpasses; one on the middle feature, and the other on the bottom feature.

Do not show an underpass between a RAILWAY or ROAD and a hydrographic

feature, even if there is no separating structure. A RAILWAY or ROAD is always assumed to be above the water body, never below it. (See the Transportation theme for RAILWAY and ROAD.)

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
Aqueduct	532.8 contours at 541.31	AQUEDUCT; Show name if known
Unspecified	532.8 contours at 541.31 double-line 541.33 single line	N/L; Show name and "NORMAL POOL ELEVATION XXXX" if applicable and known

CREVASSE FIELD - An area of deep fissures in the surface of an ice mass caused by breaking or parting.

Characteristics

Show the names of CREVASSE FIELDS if they are known.

Delineation

The limit of a CREVASSE FIELD is the extent of the field.

Depiction Conditions

If the outline of a CREVASSE FIELD is provided by the USGS Geology Discipline, Then show.

Source Interpretation Guidelines

All

N/A

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	541A.1 symbol TBD	Crevasse Field; Show name if known

DAM/WEIR - A barrier constructed to control the flow or raise the level of water.

Characteristics

Show the following DAM/WEIRS based on the construction material predominantly used:

Earthen	Constructed of earth, or a combination of earth and rock.
Nonearthen	Constructed of concrete, brick, or stone.

Show the following DAM/WEIRS based on their operational status:

Operational	Usable and intended for use.
Under Construction	Construction has begun but is not completed.

Show the names of DAM/WEIRS if they are known.

Delineation

The limit of a DAM/WEIR is the extent of the exposed built-up barrier.

Depiction Conditions

If a DAM/WEIR is earthen, is named, and is ≥ 0.02" (40 feet at 1:24,000 scale) along the shortest axis,
Or
If a DAM/WEIR is nonearthen and is named,
Or
If a DAM/WEIR is nonearthen and is ≥ 0.05" (100 feet at 1:24,000 scale) along the longest axis,
Then show.

Source Interpretation Guidelines

All

If a nonearthen DAM/WEIR meets depiction conditions, show the DAM/WEIR but do not show a NONEARTHEN SHORE.

A DAM/WEIR may include an overflow spillway, cover a portion of a SPILLWAY, or exist completely apart from a SPILLWAY.

If a DAM/WEIR carries a ROAD (Transportation theme), show the DAM/WEIR and

the ROAD.

Do not depict check dams as DAM/WEIRS. See EMBANKMENT (Built-up theme).

If a nonearthen DAM/WEIR is < 0.02" (40 feet at 1:24,000 scale) along the shortest axis, show the DAM/WEIR only for the portion that separates land from water.

Do not show a NONEARTHEN SHORE, SHORELINE, or WALL if it coincides with a DAM/WEIR, DRYDOCK, PIER/BREAKWATER/JETTY, or WHARF. (See the Built-up theme for DRYDOCK, PIER/BREAKWATER/JETTY, and WHARF.)

Graphic

If a named earthen DAM/WEIR is portrayed by contours on the previously published map, label the DAM/WEIR as the area defined by the portion of the shoreline that runs parallel to the squared-off contours and the imaginary line surrounding the built-up barrier as indicated by the contours.

Symbolization

Characteristics	Symbol	Label
Earthen, Operational	532.9 large earth 532.11 diversion 532.17 outline	N/L; Show name if known
Earthen, Under Construction	532.9 large earth 532.11 diversion 532.17 outline	N/L; If named, show name and "(Under Construction)". If not named, show "Dam Under Construction".
Nonearthen, Operational	512.35 masonry 512.36 with lock 512.37 carrying road 515.2 masonry fill	N/L; Show name if known
Nonearthen, Under Construction	512.35 masonry 512.36 with lock 512.37 carrying road 515.2 masonry fill	N/L; If named, show name and "(Under Construction)". If not named, show

ESTUARY - The lower end of a river, or a semi-enclosed coastal body of water with access to the open ocean, which is affected by the tides and where fresh and salt water mix.

Characteristics

Show the names of ESTUARIES.

Delineation

The limit of an ESTUARY is the extent of the area where fresh and salt water mix, as defined by the National Wetlands Inventory.

Depiction Conditions

If an ESTUARY has been identified as an estuarine area by the National Wetlands Inventory and is named,
Then show the name.

Source Interpretation Guidelines

All

The minimum size for islands within an ESTUARY is ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis.

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	N/A	N/L; Show name

FISH LADDER

FISH LADDER - A facility consisting of a series of small pools, each one slightly higher than the preceding, built around an obstruction to enable fish to make their way upstream.

Characteristics

N/A

Delineation

The limit of a FISH LADDER is the extent of the small pools.

Depiction Conditions

If a FISH LADDER is ≥ 0.1" (200 feet at 1:24,000 scale) along the longest axis, Then show.

Source Interpretation Guidelines

All

Displace the segments of FISH LADDERS that overlap each other.

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	512.39	Fish Ladder

FLUME - An open, inclined, artificial channel constructed of wood, metal, or concrete; generally elevated.

Characteristics

Show the names of FLUMES if they are known.

Delineation

The limit of a FLUME is the extent of the structure.

Depiction Conditions

If a FLUME is ≥ 0.12" (240 feet at 1:24,000 scale) along the longest axis,
Then show.

Source Interpretation Guidelines

All

If an underpass occurs where an AREA OF COMPLEX CHANNELS, CANAL/DITCH, FLUME, PIPELINE (siphon, aqueduct, or water), STREAM/RIVER, or WASH cross over each other at different levels, break the lower feature to indicate the vertical relationship.

A triple level stacking of features requires two underpasses; one on the middle feature, and the other on the bottom feature.

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	541.36	FLUME; Show name if known

FORESHORE - The part of a seashore between high-water and low-water marks.

Characteristics

Show the following FORESHORES based on the material they are composed of:

Boulders	Detached rock fragments larger than gravel.
Coral	Consolidated skeletal deposits produced by anthozoan polyps.
Gravel	Unconsolidated, natural accumulation of rounded rock fragments, consisting predominantly of particles larger than sand but smaller than boulders, having a diameter in the range of 2 mm to 256 mm (0.5" to 10").
Mud	A slimy, sticky, or slippery mixture of water and silt or clay-sized earth material, with consistency ranging from semi-fluid to soft and plastic.
Rock	Consolidated, naturally formed mass of mineral matter.
Sand	Unconsolidated rock particles that are larger than silt but smaller than gravel.
Shell	The hard outer covering of an animal.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the names of FORESHORES if they are known.

Delineation

The limit of a FORESHORE is the approximate line of mean high water, and the approximate line of mean lower low water.

FORESHORE

Depiction Conditions

If a FORESHORE is ≥ 0.1" (200 feet at 1:24,000 scale) along the longest axis and is ≥ 0.04" (80 feet at 1:24,000 scale) along the shortest axis,
Then show.

Source Interpretation Guidelines

All

A FORESHORE does not have to be attached to a shore.

Depict areas that uncover and are within or alongside REEFS as FORESHORES.

Graphic

Depict all of the foreshore areas shown with black stipple pattern (USGS 17) on previously published maps as FORESHORES, if the depiction conditions are met. (This does not include oil sumps that are shown with the same pattern. See RESERVOIR in the Built-up theme for oil sumps)

Symbolization

Characteristics	Symbol	Label
Boulders	517.1	Boulders; Show name if known
Coral	517.1	Coral; Show name if known
Gravel	517.1	Gravel; Show name if known
Mud	517.1	Mud Flat; Show name if known
Rock	517.1	Rock; Show name if known
Sand	517.1	Sand; Show name if known
Shell	517.1	Shell; Show name if known
Unspecified	517.1	Tidal Flat; Show name if known

FUMAROLE - A hole in the earth's crust from which steam and gases are emitted.

Characteristics

Show the names of FUMAROLES if they are known.

Delineation

The limit of a FUMAROLE is the extent of the hole from which vapors are emitted.

Depiction Conditions

Show all. (See the Source Interpretation Guidelines, if it is necessary to accurately represent a pattern of closely spaced FUMAROLES.)

Source Interpretation Guidelines

All

The feature FUMAROLE is not a GNIS feature class. According to GNIS, FUMAROLE is included in the GNIS feature class "geyser". However, not all GNIS "geysers" can be classified as the feature FUMAROLE.

If a FUMAROLE is in an area of closely spaced FUMAROLES, first show the named FUMAROLES, then those that are on the perimeter of the area, then those that are the most prominent, then finally show a representative pattern of the FUMAROLES internal to the area. Show as many as can be depicted in the correct position. The symbols must not overlap.

Graphic

Depict all the geyser or water well symbols in geothermal areas labeled "Vent" or "Gas Vent" on previously published maps as FUMAROLES.

Symbolization

Characteristics	Symbol	Label
N/A	541.39	Fumarole; Show name if known

GAGING STATION - A structure used to measure the characteristics of a hydrographic feature.

Characteristics

Show the following GAGING STATIONS:

Tide	Used for measuring the rise and fall of the tide.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the following tide GAGING STATIONS based on their operational status:

Dismantled	Structure has been taken down. Show only if positioned on compilation manuscript provided by the State of Florida.
Operational	Usable and intended for use.

Show the station designators of tidal stations, regardless of operational status, only if they are on the compilation manuscript provided by the State of Florida.

Delineation

The limit of a GAGING STATION is the extent of the housing of the equipment.

Depiction Conditions

If a GAGING STATION is published in the most recent "USGS Water Resources Data for (State)" report or is a tide station recognized by the National Ocean Service and it is permanent, automatic, continuous reading, and housed,
Or
If a GAGING STATION is on the compilation manuscript provided by the State of Florida,
Then show.

Source Interpretation Guidelines

All

If two or more GAGING STATIONS are closely spaced, show as many as can be depicted in the correct position. The symbols must not overlap.

Graphic

Depict spot elevations that are adjacent to or on GAGING STATIONS on

previously published maps as SPOT ELEVATIONS (Hypsography theme).

Symbolization

Characteristics	Symbol	Label
Tide, Dismantled	512.113	Tidal Station (if provided by Florida); Show "(Site)" and station designator
Tide, Operational	512.113	Tidal Station (if provided by Florida); Show station designator
Unspecified	512.113	Gaging Station

GATE - A structure that may be swung, drawn, or lowered to block an entrance or passageway.

Characteristics

Show the following GATES:

Drydock	Gate at the entrance to a drydock.
Floodgate	Gate placed across/along a channel to control floodwater or a gate across a roadway in a levee.
Lock	Gate at either end of a lock chamber, to control the flow of water through the lock.
Tidegate	Gate with a free-swinging barrier that is placed near or at the outlet of a conduit flowing into a body of water subject to high water from tides in order to separate fresh from salt water.
Unspecified	Does not have to be known or specified for the feature to be shown.

Delineation

The limit of a GATE is the extent of the structure.

Depiction Conditions

If a GATE is a floodgate or of an unspecified type and is ≥ 0.02" (40 feet at 1:24,000 scale) along the longest axis,
Or
If a GATE is a tidegate and is on a double-line STREAM/RIVER which is ≥ 1.32" (½ mile at 1:24,000 scale) along the longest axis,
Or
If a GATE is a drydock gate and it is associated with a non-floating DRYDOCK (Built-up theme),
Or
If a GATE is a lock gate and is associated with a LOCK CHAMBER that is ≥ 0.025" (50 feet at 1:24,000 scale) along the shortest axis,
Then show.

GATE

Source Interpretation Guidelines

All

If a GATE is associated with a transportation feature, depict it in the Transportation theme.

Show GATES as straight lines across the ends of LOCK CHAMBERS.

Graphic

If a GATE has been symbolized by a single V-shaped symbol and is on an area feature (such as a DRYDOCK gate) on the previously published map, show the GATE as a line from bank to bank, tangent to the apex of the symbol and perpendicular to a line bisecting the symbol. (See the Built-up theme for DRYDOCK.)

Symbolization

Characteristics	Symbol	Label
Drydock	512.49	N/L (gate not labeled)
Floodgate	512.40	Floodgate
Lock	512.36 on dam 512.38 on canal	N/L (gate not labeled)
Tidegate	512.40	Tidegate
Unspecified	512.40	Gate

GEYSER - A natural fountain that intermittently ejects a column of water into the air from a hole in the Earth's crust.

Characteristics

Show the names of GEYSERS if they are known.

Delineation

The limit of a GEYSER is the extent of the hole from which the eruption occurs.

Depiction Conditions

Show all. (See the Source Interpretation Guidelines, if it is necessary to accurately represent a pattern of closely spaced GEYSERS.)

Source Interpretation Guidelines

All

If a GEYSER is in an area of closely spaced GEYSERS, first show the named GEYSERS, then those that are on the perimeter of the area, then those that are most prominent, then finally show a representative pattern of the GEYSERS internal to the area. Show as many as can be depicted in the correct position. The symbols must not overlap.

If a group of GEYSERS is named, the group name is associated with the feature LOCALE (Built-up theme).

Graphic

Depict elevations on GEYSERS that are on previously published maps as SPOT ELEVATIONS (Hypsography theme).

Symbolization

Characteristics	Symbol	Label
N/A	541.39	Geyser; Show name if known

HAZARD ZONE - An area identified as a danger to maritime navigation.

Characteristics

Show the following HAZARD ZONES:

Rock Area	Containing one or more rocks.
Shoal	Containing underwater offshore ridge, bank, or bar.
Wreckage	Containing the ruined remains of one or more vessels.

Delineation

The limit of a HAZARD ZONE is the extent of the area that is dangerous to navigation. This extent is provided by the National Ocean Service.

Depiction Conditions

If a HAZARD ZONE contains rocks, shoals (bars), or wreckage and is on an existing National Ocean Service chart,
Then show.

Source Interpretation Guidelines

All

N/A

Graphic

A HAZARD ZONE is the area enclosed by the dotted line symbol on previously published maps.

Depict any symbols within the dotted line on previously published maps independently as the appropriate feature.

Some features on maps produced prior to February 1, 1961 do not meet current depiction conditions and should not be shown. Do not show barges, buoys, dolphins, duck blinds, dumping grounds, fish stakes, fish traps, foul areas, harbor limits, lightships, limiting danger lines, measured courses, pilings, project depths of channels, restricted areas, sailing lines, sewage outlets, snags, underwater rocks, underwater wrecks, tide rips, breakers, and types of offshore bottoms.

HAZARD ZONE

Symbolization

Characteristics	Symbol	Label
Rock Area	512.136 lone, danger to navigation 512.138 group	N/L
Shoal	512.142	Shoal
Wreckage	512.140	Wreckage

ICE MASS - A field of ice, formed in regions of perennial frost.

Characteristics

Show the following ICE MASSES:

Glacier	Body of ice and snow, originating in mountain ranges, showing evidence of past or present flow.
Snowfield	Broad expanse of permanent snow.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the following glacier ICE MASSES based on their ice mass movement:

Advancing	Moving forward ≥ 0.1" (200 feet at 1:24,000 scale) from previous position.
Receding	Moving backward ≥ 0.1" (200 feet at 1:24,000 scale) from previous position.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the names of ICE MASSES if they are known.

Delineation

The limit of an ICE MASS is the extent of the ice or snow.

Depiction Conditions

If an ICE MASS is ≥ 0.0625 square inches (250,000 square feet at 1:24,000 scale), Then show.

Source Interpretation Guidelines

All

If named glaciers join, the dividing line is the approximate line of divergence or confluence as determined by the topography of the ice masses and/or by the changes in color or texture.

Graphic

N/A

ICE MASS

Symbolization

Characteristics	Symbol	Label
Glacier, Advancing	541B.2	N/L; Show name if known
Glacier, Retreating	539.1	N/L; Show name if known
Glacier, Unspecified	541.42 outline 541.44 indefinite contours 541.66 indefinite depression contours	N/L; Show name if known
Snowfield	541.42 outline 541.44 indefinite contours 541.66 indefinite depression contours	N/L; Show name if known
Unspecified	541.42 outline 541.44 indefinite contours 541.66 indefinite depression contours	N/L; Show name if known

INUNDATION AREA - An area of land subject to flooding.

Characteristics

Show the following INUNDATION AREAS based on their control status:

Controlled	Structures, such as DAMS/WEIRS or EMBANKMENTS, exist to control the water and inundate specific areas.
Not Controlled	No controlling structures exist. Flooding is natural and periodic.

Show the following controlled INUNDATION AREAS:

Debris Basin	Area to catch and temporarily store debris and sediment from runoff.
Dewatering Area	Area that is seasonally drained by the Tennessee Valley Authority to control mosquitoes.
Duck Pond	Commercially developed areas, inundated for duck hunting (normally found along the Pacific Coast Flyway).
Percolation Basin	Area used to temporarily store excess runoff and return water to the ground-water reservoir; also called spreading ground.
Retarding Basin	Basin or embanked area for retarding the flow of flood waters.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the flood elevations of controlled unspecified INUNDATION AREAS if they are known. A flood elevation is the stage of an artificially impounded water body as determined by the highest controlling structure.

Show the names of INUNDATION AREAS if the names apply to the areas and not to associated LAKE/PONDS or STREAM/RIVERS.

INUNDATION AREA

Delineation

In flat coastal areas where the shoreline varies with the tide and meteorological conditions, the limit of an INUNDATION AREA is the approximate mean low or mean lower low water line and the approximate limit of flooding.

The limit of an INUNDATION AREA controlled by a DAM/WEIR is the average water line and the line corresponding to the highest controlling structure.

For all other controlled INUNDATION AREAS, the limit is the average water line and the crest of the EMBANKMENT (Built-up theme) or, if there is no EMBANKMENT, the limit of the flooding.

Depiction Conditions

If an INUNDATION AREA is controlled and is ≥ 0.06" (120 feet at 1:24,000 scale) along the shortest axis,
Or
If INUNDATION AREA is uncontrolled, is ≥ 0.06" (120 feet at 1:24,000 scale) along the shortest axis, and is along SEA/OCEAN or ESTUARY,
Then show.

Source Interpretation Guidelines

All

Show all the features within INUNDATION AREAS as they normally would be depicted.

Graphic

N/A

INUNDATION AREA

Symbolization

Characteristics	Symbol	Label
Controlled, Debris Basin	541.29 outline 546.2 fill	Debris Basin; Show name if known
Controlled, Dewatering Area	541.56 541.29 outline 546.1 fill	N/L; Show name if known
Controlled, Duck Pond	541.29 outline 546.2 fill	Duck Pond; Show name if known
Controlled, Percolation Basin	541.29 outline 546.2 fill	Percolation Basin; Show name if known
Controlled, Retarding Basin	541.29 outline 546.2 fill	Retarding Basin; Show name if known
Controlled, Unspecified	541.56 541.29 outline 546.1 fill	N/L; Show name if known
Not Controlled	541.56 541.3 outline 546.1 fill	N/L

LAKE/POND - A standing body of water with a predominantly natural shoreline surrounded by land.

Characteristics

Show the following LAKE/PONDS based on the portion of the year they contain water:

Intermittent	Contains water for only part of the year, but more than just after rainstorms and at snowmelt.
Perennial	Contains water throughout the year, except for infrequent periods of severe drought.

Show the average, normal pool, or spillway elevations of LAKE/PONDS if they are known. The average elevation is the stage of a natural perennial water body that prevails for the greater part of the year. The normal pool elevation is the stage of an artificially impounded perennial water body that prevails for the greater part of the year. The spillway elevation is the stage of an artificially impounded perennial water body, as determined by the spillway.

Show the dates of the water levels of LAKE/PONDS when they are a significant factor (such as for Great Salt Lake).

Show the water characteristic of LAKE/PONDS to be salt if it is known.

Show the names of LAKE/PONDS if they are known.

Delineation

The limit of a LAKE/POND where a STREAM/RIVER enters or leaves, is determined by the conformation of the land.

The limit of a naturally formed, perennial LAKE/POND is the position of the SHORELINE when the water is at the average water stage or, if this limit cannot be determined, the visible edge of the water body on the source imagery.

The limit of an artificially formed, perennial LAKE/POND is the position of the SHORELINE at normal pool stage or, if this limit cannot be determined, the limits defined by the spillway elevation, or the visible edge of the water body on the source imagery.

The limit of an intermittent LAKE/POND is the position of the SHORELINE when the water is at the stage that prevails when the feature is at or near capacity or, if this limit cannot be determined, the visible edge of the water body on the source imagery.

Depiction Conditions

If a LAKE/POND is in an arid area,

Or

If a LAKE/POND is ≥ 0.025" (50 feet at 1:24,000 scale) along the shortest axis and is ≥ 0.0025 square inches (10,000 square feet at 1:24,000 scale),

Then show.

Source Interpretation Guidelines

All

See INUNDATION AREA for the depiction of flood elevations.

See appendix 2-A for the location of arid regions.

Do not depict dry lakes as LAKE/PONDS. See PLAYA.

Refer to the feature definition to decide how to depict a given feature. Do not use the proper name of the feature as a guide. Many features that are known as "Reservoirs" or labeled on source maps as "Reservoirs" will be depicted as LAKE/PONDS. "Stock Tanks" or "Tanks" may be RESERVOIRS or LAKE/PONDS, depending on their form. As a general rule, if a water body has a geometric shape or other information indicates it is contained by a constructed basin, depict it as RESERVOIR. If it does not appear to be contained by a constructed basin, depict it as LAKE/POND.

The minimum size for islands within LAKE/POND is ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis.

Refer to the feature's SHORELINE, DAM/WEIR, NONEARTHEN SHORE, or SPILLWAY to determine how to depict the perimeter of the LAKE/POND.

If the imagery shows a lower than average water level, show the LAKE/POND at the normal pool or average water level by using ancillary sources or evidence of water marks on images.

If the imagery shows a lower than average water level and the average water elevation or normal pool elevation cannot be determined, show the LAKE/POND at the visible edge of the water body.

If the imagery shows a higher than average water level, show the LAKE/POND at the normal pool or average water level by using ancillary sources.

If the imagery shows a higher than average water level and the average water elevation or normal pool elevation cannot be determined, show the LAKE/POND at the visible edge of the water body.

Retain double-line streams (see SUBMERGED STREAM), stream names, PLSS, and civil boundaries within newly added manmade LAKE/PONDS. If the contours are fully revised and the newly added manmade LAKE/POND is ≥ 5.28 square inches (¾ square mile at 1:24,000 scale), retain the underwater contours. All other features should be deleted.

Graphic

If "Salt" appears in the proper name of the LAKE/POND on the previously published map, do not show the water characteristic of the LAKE/POND.

Symbolization

Characteristics	Symbol	Label*
Intermittent	541.26 outline 547.1 fill	N/L; Show name and high water elevation ("ELEVATION XXXX") if known
Perennial	541.23 outline 545.1 fill	N/L; Show name, average ("ELEVATION XXXX") normal pool ("NORMAL POOL ELEVATION XXX"), or spillway elevation ("SPILLWAY ELEVATION XXX") if known
* Show the water characteristic to be "(Salt)" if it is known and is not part of the proper name.		

LOCK CHAMBER - An enclosure on a waterway used to raise and lower vessels as they pass from one level to another.

Characteristics

Show the names of LOCK CHAMBERS if they are known.

Delineation

The limit of a LOCK CHAMBER is the gates and sidewalls that enclose the portion of a waterway to be raised or lowered.

Depiction Conditions

Show all.

Source Interpretation Guidelines

All

If a LOCK CHAMBER is on a double-line STREAM/RIVER or CANAL/DITCH, depict the ends of the chamber as GATES.

If a LOCK CHAMBER is on a double-line STREAM/RIVER or CANAL/DITCH, depict the sidewalls of the chamber as SHORELINES, NONEARTHEN SHORES, or WALLS.

Graphic

If a LOCK CHAMBER has been symbolized by a V-shaped symbol on the previously published map, depict the LOCK CHAMBER at the apex of the V-shaped symbol.

If a LOCK CHAMBER has been symbolized by a pair of V-shaped symbols and is on a double-line STREAM/RIVER or CANAL/DITCH on the previously published map, the LOCK CHAMBER is the water area between the V-shaped symbols. Depict the ends of the chamber at the apex of the V-shaped symbols.

Symbolization

Characteristics	Symbol	Label
N/A	512.36 on dam 512.38 on canal	Lock; Show name if known

MILE MARKER - A point on a feature indicating the distance, in miles, measured along the course or path of the feature, from an established origin point on the feature.

Characteristics

Show selected mileage numbers, or distances from the origin, next to MILE MARKERS.

Delineation

The limit of a MILE MARKER is the point established by the Army Corps of Engineers, the Pacific Northwest River Basin Commission, the Tennessee Valley Authority, or the Pacific Southwest Inter-Agency Committee.

Depiction Conditions

If a MILE MARKER is associated with a STREAM/RIVER, there are more than 10 miles of reference points, and the data is provided by one of the following sources:

the Army Corps of Engineers;
the Tennessee Valley Authority (Tennessee River Watershed);
the Pacific Southwest Inter-Agency Committee (Western U.S.); or,
the Pacific Northwest River Basin Commission (Western U.S.),

Then show.

Source Interpretation Guidelines

All

Show mile reference numbers next to the MILE MARKER nearest to where the STREAM/RIVER enters and exits the map and on every 5-mile point along the course of the STREAM/RIVER.

Do not adjust MILE MARKERS positioned by reference to Corps of Engineer charts or Tennessee Valley Authority maps to conform to changes in the stream channel or to measured mile intervals. Maintain the Corps of Engineer position, even if the point is no longer within the water channel.

MILE MARKERS provided by the Pacific Northwest River Basin Commission or the Pacific Southwest Inter-Agency Committee are derived from tables. Positions are keyed to prominent features along the waterway. Show the MILE MARKERS along the centerline of the watercourse.

MILE MARKER

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	512.109	N/L; Show "Mile" and number if applicable

MUD POT - A pool of mud from which gas or vapors issue.

Characteristics

Show the names of MUD POTS if they are known.

Delineation

The limit of a MUD POT is the extent of the pool of mud.

Depiction Conditions

Show all. (See the Source Interpretation Guidelines, if it is necessary to accurately represent a pattern of closely spaced MUD POTS.)

Source Interpretation Guidelines

All

The feature MUD POT is not a GNIS feature class. According to GNIS, mud pots are included in the GNIS feature class "spring". However, not all GNIS "springs" can be classified as the feature MUD POT.

If a MUD POT is within an area of closely spaced MUD POTS, first show the named MUD POTS, then those that are on the perimeter of the area, then those that are the most prominent, then finally show a representative pattern of the MUD POTS internal to the area. Show as many as can be depicted in the correct position. The symbols must not overlap.

Graphic

Mud pots have been symbolized with the spring symbol on previously published maps. Unless the name or label indicates that it is a mud pot, depict it as a SPRING/SEEP.

Depict all the features that are labeled "Paint Pot" on previously published maps as MUD POTS.

Symbolization

Characteristics	Symbol	Label
N/A	541.39	Mud Pot; Show name if known

NONEARTHEN SHORE - A structure built of stone, brick, concrete, or other building materials that borders a body of water.

Characteristics

N/A

Delineation

The limit of a NONEARTHEN SHORE is the extent of the structure.

Depiction Conditions

If a NONEARTHEN SHORE is ≥ 0.05" (100 feet at 1:24,000 scale) along the longest axis and separates land from water,
Then show.

Source Interpretation Guidelines

All

If a nonearthen shore does not meet depiction conditions, see DAM/WEIR, SHORELINE or WALL.

Do not show a NONEARTHEN SHORE, SHORELINE, or WALL if it coincides with a DAM/WEIR, DRYDOCK, PIER/BREAKWATER/JETTY, or WHARF. (See the Built-up theme for DRYDOCK, PIER/BREAKWATER/JETTY, and WHARF.)

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	512.50	N/L

PIPELINE - A closed conduit, with pumps, valves and control devices, for conveying fluids, gases, or finely divided solids.

Characteristics

Show the following PIPELINES:

Aqueduct	A structure designed to transport domestic or industrial water from a supply source to a distribution point, often by gravity.
General Case	Those that are in common use.
Penstock	Designed to convey water into the turbine of a hydroelectric generating plant.
Siphon	Designed to convey water by gravitational force over, or under, an obstruction.

Show the following PIPELINES based on their relationship to the surface:

At or Near	At or slightly above the surface.
Elevated	Supported above the earth.
Underground	Buried.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the names of PIPELINES if they are known.

Delineation

The limit of a PIPELINE that is at or near the surface or elevated is the extent of the structure.

The limit of a PIPELINE that is underground is the edge of the ground scars or linear clearings.

PIPELINE

Depiction Conditions

If a PIPELINE is an aqueduct,

Or

If a PIPELINE is aboveground, is outside of a congested area, is a trunk line, and is ≥ 0.25" (500 feet at 1:24,000 scale) from a paralleling RAILWAY, ROAD, or other linear feature,

Or

If a PIPELINE is underground, surface scars are present, is outside of a congested area, is a trunk line, and is ≥ 0.25" (500 feet at 1:24,000 scale) from a paralleling RAILWAY, ROAD, or other linear feature,

Or

If a PIPELINE is a penstock or siphon and is ≥ 0.12" (240 feet at 1:24,000 scale) along the longest axis,

Then show. (See the Transportation theme for RAILWAY and ROAD.)

Source Interpretation Guidelines

All

Do not depict artificial open waterways constructed to transport water as PIPELINES. See CANAL/DITCH.

If a PIPELINE conveys a product other than water, depict it in the Built-up theme.

If a PIPELINE is elevated over a depression by a structure built for that purpose, depict the PIPELINE as elevated.

Trunk pipelines are those that transport raw materials from central gathering points in producing areas to refineries or terminals, or those that transport products from refineries to large consumer areas.

If an underpass occurs where an AREA OF COMPLEX CHANNELS, CANAL/DITCH, FLUME, PIPELINE (siphon, aqueduct, or water), STREAM/RIVER, or WASH cross over each other at different levels, break the lower feature to indicate the vertical relationship.

A triple level stacking of features requires two underpasses; one on the middle feature, and the other on the bottom feature.

PIPELINE

Graphic

If a PIPELINE is labeled "Pipeline Bridge" on the previously published map, depict the PIPELINE as elevated.

Symbolization

Characteristics	Symbol	Label
Aqueduct, At or Near	541.31	AQUEDUCT; Show name if known
Aqueduct, Elevated	541.36	ELEVATED (if ≥ 0.5" long)
Aqueduct, Underground	541.34	AQUEDUCT; Show name if known
Aqueduct, Unspecified	541.34	AQUEDUCT; Show name if known
General Case, At or Near	541.31	ABOVEGROUND PIPELINE; Show name if known
General Case, Elevated	541.36	ELEVATED (if ≥ 0.5" long)
General Case, Underground	541.34	PIPELINE; Show name if known
General Case, Unspecified	541.34	PIPELINE; Show name if known
Penstock, At or Near	541.31	PENSTOCK; Show name if known
Penstock, Underground	541.34	PENSTOCK; Show name if known
Siphon	541.41	SIPHON; Show name if known

PLAYA - The flat area at the lowest part of an undrained desert basin, generally devoid of vegetation.

Characteristics

Show the following PLAYAS based on the material they are composed of:

Mud	A slimy, sticky, or slippery mixture of water and silt or clay-sized earth material, with consistency ranging from semi-fluid to soft and plastic.
Salt	A mineral in the chemical class of halides, such as common table salt, or one composed of alkali salts, such as soda.
Sand	Unconsolidated rock particles that are larger than silt but smaller than gravel.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the names of PLAYAS if they are known.

Delineation

The limit of a PLAYA is the extent of the lowest part of the basin.

Depiction Conditions

If a PLAYA is ≥ 0.1" (200 feet at 1:24,000 scale) along the shortest axis,
Then show.

Source Interpretation Guidelines

All

Do not depict a place composed of bare rock, sand, silt, gravel, or other earthen material with little or no vegetation that is not the flat area of an undrained desert as a PLAYA. See BARREN LAND (Nonvegetative Surface theme).

If the PLAYA is an alkali flat, depict the material it is composed of as salt.

PLAYA

The edge of a PLAYA may be indicated by vegetation, discoloration, or sediment line.

Graphic

Depict all the lakes that are labeled "Dry" or "Alkali" on previously published maps as PLAYAS.

Symbolization

Characteristics	Symbol	Label
Mud	534.6 fill 541.25 outline	Mud Flat; Show name if known
Salt	541.28	Salt Flat; Show name if known
Sand	534.1 fill 541.25 outline	N/L; Show name if known
Unspecified	534.5 fill 541.25 outline	N/L; Show name if known

RAPIDS - An area of swift current in a stream or river, characterized by standing waves or by boulders and rocks.

Characteristics

Show the names of RAPIDS if they are known.

Delineation

The limit of a RAPIDS is the extent of the turbulent water.

Depiction Conditions)

If a RAPIDS is named,

Or

If a RAPIDS is ≥ 0.01" (20 feet at 1:24,000 scale) as measured perpendicular to stream flow,

Then show.

Source Interpretation Guidelines

All

If the distance between two RAPIDS is ≥ 0.05" (100 feet at 1:24,000 scale), show them as separate RAPIDS.

If the distance between two RAPIDS is < 0.05" (100 feet at 1:24,000 scale), show them as one RAPIDS.

Graphic

Names that contain the word "Falls" may indicate the feature RAPIDS. Careful identification of the symbol is required to accurately determine whether the feature should be depicted as a RAPIDS or a WATERFALL.

If a RAPIDS is symbolized by a hachure on a the previously published map, the limit of the RAPIDS is the extent of the hachure.

RAPIDS

Symbolization

Characteristics	Symbol	Label
N/A	541.54 single-line stream	Rapids; Show name if known
N/A	541B.1 double-line stream	N/L; Show name if known

REEF - A chain of rocks or coral at or near the surface of the water.

Characteristics

Show the following REEFS based on the material they are composed of:

Coral	Consolidated skeletal deposits produced by anthozoan polyps.
Rock	Consolidated, naturally formed mass of mineral matter.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the names of REEFS if they are known.

Delineation

The limit of a REEF is the edge of the rock or coral.

Depiction Conditions

If a REEF is on an existing National Ocean Service chart,
Then show.

Source Interpretation Guidelines

All

Areas within or next to a REEF may be land areas, areas that uncover, or water areas. The characteristic of areas that uncover (such as boulders, coral, gravel, mud, rock, sand, shell, and unspecified earth or rock composition) are associated with FORESHORE. If the area is water, see SEA/OCEAN.

Depict numerous closely spaced rocks that form chains along the coastline or close to the shore as REEFS.

Graphic

The areas within or next to REEFS that uncover are symbolized on previously published maps with the brown stipple pattern (USGS 17) on topographic-bathymetric editions and with the black stipple pattern (USGS 17) on topographic editions. For depiction of these areas, see FORESHORE.

REEF

Depict REEFS along lines that connect the high points of the closed, outer portion of the reef symbols on previously published maps.

Symbolization

Characteristics	Symbol	Label
Coral	512.135 outline 517.2 fill	Coral; Show name if known
Rock	512.135 outline 517.2 fill	N/L; Show name if known
Unspecified	512.135 outline 517.2 fill	N/L; Show name if known

RESERVOIR - A constructed basin formed to contain water or other liquids.

Characteristics

Show the following RESERVOIRS:

Aquaculture	For rearing of finfish, shellfish, or aquatic plants.
Decorative Pool	For improving the aesthetic appearance of the landscape.
Evaporator	For the natural evaporation of water Used for the harvesting of mineral concentrates.
Stock Tank	Water tank designed to serve large animals.
Swimming Pool	For swimming.
Tailings Pond	Contains ore and waste materials, in aqueous form, discarded in ore treatment processes.
Treatment	For treatment.
Unspecified	Does not have to be known or specified for the feature to be shown.
Water Storage	For long- or short-term storage of water.

Show the following treatment RESERVOIRS:

Cooling Pond	For cooling industrial waste water.
Filtration Pond	For removing foreign elements from water.
Settling Pond	For precipitating solid matter from a liquid.
Sewage Treatment Pond	For the treatment of domestic water-born waste.

Show the following water storage RESERVOIRS based on their cover status:

Covered	With protective cover.

Uncovered	Without protective cover.

Show the following unspecified uncovered water storage RESERVOIRS based on the construction material predominantly used:

Earthen	Constructed of earth or a combination of earth and rock.
Nonearthen	Constructed of concrete, brick, or stone.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the following uncovered earthen RESERVOIRS based on the portion of the year they contain water:

Intermittent	Contains water for only part of the year, but more than just after rainstorms and at snowmelt.
Perennial	Contains water throughout the year, except for infrequent periods of severe drought.

Show the elevations and names of RESERVOIRS if they are known.

Delineation

The limit of a RESERVOIR is the rim of the constructed basin.

Depiction Conditions

If a RESERVOIR is a sewage treatment pond or a filtration pond,
Or
If a RESERVOIR is for water storage and is in an arid region,
Or
If a RESERVOIR is a stock tank and is in an arid region,
Or
If a RESERVOIR is not a sewage treatment pond or filtration pond and is ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis,
Then show.

Source Interpretation Guidelines

All

Depict added RESERVOIRS as unspecified reservoirs if there is no other

information.

If a RESERVOIR is a covered water storage reservoir, decorative pool, or swimming pool, show the construction material as nonearthen.

If a RESERVOIR is an aquaculture reservoir, evaporator, or treatment reservoir, show the construction material as unspecified.

Refer to the feature definition to decide how to depict a given feature. Do not use the proper name of the feature as a guide. Many features that are known as "Reservoirs" or labeled on source material as "Reservoirs" will be depicted as LAKE/PONDS. "Stock Tanks" or "Tanks" may be RESERVOIRS or LAKE/PONDS, depending on their form. As a general rule, if a water body has a geometric shape or other information indicates it is contained by a constructed basin, depict it as RESERVOIR. If it does not appear to be contained by a constructed basin, depict it as LAKE/POND.

Aquaculture reservoirs include minnow ponds, fish hatcheries, rearing ponds, fish ponds, or other similar facilities.

Do not depict fish ponds in natural water bodies as RESERVOIRS. See ESTUARY, LAKE/POND or SEA/OCEAN.

If a RESERVOIR is divided by wire mesh, screens, or grates, do not depict the resulting divisions as separate RESERVOIRS. Show them as one RESERVOIR.

If a RESERVOIR is < 0.03" (60 feet at 1:24,000 scale) along the shortest axis and is within 0.02" (40 feet at 1:24,000 scale) of another RESERVOIR with the same characteristics, show them as one RESERVOIR when the combined areas are ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis.

If two RESERVOIRS that are ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis are < 0.005" (10 feet at 1:24,000 scale) apart and have the same characteristics, show them as two RESERVOIRS with a shared perimeter line.

If two RESERVOIRS that are ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis are < 0.005" (10 feet at 1:24,000 scale) apart and do not have the same characteristics, displace the perimeter lines equally and show them

so that the perimeter lines are 0.005" (10 feet at 1:24,000 scale) apart.

If a RESERVOIR is an oil sump or sludge pit, depict it in the Built-Up theme.

Graphic

If a RESERVOIR is symbolized with a black outline on the previously published map, assume the construction material to be nonearthen.

If a RESERVOIR is symbolized with a blue or dashed brown outline (tailings pond) on the previously published map, assume the construction material to be earthen.

Symbolization

Characteristics	Symbol	Label
Aquaculture	512.61 outline 545.4 fill	Aquaculture; Show name and elevation if known
Decorative Pool	512.61 outline 545.4 fill	N/L; Show name and elevation if known
Evaporator	541.27	Evaporator; Show name and elevation if known
Stock Tank	541.39	Stock Tank; Show name and elevation if known
Swimming Pool	512.60 outline 545.4 fill	N/L; Show name and elevation if known
Tailings Pond	532.22 outline 538.1 fill	Tailings Pond; Show name and elevation if known
Treatment, Cooling Pond	512.59 outline 545.4 fill	Cooling Pond; Show name and elevation if known
Treatment, Filtration Pond	512.59 outline 545.4 fill	Filtration Pond; Show name and elevation if known
Treatment, Settling Pond	512.59 outline 545.4 fill	Settling Pond; Show name and elevation if known
Treatment, Sewage Treatment Pond	512.59 outline 545.4 fill	Sewage Treatment Pond; Show name and elevation if known

RESERVOIR

Characteristics	Symbol	Label
Unspecified, Earthen	541.24 outline 545.4 fill	N/L; Show name and elevation if known
Unspecified, Nonearthen	512.61 outline 545.4 fill	N/L; Show name and elevation if known
Water Storage, Covered	512.62 outline & hatch 545.6 fill	Reservoir; Show name and elevation if known
Water Storage, Uncovered, Earthen, Intermittent	541.27 outline 547.1 fill	N/L; Show name and elevation if known
Water Storage, Uncovered, Earthen/ Perennial	541.24 outline 545.1 fill	N/L; Show name and elevation if known
Water Storage, Uncovered, Nonearthen)	512.61 outline 545.4 fill	N/L; Show name and elevation if known

ROCK - A concreted mass of stony material.

Characteristics

Show the names of ROCKS if they are known.

Delineation

The limit of a ROCK is the edge of the mass exposed at mean lower low water.

Depiction Conditions

If a ROCK is exposed at mean lower low water, is < 0.03" (60 feet at 1:24,000 scale) in the longest axis, and is on an existing National Ocean Service chart, Then show.

Source Interpretation Guidelines

All

Do not depict exposed rocks that are ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis as ROCKS. See FORESHORE, ISLAND (Named Landforms theme), and REEF.

Groups of rocks are sometimes surrounded by limiting danger lines, as delineated by the National Ocean Service. Depict individual rocks as ROCKS. Depict the extent of the limiting danger lines as HAZARD ZONES.

Depict numerous closely spaced rocks that form chains along the coastline or close to the shore as REEFS.

Graphic

Underwater rocks that are on maps produced before February 1, 1961 do not meet current depiction conditions and should not be shown. For information on other features on previously published maps that should not be shown, see HAZARD ZONE.

ROCK

Symbolization

Characteristics	Symbol	Label
N/A	512.136 lone, danger to navigation 512.138 lone 512.138 group	N/L; Show name if known

SEA/OCEAN - The great body of salt water that covers much of the earth.

Characteristics

Show the names of SEA/OCEANS.

Delineation

The limit of a SEA/OCEAN is the approximate line of mean high water.

In areas where rivers enter a SEA/OCEAN, the limit is where the conformation of the land and water make the division obvious or, if the land and water do not suggest an obvious limit, the limit is where the river reaches a width of 1 nautical mile (6,076.1 feet, or 1.15 statute miles) with no further constrictions.

In an area where an ESTUARY enters a SEA/OCEAN, the limit is where the ESTUARY ends.

Depiction Conditions

Show all.

Source Interpretation Guidelines

All

Depict reef pools that are completely surrounded by coral reefs as SEA/OCEANS.

Refer to the feature's NONEARTHEN SHORE, SHORELINE, or WALL to determine how to depict the perimeter of the SEA/OCEAN. Structures in the Built-up theme, such as a DRYDOCK, PIER/BREAKWATER/JETTY or WHARF, may also define the perimeter of a SEA/OCEAN.

The minimum size for islands within a SEA/OCEAN is ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis.

Graphic

If a reef symbol encircles an area shown with the blue water symbol on the previously published map and the reef symbol points inward, depict the reef pool area as a SEA/OCEAN.

SEA/OCEAN

Symbolization

Characteristics	Symbol	Label
N/A	545.1 fill	N/L; Show name

SHORELINE - A naturally occurring line of contact between a body of water and the land.

Characteristics

Show the following SHORELINES based on the portion of the year the water body contains water:

Intermittent	Contains water for only part of the year, but more than just after rainstorms and at snowmelt.
Perennial	Contains water throughout the year, except for infrequent periods of severe drought.

Show the following perennial SHORELINES based on their positional accuracy:

Definite	Conditions permit the feature to be confidently positioned. Horizontal data are confidently positioned within 0.02" (40 feet at 1:24,000 scale), at map scale, of true ground position. Vertical data are confidently positioned within one-half contour interval of the true ground position.
Indefinite	Conditions prevent the feature from being confidently positioned. Horizontal data cannot be confidently positioned within 0.02" (40 feet at 1:24,000 scale), at map scale, of the true ground position. Vertical data cannot be confidently positioned within one-half contour interval of the true ground position.

Delineation

The limit of a definite SHORELINE is the line of contact between the water and land.

The limit of an indefinite SHORELINE in tidal areas is the seaward edge of the marine vegetation where that limit would reasonably appear as the SHORELINE to the mariner.

The limit of an indefinite SHORELINE in inland areas is the estimated line of contact between the water and land.

SHORELINE

Depiction Conditions

If a SHORELINE is associated with a CANAL/DITCH, ESTUARY, LAKE/POND, SEA/OCEAN, or double-line STREAM/RIVER,
Then show.

Source Interpretation Guidelines

All

Do not show a NONEARTHEN SHORE, SHORELINE, or WALL if it coincides with a DAM/WEIR, DRYDOCK, PIER/BREAKWATER/JETTY, or WHARF. (See the Built-up theme for DRYDOCK, PIER/BREAKWATER/JETTY, and WHARF.)

Show intermittent SHORELINES as having definite positional accuracy.

Graphic

If there is no evidence that a purple photorevised outline on the previously published map is a nonearthen DAM/WEIR, DRYDOCK, NONEARTHEN SHORE, PIER/BREAKWATER/JETTY, SPILLWAY, or WHARF, depict the outline as a SHORELINE. (See the Built-up theme for DRYDOCK, PIER/BREAKWATER/JETTY, and WHARF.)

If a SHORELINE is symbolized on the previously published map as apparent, indefinite, or unsurveyed, show the positional accuracy of the SHORELINE as indefinite.

Symbolization

Characteristics	Symbol	Label
Intermittent, Definite	541.26	N/L
Perennial, Definite	541.1 541.23 lake	N/L
Perennial, Indefinite	541.3	N/L

SINK/RISE - The place at which a stream disappears underground or reappears at the surface in a karst area.

Characteristics

Show the names of SINK/RISES if they are known.

Delineation

The limit of a SINK/RISE is the extent of the hole where the stream disappears or reappears.

Depiction Conditions

If a SINK/RISE is on STREAM/RIVER,
Then show.

Source Interpretation Guidelines

All

Do not depict indeterminate points where streams dissipate into the ground as SINK/RISES. These points are indicated by the end of the feature STREAM/RIVER.

Do not depict the points where streams enter into manmade features as SINK/RISES. These points are indicated by the end of the feature STREAM/RIVER.

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	541.12	N/L; Show name if known

SPILLWAY - A constructed passage for surplus water to run over or around a dam.

Characteristics

Show the elevations of SPILLWAYS if they are known.

Delineation

The limit of a SPILLWAY is the extent of the structure over which water flows.

Depiction Conditions

If a SPILLWAY is constructed of masonry and is ≥ 0.02" (40 feet at 1:24,000 scale) along the shortest axis,
Then show.

Source Interpretation Guidelines

All

Do not depict tunnels or closed-conduit spillways, including glory-holes and risers, as SPILLWAYS. See WATER INTAKE/OUTFLOW or PIPELINE.

Do not depict overflow spillways as SPILLWAYS. See DAM/WEIR.

Do not depict spillway elevations as SPOT ELEVATIONS (Hypsography theme). See INUNDATION AREA, LAKE/POND, or RESERVOIR.

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	512.41	Spillway; Show elevation if known

SPRING/SEEP - A place where water issues from the ground naturally.

Characteristics

Show the following SPRING/SEEPS based on the characteristic of the water:

Alkaline	Water shows evidence of alkali salts.
Hot	Water temperature is higher than that of the human body (98.6 degrees F).
Sulphur	Water shows evidence of sulphur.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the names of SPRING/SEEPS if they are known.

Delineation

The limit of a SPRING/SEEP is the extent of the place where water issues from the ground.

Depiction Conditions

If a SPRING/SEEP is in an arid region,
Or
If a SPRING/SEEP is not in an arid region and is large or well known,
Then show. (See the Source Interpretation Guidelines, if it is necessary to accurately represent the pattern of closely spaced SPRING/SEEPS.)

Source Interpretation Guidelines

All

See appendix 2-A for the location of arid regions.

If a SPRING/SEEP is within an area of closely spaced SPRING/SEEPS, first show the named SPRING/SEEPS, then those that are on the perimeter of the area, then those that are the most prominent, then finally show a representative pattern of the SPRING/SEEPS internal to the area. Show as many as can be depicted in the correct position. The symbols must not overlap.

Graphic

Depict elevations on SPRING/SEEPS that are on previously published maps as

SPOT ELEVATIONS (Hypsography theme).

Do not depict springs that are labeled "Dry" on previously published maps as SPRING/SEEPS. See LOCALE (Built-Up theme).

Depict all the SPRING/SEEPS that are labeled "Salt" on previously published maps as alkaline SPRING/SEEPS.

If "Alkali", "Hot", or "Sulphur" appear in the proper name of the SPRING/SEEP on the previously published map, do not repeat the water characteristic of the SPRING/SEEP in the name.

Symbolization

Characteristics	Symbol	Label
Alkaline	541.40	Spring (Alkaline); Show name if known
Hot	541.40	Spring (Hot); Show name if known
Sulphur	541.40	Spring (Sulphur); Show name if known
Unspecified	541.40	Spring

STREAM/RIVER - A body of flowing water.

Characteristics

Show the following STREAM/RIVERS based on the portion of the year they contain water:

Intermittent	Contains water for only part of the year, but more than just after rainstorms and at snowmelt.
Perennial	Contains water throughout the year, except for infrequent periods of severe drought.

Show the following STREAM/RIVERS based on their positional accuracy:

Definite	Conditions permit the feature to be confidently positioned. Horizontal data are confidently positioned within 0.02" (40 feet at 1:24,000 scale), at map scale, of true ground position. Vertical data are confidently positioned within one-half contour interval of the true ground position.
Indefinite	Conditions prevent the feature from being confidently positioned. Horizontal data cannot be confidently positioned within 0.02" (40 feet at 1:24,000 scale), at map scale, of the true ground position. Vertical data cannot be confidently positioned within one-half contour interval of the true ground position.

Show the normal pool elevations of STREAM/RIVERS controlled for navigation by DAM/WEIRS or lock GATES if they are known and the STREAM/RIVER is not coincident with a LOCK CHAMBER. The normal pool elevation is the stage of an artificially impounded perennial water body that prevails for the greater part of the year.

Show the names of STREAM/RIVERS if they are known.

Delineation

The limit of a perennial STREAM/RIVER is the position of the shoreline when the water is at the stage that prevails for the greater part of the year.

STREAM/RIVER

The limit of an intermittent STREAM/RIVER is the position of the shoreline when the water is at the stage that prevails when the feature is at or near capacity.

The upper limit of a STREAM/RIVER is where the feature first becomes evident as a channel.

The limit of a STREAM/RIVER where it enters or leaves a LAKE/POND is determined by the conformation of the land.

The limit of a STREAM/RIVER where it enters a SEA/OCEAN is where the conformation of the land and water make the division obvious or if the land and water do not suggest an obvious limit, the limit is where the stream/river reaches a width of 1 nautical mile (6,076.1 feet or 1.15 statute miles) with no further constrictions.

The limit of a STREAM/RIVER where it enters a ESTUARY is where the fresh and salt water mix, as defined by the National Wetlands Inventory.

Depiction Conditions

If a STREAM/RIVER flows from a LAKE/POND or SPRING/SEEP,
Or
If a STREAM/RIVER is ≥ 1.25" (2,500 feet at 1:24,000 scale) along the longest axis,
Or
If a STREAM/RIVER is perennial and is in an arid region,
Then show.

Source Interpretation Guidelines

All

See appendix 2-A for the location of arid regions.

In arid areas it is difficult to distinguish between narrow intermittent and ephemeral drains, so depict all intermittent and ephemeral drains < 0.025" (50 feet at 1:24,000 scale) wide as single-line intermittent STREAM/RIVERS. Thin the drainage in arid areas to appropriately represent the wetness of the area.

If a STREAM/RIVER intersects the quadrangle boundary and an overedge source is not available to aid in determining length, show the STREAM/RIVER,

regardless of its length.

If a portion of a STREAM/RIVER flows through a SWAMP/MARSH, show it as perennial or intermittent based on the provided definitions.

Do not depict dry washes, arroyos, dry gulches, and ephemeral drains ≥ 0.025" (50 feet at 1:24,000 scale) wide as STREAM/RIVERS. See WASH.

The minimum size for islands within a STREAM/RIVER is ≥ 0.03" (60 feet at 1:24,000 scale) along the shortest axis.

If a stream flows in a braided pattern, see AREA OF COMPLEX CHANNELS.

If the headwaters of a STREAM/RIVER are closer than 0.5" (1,000 feet at 1:24,000 scale) from a saddle or divide, show the STREAM/RIVER starting 0.5" (1,000 feet at 1:24,000 scale) from the saddle or divide.

Refer to the feature's SHORELINE or NONEARTHEN SHORE to determine how to depict the perimeter of the STREAM/RIVER.

If the imagery shows a lower than average water level, show the STREAM/RIVER at the normal pool or average water level by using ancillary sources or evidence of water marks on the image.

If the imagery shows a lower than average water level and the average water elevation or normal pool elevation cannot be determined, show the STREAM/RIVER at the visible edge of the water body.

If the imagery shows a higher than average water level, show the STREAM/RIVER at the normal pool or average water level by using ancillary sources.

If the imagery shows a higher than average water level and the average water elevation or normal pool elevation cannot be determined, show the STREAM/RIVER at the visible edge of the water body.

If an underpass occurs where an AREA OF COMPLEX CHANNELS, CANAL/DITCH, FLUME, PIPELINE (siphon, aqueduct, or water), STREAM/RIVER, or WASH cross over each other at different levels, break the lower feature to indicate the vertical relationship.

A triple level stacking of features requires two underpasses; one on the middle feature, and the other on the bottom feature.

Do not show an underpass between a RAILWAY or ROAD and a hydrographic feature, even if there is no separating structure. A RAILWAY or ROAD is always assumed to be above the water body, never below it. (See the Transportation theme for RAILWAY and ROAD.)

Graphic

If a wash is symbolized with a single brown line or with a brown USGS 17 pattern on the previously published map that is too small to meet depiction conditions for a WASH or BARREN LAND (Nonvegetative Surface Cover theme), depict it as an intermittent STREAM/RIVER when the depiction conditions are met.

Symbolization

Characteristics	Symbol	Label
Intermittent, Definite	541.7 single-line 541.8 double-line	N/L; Show name if known
Intermittent, Indefinite	541.11 single-line	N/L; Show name if known
Perennial, Definite	541.4 single-line 541.5 double-line	N/L; Show name and "NORMAL POOL ELEVATION XXXX" if applicable and known
Perennial, Indefinite	541.10 single-line	N/L; Show name if known

SUBMERGED STREAM - An old river course inundated by an impounded water body.

Characteristics

Show the names of SUBMERGED STREAMS if they are known.

Delineation

The limit of a SUBMERGED STREAM is the extent of the banks as previously mapped.

Depiction Conditions

If a SUBMERGED STREAM is published as a double-line stream on previous mapping at the same or larger scale and the stream has since been submerged by an impounded LAKE/POND or STREAM/RIVER,
Then show.

Source Interpretation Guidelines

All

N/A

Graphic

If the dashed symbol ends within 0.01" (20 feet at 1:24,000 scale) of the limits of the impounded water area, delineate the area using the limits of the impounded water area.

Symbolization

Characteristics	Symbol	Label
N/A	541.15	N/L; Show name if known

SWAMP/MARSH - A noncultivated, vegetated area that is inundated or saturated for a significant part of the year. The vegetation is adapted for life in saturated soil conditions.

Characteristics

Show the names of SWAMP/MARSHES if they are known.

Delineation

The limit of a SWAMP/MARSH is the extent of the wet, spongy area.

Depiction Conditions

If a SWAMP/MARSH is ≥ 0.1" (200 feet at 1:24,000 scale) along the shortest axis, Then show.

Source Interpretation Guidelines

All

Break SWAMP/MARSHES for DISPOSAL SITES, DISTURBED SURFACES, MINES, RAILWAYS, RESERVOIRS, class 1, 2, and 3 ROADS, and RUNWAY/APRON/TAXIWAYS. (See the Built-up theme for DISPOSAL SITES, DISTURBED SURFACES, MINES, and RESERVOIRS. See the Transportation theme for RAILWAYS, ROADS, and RUNWAY/APRON/TAXIWAYS.)

Break SWAMP/MARSHES for clearings that are ≥ 0.05" (100 feet at 1:24,000 scale) along the shortest axis, or for linear clearings that are ≥ 0.025" (50 feet at 1:24,000 scale) along the shortest axis.

If a SWAMP/MARSH is coincident with an AREA OF COMPLEX CHANNELS, ESTUARY, LAKE/POND, SEA/OCEAN, STREAM/RIVER, or TREES (Vegetative Surface Cover theme), show the SWAMP/MARSH and the other feature.

Do not depict mangrove areas as SWAMP/MARSHES. See TREES (Vegetative Surface Cover theme).

Do not depict cranberry bogs and other cultivated cropland as SWAMP/MARSHES. See CULTIVATED CROPLAND (Vegetative Surface Cover theme).

Do not show rice fields.

Graphic

Do not show rice fields that are on previously published maps.

SWAMP/MARSH

Symbolization

Characteristics	Symbol	Label
N/A	543.1 543.2 submerged 543.3 wooded 543.4 submerged, wooded	N/L; Show name if known

TUNNEL - An underground or underwater passage.

Characteristics

Show the names of TUNNELS if they are known.

Delineation

The limit of a TUNNEL is the walls of and openings to the passage.

Depiction Conditions

If a TUNNEL provides passage for a hydrographic feature,

Then show.

Source Interpretation Guidelines

All

If a TUNNEL provides passage for a RAILWAY or ROAD, depict it in the Transportation theme. (See the Transportation theme for RAILWAY and ROAD.)

Graphic

N/A

Symbolization

Characteristics	Symbol	Label
N/A	541.35	N/L; Show name if known

WALL - An upright structure of masonry, wood, plaster, or other building material serving to enclose, divide, or protect an area.

Characteristics

Show the following WALLS:

General Case	Those that are in common use.
Sea	A wall set back from the shoreline for the purpose of holding back the sea.

Delineation

The limit of a WALL is the edge of the structure.

Depiction Conditions

If a WALL is a seawall,
Or
If a WALL is associated with an areal LOCK CHAMBER and WALL has water on both sides,
Then show.

Source Interpretation Guidelines

All

If a WALL is not associated with a hydrographic feature, depict it in the Built-Up theme.

Do not show a NONEARTHEN SHORE, SHORELINE, or WALL if it coincides with a DAM/WEIR, DRYDOCK, PIER/BREAKWATER/JETTY, or WHARF. (See the Built-up theme for DRYDOCK, PIER/BREAKWATER/JETTY, and WHARF.)

Do not depict the edges of LOCK CHAMBERS separating water from land as WALLS. See NONEARTHEN SHORE or SHORELINE.

Graphic

N/A

WALL

Symbolization

Characteristics	Symbol	Label
General Case	512.36 lock on dam 512.63	N/L
Sea	512.48	WALL (if ≥ 1.0" long)

WASH - The usually dry portion of a stream bed that contains water only during or after a local rainstorm or heavy snowmelt.

Characteristics

Show the names of WASHES if they are known.

Delineation

The limit of a WASH is the cut banks of the dry channel.

Depiction Conditions

If a WASH is ≥ 0.025" (50 feet at 1:24,000 scale) along the shortest axis, is ≥ 1.25" (2,500 feet at 1:24,000 scale) along the longest axis, is greater than or equal to two times the width of any STREAM/RIVER within the WASH, and is in an arid region,
Then show.

Source Interpretation Guidelines

All

See appendix 2-A for the location of arid regions.

Do not depict the stream bed portions of channels that contains water more than just during or after local rainstorms or heavy snowmelt as WASHES. See STREAM/RIVER.

If a WASH contains a STREAM/RIVER, show the WASH and the STREAM/RIVER.

Sand areas that do not meet the definition for WASH and which are associated with STREAM/RIVER may be considered for showing as just BARREN LAND (Nonvegetative Surface Cover theme).

In arid areas it is difficult to distinguish between narrow intermittent and ephemeral drains, so no distinction is made. Show all intermittent drainages < 0.025" (50 feet at 1:24,000 scale) as single-line intermittent STREAM/RIVERS. Thin the drainage in arid areas to appropriately represent the wetness of the area.

If an underpass occurs where an AREA OF COMPLEX CHANNELS, CANAL/DITCH, FLUME, PIPELINE (siphon, aqueduct, or water), STREAM/RIVER, or WASH cross over each other at different levels, break the lower feature to indicate the vertical

relationship.

A triple level stacking of features requires two underpasses; one on the middle feature, and the other on the bottom feature.

Do not show an underpass between a RAILWAY or ROAD and a hydrographic feature, even if there is no separating structure. A RAILWAY or ROAD is always assumed to be above the water body, never below it. (See the Transportation theme for RAILWAY and ROAD.)

Graphic

If a wash is symbolized with a single brown line or with a brown USGS 17 pattern on the previously published map that is too small to meet depiction conditions for a WASH or BARREN LAND (Nonvegetative Surface Cover theme), depict it as an intermittent STREAM/RIVER when the depiction conditions are met.

Symbolization

Characteristics	Symbol	Label
N/A	534.3	N/L; Show name if known

WATER INTAKE/OUTFLOW - A structure through which water enters or exits a conduit.

Characteristics

Show the following WATER INTAKE/OUTFLOWS:

Intake	For controlling the level of a water body or for intaking water for hydroelectric power, irrigation, or water supply.
Outflow	For releasing water from a structure.

Delineation

The limit of a WATER INTAKE/OUTFLOW is the extent of the structure.

Depiction Conditions

If a WATER INTAKE/OUTFLOW is an intake structure and is exposed at the water surface,

Or

If a WATER INTAKE/OUTFLOW is an outflow structure and is ≥ 0.04" (80 feet at 1:24,000 scale) along the shortest axis,

Then show.

Source Interpretation Guidelines

All

Depict a structure that provides access to a WATER INTAKE/OUTFLOW as a BRIDGE, unless there is supporting evidence that it is a PIER/BREAKWATER/JETTY (Built-up theme).

Do not depict water intake towers as WATER INTAKE/OUTFLOWS. See TOWER (Built-up theme).

Do not depict elevations on WATER INTAKE/OUTFLOWS as SPOT ELEVATIONS (Hypsography theme). See INUNDATION AREA, LAKE/POND, or RESERVOIR.

Graphic

Depict all located object symbols labeled "Riser" on previously published maps as intake WATER INTAKE/OUTFLOWS. If a riser has been shown as a pipeline, do not depict it as a WATER INTAKE/OUTFLOW. See PIPELINE.

Depict all the features that are labeled "Water Intake", "Waterworks Intake",

or "Intake" on previously published maps as intake WATER INTAKE/OUTFLOWS.

Symbolization

Characteristics	Symbol*	Label
Intake	512.72	Intake
Outflow	N/A	Outflow
* Show the perimeters of intakes and outflows with black 0.004" lines when they are ≥ 0.04" (80 feet at 1:24,000 scale) in the shortest dimension.		

WATERFALL - A vertical or near vertical descent of water over a step or ledge in the bed of a river.

Characteristics

Show the names of WATERFALLS if they are known.

Delineation

The limit of a WATERFALL is the extent of the vertical or nearly vertical descent and the SHORELINES.

Depiction Conditions

If a WATERFALL is named,

Or

If a WATERFALL is on a perennial STREAM/RIVER, has a vertical drop ≥ 10 feet, and extends from SHORELINE to SHORELINE,

Then show. (See the Source Interpretation Guidelines, if it is necessary to accurately represent a pattern of closely spaced WATERFALLS.)

Source Interpretation Guidelines

All

If a WATERFALL is within an area of closely spaced WATERFALLS, first show the upstream WATERFALL, then show as many others as can be depicted in the correct position. The symbols must not overlap.

Graphic

Names that contain the word "Falls" may indicate the feature RAPIDS. Careful identification of the symbol is required to accurately determine whether the feature should be depicted as a RAPIDS or WATERFALL.

If WATERFALL is on a single-line STREAM/RIVER on the previously published map, depict the WATERFALL at the intersection of the tick and the STREAM/RIVER.

If a WATERFALL is shown by a tick on a double-line STREAM/RIVER on the previously published map, depict the WATERFALL by connecting the intersection of the tick and the SHORELINES.

If a WATERFALL is shown by hachure on a double-line STREAM/RIVER on the previously published map, depict the WATERFALL by connecting the upstream

limit of the hachure and the SHORELINES.

Depict elevations at the top and/or bottom of WATERFALLS on previously published maps as SPOT ELEVATIONS (Hypsography theme).

Symbolization

Characteristics	Symbol	Label
N/A	541.51 double-line 541.52 single-line	Falls; Show name if known

WELL - A pit or hole dug or bored into the earth for the extraction of oil, water, other fluids, or gases.

Characteristics

Show the following WELLS based on the product involved:

Heat	Produces internal heat from the earth.
Water	Produces water from the earth.

Show the following water WELLS based on the characteristic of the water:

Alkaline	Water shows evidence of alkali salts.
Hot	Water temperature is higher than that of the human body (98.6 degrees F).
Sulphur	Water shows evidence of sulphur.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the following water WELLS with unspecified water characteristics based on their flow status:

Flowing	Water flows to the surface naturally. Show the water characteristic of flowing WELLS as unspecified.
Unspecified	Does not have to be known or specified for the feature to be shown.

Show the names of WELLS if they are known.

Delineation

The limit of a WELL is the extent of the hole in the ground.

Depiction Conditions

If a WELL is a water well and is a landmark,

Or

If a WELL is a water well, is in an arid area, and is $\geq$ 0.25" (500 feet at 1:24,000 scale) from a building,

Or
If a WELL is a water well, is in an arid agricultural area, and is used for irrigation,
Or
If a WELL is a heat well,
Then show. (See the Source Interpretation Guidelines, if it is necessary to accurately represent the pattern of closely spaced WELLS.)

Source Interpretation Guidelines

All

See appendix 2-A for the location of arid regions.

If a WELL is within an area of closely spaced WELLS, first show the named WELLS, then those that are on the perimeter of the area, then those that are the most prominent, then finally show a representative pattern of the WELLS internal to the area. Show as many as can be depicted in the correct position. The symbols must not overlap.

Irrigation wells are often enclosed in a structure and are usually found in wide areas along or at the end of field roads. They may be evidenced by a wide wet collection area leading into a linear channel.

If a WELL produces a product other than heat or water, depict it in the Built-up theme.

Do not show dry water wells.

If a WELL is associated with a WINDMILL (Built-up theme), show the WINDMILL but do not show the WELL.

Graphic

Depict all the WELLS that are labeled "Geothermal" or "Steam" on previously published maps as heat WELLS.

Depict all the water WELLS that are labeled "Artesian" on previously published maps as flowing WELLS.

Depict all the water WELLS that are labeled "Salt" on previously published maps as alkaline WELLS.

WELL

If "Alkaline", "Hot", or "Sulphur" appears in the proper name of the WELL on the previously published map, do not repeat the water characteristic of the WELL in the name.

Symbolization

Characteristics	Symbol	Label
Heat	541.39	Geothermal Well; Show name if known
Water, Alkaline	541.39	Well (Alkaline); Show name if known
Water, Hot	541.39	Well (Hot); Show name if known
Water, Sulphur	541.39	Well (Sulphur); Show name if known
Water, Unspecified, Flowing	541.39	Flowing Well; Show name if known
Water, Unspecified, Unspecified	541.39	Well; Show name if known

WRECK - The hulk or the ruins of a disabled vessel which is attached to or foul of the bottom or cast up on the shore.

Characteristics

Show the following WRECKS based on their relationship to the water surface:

Abovewater — Exposed at mean lower low water.

Show the following WRECKS based on the portion that is exposed at mean lower low water:

Hull and/or Superstructure

Mast and/or Funnel

Show the names of WRECKS if they are known.

Delineation

The limit of a WRECK is the extent of the hull or other remaining portion of the disabled vessel.

Depiction Conditions

If a WRECK is exposed at mean lower low water and is on an existing National Ocean Service chart,
Then show.

Source Interpretation Guidelines

All

If the abovewater portion of a WRECK is the mast and/or funnel, show the WRECK and a HAZARD ZONE.

Do not depict bits and pieces of a wreck or scattered wreckage as WRECKS. See HAZARD ZONE.

Graphic

Do not depict a dotted outline labeled "Exposed Wreckage" or "Wreckage" on the previously published map as a WRECK. See HAZARD ZONE.

Wrecks that are on maps produced before February 1, 1961 do not meet current depiction conditions and should not be shown. For information on other features on previously published maps that should not be shown, see HAZARD

WRECK

ZONE.

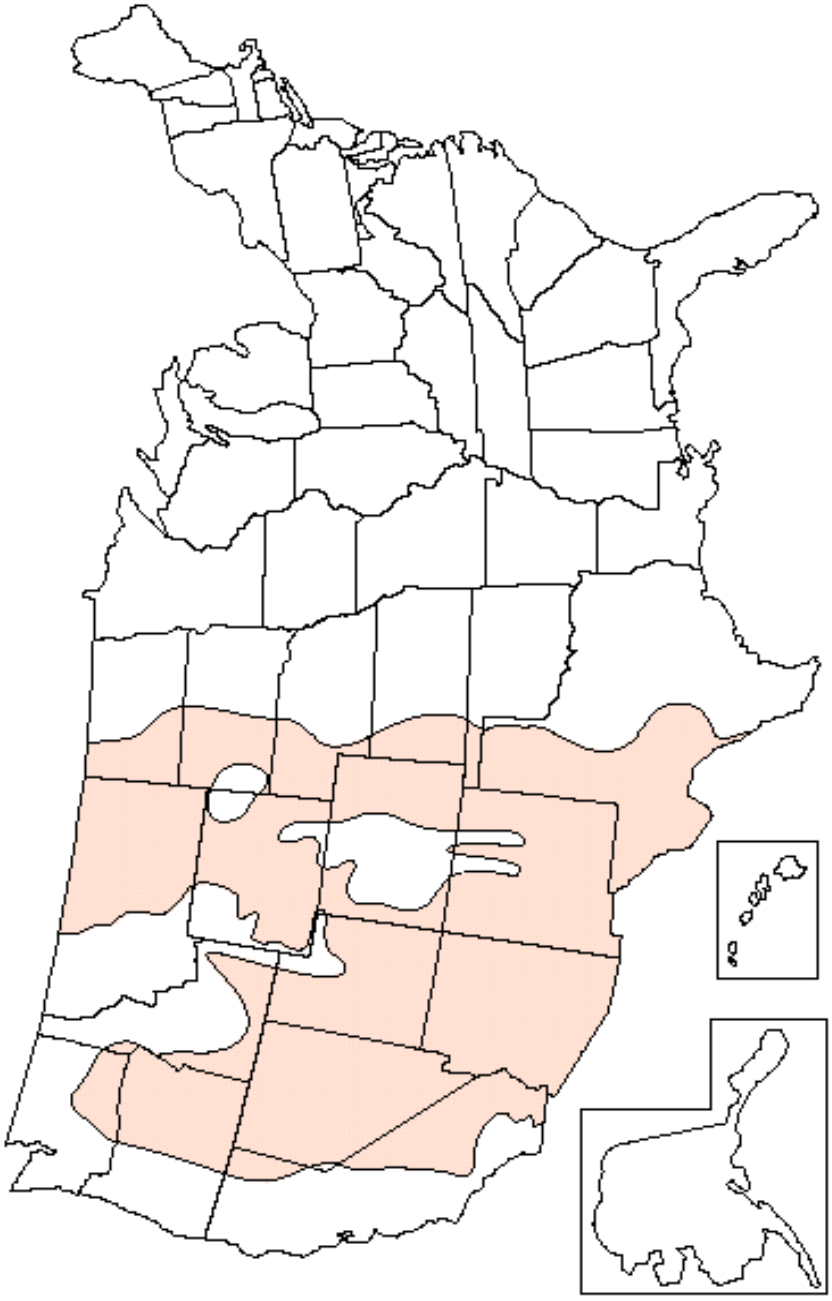
Symbolization

Characteristics	Symbol	Label
Abovewater, Hull and/or Superstructure	512.139	N/L; Show name if known
Abovewater, Mast and/or Funnel	512.141	Masts Exposed; Show name if known

APPENDIX 2-A
Location of Arid Regions

Standards for USGS and USDA Forest Service Single Edition Quadrangle Maps
Part 2: Hydrography
Appendix 2-A: Location of Arid Regions

This appendix shows the general location of arid regions in the United States.



Location of arid regions.