



<b>SUPPLEMENTAL TECHNICAL INSTRUCTIONS</b>	<b>Supplement Number</b>	<b>Date Issued</b>
	93-1-D	04/09/93

**National Mapping Division**

**SUBJECT**

Photoinspection Criteria for 1:24,000-Scale and 1:100,000-Scale Products

**BACKGROUND**

The National Mapping Division (NMD) revises both its 1:24,000-scale primary series digital line graphs (DLGs) and quadrangle maps, and 1:100,000-scale DLGs and quadrangle maps to maintain currentness of feature content, based on current product standards, to meet user requirements. Prior to authorization for revision, quadrangles from both the 1:24,000-scale and 1:100,000-scale series are photoinspected. Photoinspection is a process to determine currentness of selected content and whether there is sufficient change (additions, deletions, classification and realignment changes) to the features on the quadrangle to justify revising the map.

Revision project authorizations are based on photoinspection results and, for 1:24,000-scale maps, information available in the PRIM (Primary Map Inventory) and MSTs (Map Separates Tracking System) databases. The mapping centers further determine the methods and procedures for how to conduct the revision.

**INSTRUCTIONS**

Apply the terms and technical criteria defined in the attached instructions as required during photoinspection processes.

**APPLIES TO**

All primary series and 1:100,000-scale digital line graphs and quadrangle maps.

**ISSUED TO**

EDC, MAC, MCMC, RMMC, and WMC.

**APPROVED BY**

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Assistant Division Chief for Production Operations

Attachment  
cc: NMD      TS&PD-2      ADC/C&R      ADC/IS      ADC/PO      ADC/PB&A      ADC/RES      MPO  
    RSA      RST      Census      NIMA      TVA      USFS      Canada

## **PHOTOINSPECTION CRITERIA**

### **DEFINITION OF CRITERIA**

Each feature must meet accepted NMD content standards including feature definition, delineation, and capture conditions before assessment against the photoinspection qualifications and criteria.

The photoinspection criteria are organized into three columns. The first column gives the feature name and any attribute values that may differentiate distinctive qualities of the feature. Features having similar qualifications and criteria are listed together.

The second column gives the qualification criteria for each feature or group of features as they apply to the determination of currentness by photoinspection. The qualifications state how to define an occurrence of a feature and any minimum areal or segment length requirements. Some qualifications are based on the dimensionality of a feature (0-D point features, 1-D linear features, or 2-D areal features). Feature segments are the measured length from the beginning point of change to the ending point of change. When the term 'facility' is used, it refers to the feature and all components and other structures associated with the facility (e.g. parking area, administrative buildings, roads, etc).

The third column is the minimum change required to justify revision for a particular set of qualifying features. Each minimum change criterion is the number of occurrences of a feature.

Instructions for applying the criteria, combining features, and accounting for different proportions of land to water follow the 1:100,000-scale criteria.

**PHOTOINSPECTION CRITERIA FOR 1:24,000-SCALE MAPS**

This section of features provides the criteria used to determine whether or not a 1:24,000-scale quadrangle requires revision.

Accumulate individual instances or groups of the same feature, according to the given qualifications, to meet the criterion for a particular feature.

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
CANAL/DITCH, STREAM/RIVER, WASH (Perennial or Intermittent)	For 2-D (double line) segments $\geq$ 1 mile long, count each full mile as one feature.	1
	For 1-D (single line) segments $\geq$ 1 mile long, count each full mile as one feature.	5
	For 1-D or 2-D segments < 1 mile long, count each occurrence as one feature.	24
FLAT, INUNDATION AREA, LAKE/POND, RESERVOIR (Perennial or Intermittent)	For 2-D features $\geq$ 1 mile along the longest axis and covering at least 1/4 square mile, count each occurrence as one feature.	1
	For 0-D features, or 2-D features < 1 mile along the longest axis or < 1/4 square mile, count each occurrence as one feature.	24

Photoinspection Criteria For 1:24,000-Scale Maps

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
SHORELINE	Shoreline must bound a SEA/OCEAN or ESTUARY. Count as one feature: 1) each segment $\geq$ 1000 feet along the longest axis of new or changed characteristics of the shoreline, such as inlets, lagoons, spits, etc; <b>or</b> 2) each lateral shift or realignment of the shoreline $\geq$ 1000 feet and of any segment length.	1
AIRCRAFT FACILITY, RUNWAY (Paved), APRON/TAXIWAY	Count as one feature: 1) a new aircraft facility or one new runway; <b>or</b> 2) an accumulation of up to 1 mile for any extension(s) to existing runways or apron/taxiways.	1
RUNWAY (Not Paved)	Count each runway as one feature.	3
RAILWAY (Primary, Spur, Siding)	For <u>new</u> primary railway segments $\geq$ 1 mile long, count each full mile as one feature.	1
	Count as one feature: 1) <u>new</u> primary railway segments $<$ 1 mile long; <b>or</b> 2) each full mile of any spur, siding, or <u>dismantled</u> railway segment $\geq$ 1 mile long.	15

Photoinspection Criteria For 1:24,000-Scale Maps

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
RAILWAY YARD	For <u>new</u> or <u>dismantled</u> railway yards $\geq 1/4$ square mile, count each occurrence as one feature.	1
	For <u>new</u> or <u>dismantled</u> railway yards $< 1/4$ square mile, count each occurrence as one feature.	3
ROAD (Class 1)	Count as one feature: 1) any segment $\geq 1$ mile long; <b>or</b> 2) any new or rebuilt interchange.	1
(Class 2, 3, 4)	Count as one feature: 1) each full mile of any segment $\geq 1$ mile long; <b>or</b> 2) any new or rebuilt interchange.	5
ROAD, (Class 5) TRAIL	For segments of <u>Class 5 road</u> or <u>trail</u> $\geq 1$ mile long, count each full mile as one feature.	24
HIGH DENSITY BUILDING AREA	For areas $\geq 1/4$ square mile, count each area as one feature.	1

Photoinspection Criteria For 1:24,000-Scale Maps

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
AQUACULTURE SITE, ATHLETIC FIELD, BUILDING <sup>1</sup> , EXHIBITION GROUNDS, FILTRATION PLANT, HOLDING PEN, INSTITUTIONAL SITE <sup>1</sup> , MARINA, PIPELINE REGULATION STATION, POWER SITE, RACETRACK, SEWAGE DISPOSAL PLANT, SHOPPING CENTER, SPORTS SITE, TANK FARM, WELL FIELD	Count as one feature: 1) each new facility $\geq$ 1/4 square mile; <b>or</b> 2) a group of 2-D buildings (e.g. industrial parks or institutional sites), $\geq$ 1/4 square mile; <b>or</b> 3) an individual building $\geq$ 1 million square feet and generally $\geq$ 500' along the shortest axis.	1
	Count as one feature: 1) each new facility $<$ 1/4 square mile; <b>or</b> 2) areas $<$ 1/4 square mile that do not qualify for High Density Building Area tint, but have 0-D and/or 2-D buildings and associated regular street patterns, such as in a subdivision, industrial park, or institutional site.	24
CABLEWAY, CONVEYOR, EMBANKMENT, NON-EARTHEN SHORE, PIPELINE, TRANSMISSION LINE	Count as one feature: 1) segments $<$ 1 mile long; <b>or</b> 2) each full mile for segments $\geq$ 1 mile long.	15

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1. These features include areas of various structures or groups of buildings, such as in residential areas that do not qualify for the tint symbolization of High Density Building Area features and for industrial parks or institutional sites. This set of features is not intended to refer to the density of built-up structures. For industrial parks and institutional sites to qualify, most of the buildings must be 2-D ( $\geq$  100' along the longest axis), and clustered in groups of several buildings with other associated structures such as roads and parking.

Supplemental Technical Instruction 93-1-D  
 April 9, 1993

Photoinspection Criteria For 1:24,000-Scale Maps

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
DISPOSAL SITE, DISTURBED SURFACE, MINE (2-D)	For new areas or extensions of exist- ing areas $\geq$ 1/4 square mile, count each area as one feature.	1
CONTOUR	For <u>reclaimed</u> mining areas $\geq$ 1/4 square mile, count each 1/4 square mile as one feature.	3
	For <u>reclaimed</u> mining areas $<$ 1/4 square mile, count each occurrence as one feature.	9
CULTIVATED CROPLAND, SHRUBLAND, TREES	For areas $\geq$ 1 square mile, count each full square mile as one feature.	6
Any other feature that may be shown on a 1:24,000-scale map, e.g. CAMPGROUNDS, CEMETERIES, DAMS, SUBSTATIONS, TOWERS, TANKS, WINDMILLS, etc.	Count any occurrence as one feature.	60

**PHOTOINSPECTION CRITERIA FOR 1:100,000-SCALE MAPS**

This section of features provides the criteria used to determine whether or not a 1:100,000-scale quadrangle requires revision.

Accumulate individual instances or groups of the same feature, according to the given qualifications, to meet the criterion for a particular feature.

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
CANAL/DITCH, STREAM/RIVER, WASH (Perennial or Intermittent)	For 2-D (double line) segments $\geq$ 1 mile long, count each full mile as one feature.	8
	For 1-D (single line) segments $\geq$ 1 mile long, count each full mile as one feature.	40
	For 1-D or 2-D segments $<$ 1 mile long, count each occurrence as one feature.	90
FLAT, INUNDATION AREA, LAKE/POND, RESERVOIR (Perennial or Intermittent)	In arid areas: For 2-D features $\geq$ 1 mile along the longest axis <u>and</u> covering at least 1/4 square mile, count each full square mile as one feature.	8
	In non-arid areas: For 2-D features $\geq$ 1 mile along the longest axis <u>and</u> covering at least 1/4 square mile, count each full square mile as one feature.	16
	For 0-D features, or 2-D features $<$ 1 mile along the longest axis or $<$ 1/4 square mile, count each occurrence as one feature.	90



<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
SHORELINE	Shoreline must bound a SEA/OCEAN or ESTUARY. Count as one feature: 1) each segment $\geq$ 1000 feet along the longest axis of new or changed characteristics of the shoreline, such as inlets, lagoons, spits, etc; <b>or</b> 2) each lateral shift or realignment of the shoreline $\geq$ 1 mile along the longest axis.	6
RAILWAY (Primary, Spur, Siding)	For <u>new</u> primary railway segments $\geq$ 4 miles, count each <u>four-mile</u> segment as one feature.	2
	For <u>new</u> spur or siding railway segments $\geq$ 1 mile, count each full <u>mile</u> as one feature.	120
	For <u>dismantled</u> primary, spur, or siding railway segments $\geq$ 4 miles, count each <u>four-mile</u> segment as one feature.	20
RAILWAY YARD	For <u>new</u> or <u>dismantled</u> railway yards $\geq$ 1/2 square mile, count each occurrence as one feature.	4
	For <u>new</u> or <u>dismantled</u> railway yards $<$ 1/2 square mile, count each occurrence as one feature.	8

Photoinspection Criteria for 1:100,000-Scale Maps

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
ROAD (Class 1 or 2)	Count as one feature: 1) each accumulated mile of any segment length for <u>new</u> roads; <b>or</b> 2) any new or rebuilt interchange.	8
	For <u>realigned</u> roads $\geq$ 1 mile, count each full mile as one feature.	16
(Class 3 or 4)	For segments $\geq$ 1 mile long, count each full mile as one feature.	40
(Class 5)	For segments $\geq$ 1 mile long, count each full mile as one feature.	120
RUNWAY (Paved)	Count each full mile of <u>new</u> runway as one feature.	3
	Count each accumulated mile of <u>extension(s)</u> to existing runways or <u>runway deletions</u> as one feature.	8
(Not Paved)	Count each runway as one feature.	24
DISPOSAL SITE, MINE (0-D, 2-D)	For extensions $\geq$ 1/4 square mile to <u>existing</u> areas and for <u>new</u> areas $\geq$ 1/2 square mile, count each full square mile as one feature.	12

Photoinspection Criteria for 1:100,000-Scale Maps

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
HIGH DENSITY BUILDING AREA (HDBA) <sup>2</sup> , FILTRATION PLANT, SEWAGE DISPOSAL PLANT, TANK FARM, WELL FIELD	For any area $\geq 1/8$ square mile, having a definite street, tank, or well pattern (symbolized with or without tint on graphics), count each full square mile as one feature.	8
CABLEWAY (Ski Lift), EMBANKMENT, NON-EARTHEN SHORE, PIPELINE, TRAIL, TRANSMISSION LINE	For segments $\geq 1$ mile long, count each full mile as one feature.	120
EXHIBITION GROUNDS, RACETRACK, SPORTS SITE (Raceway, Rodeo Grounds, Ski Area, Stadium)	For facilities $\geq 1/2$ square mile, count each occurrence as one feature.	9
CONTOUR	For <u>reclaimed</u> mining areas of any dimension, count each full square mile as one feature.	90

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2. For photoinspection, the feature definition for 1:100,000-scale HDBA is applied in a different manner. The qualifications are for any built-up-like area having a definite street pattern. It does not matter if the area qualifies for a tint symbol on graphic products.

Photoinspection Criteria for 1:100,000-Scale Maps

<u>Feature</u>	<u>Feature Qualification(s)</u>	<u>Number of Features Required for Updating</u>
CULTIVATED CROPLAND, SHRUBLAND, TREES	For areas $\geq$ 1 square mile, count each full square mile as one feature.	150
Any other feature that may be shown on a 1:100,000-scale map, e.g. CAMPGROUNDS, CEMETERIES, DAMS, SUBSTATIONS, TOWERS, TANKS, WINDMILLS, etc.	Count any occurrence as one feature.	150

## APPLYING THE CRITERIA

Justification for map revision of a quadrangle exists when the accumulation of additions, deletions, or classification and realignment changes meet or exceed the minimum criteria in any one or more features.

Feature Continuity -- The minimum change criteria required to qualify for map revision is overridden for the following features in order to preserve continuity of features through two or more quadrangles. One of the maps must qualify for revision. The feature as a whole, no matter where it is located, must qualify for minimum segment length or areal size.

### **For 1:24,000-scale maps:**

Canal/Ditch, Stream/River, Wash, if qualifying feature is 2-Dimensional.  
Flat, Inundation Area, Lake/Pond, Reservoir, if qualifying feature is > 1 mile along the longest axis.  
Aircraft Facility, Runway (Paved).  
New Primary Railway, if segment is > 1 mile long.  
Railway Yard, if area is > 1/4 square mile.  
Road (Class 1 or 2), if segment is > 1 mile long.

### **For 1:100,000-scale maps:**

Canal/Ditch, Stream/River, Wash, if qualifying feature is 2-Dimensional.  
Flat, Inundation Area, Lake/Pond, Reservoir, if qualifying feature is > 1 mile along the longest axis.  
Aircraft Facility, Runway (Paved).  
New Primary Railway, if segment is > 4 miles long.  
Railway Yard, if area is > 1/4 square mile.  
Road (Class 1 or 2), if segment is > 1 mile long.

For example, map "A" qualifies for revision and has a new lake which meets minimum qualifications and also continues onto map "B". The area of the lake on map "B" is only 1/6 square mile and map "B" has no other significant changes. However, to preserve the continuity of the lake, map "B" also qualifies for revision.

Double Counting -- Do not count associated features in two different feature groups. For example, if an area of change is counted as the feature High Density Building Area, do not also measure and count the road lengths within the area as a Road feature.

Landmark Changes -- The criteria have been designed to account for changes to an "average" quadrangle map. Given the geographic and social diversity of our nation, there will be instances where the criteria do not account for outstanding and landmark change for some areas. In some areas, a particular feature may have local importance and should qualify a map for revision. In other areas, the same or similar feature may not have local importance and should not qualify a map for revision. In these instances, based on knowledge of a locality, the issue may be discussed among revision program managers, requirements personnel, and the photointerpreters, to make logical and consistent recommendations.

### **Combinations Of Features**

Qualified feature changes that in aggregate do not meet minimum requirements for a particular feature may be combined with other qualified feature changes to justify a map for revision. The fewer qualified changes there are for each feature, the more features are required. Use the following rules when combining features:

If two features are combined, at least 75 percent of the minimum requirements for each feature must be met to qualify the map for revision.

If three features are combined, at least 75 percent of the minimum requirements for one feature must be met and at least 50 percent of each of the other two features must be met to qualify the map for revision.

If four or more features are combined, at least 50 percent of the minimum requirements for all features must be met to qualify the map for revision.

The following examples illustrate the application of these rules.

At 1:24,000-scale, a map qualifies for revision using three features if there are 4 new miles of class 3 road, 8 miles of dismantled railway, and 12 new small (< 1 mile along the longest axis) ponds.

At 1:24,000-scale, a map qualifies for revision using four features if there are 3 miles of class 2 road, 12 small (each one is < 1/4 square mile) built-up facilities, 2 new unpaved runways, and 8 miles of new transmission lines.

At 1:100,000-scale, a map qualifies for revision using three features if there are 6 miles of new class 1 roads, 4 square miles of new extensions to High Density Building Area, and 50 new small ponds.

At 1:100,000-scale, a map qualifies for revision using four features if there are 20 miles of new class 3 roads, 6 square miles of new mines, 2 large ski resorts, 1 stadium, 1 raceway, and 1 rodeo ground, and 45 square miles of reclaimed strip mines (contours).

### **Proportional Change**

Many quadrangles have significantly fewer mapped features and land surface area represented on them because of coastal water or non-U.S. territory. For the minimum change criteria on these quadrangles, use a value equal to the proportion of U.S. land to water and/or foreign land. For example, if a 1:24,000-scale quadrangle has 25 percent U.S. land and 75 percent water on it, then the criteria to qualify a map for revision using a class 2 road is 1.25 features (.25 times 5 features).

Do not consider changes to non-U.S. territory during photointerpretation.

### **JOINT PHOTOINSPECTIONS**

Photoinspections for individual 1:24,000-scale maps are currently authorized with photoinspections for 1:100,000-scale maps. It is recommended that the 7.5-minute maps be photoinspected first, then visually compared with the 1:100,000-scale map and the 1:100,000-scale photoinspection criteria applied to determine need for revision.

### **REPORTING RESULTS**

Currently, inspections are discontinued as soon as a map qualifies for revision. The changes observed during photoinspection are annotated on paper maps. The maps are available for unrestricted distribution and use by the mapping centers. A matrix form indicates whether or not each map should be revised and provides remarks on the features found to be inadequate. Mapping Applications Center (MAC) enters results into the Primary Map Inventory (PRIM) database (only for primary series maps) and forwards a report and diagram delineating the photoinspection results to Program Management at headquarters which then applies an approval and authorization process to determine revision projects.

A sample photoinspection report follows.

Supplemental Technical Instruction 93-1-D  
April 9, 1993

**SAMPLE PHOTOINSPECTION REPORT**

In Reply Refer To:  
Mail Stop

Memorandum

To: Chief, Program Control Section  
From: Chief, Technical Services Section  
Subject: Photoinspection

The maps in the \_\_\_\_\_ 1:100,000-scale quadrangle area have been photoinspected to determine the need for revision. The results of the photoinspection are indicated on the attached graphic. The photoinspection criteria check list is attached. This list indicates the currentness of the quadrangle and those categories found to be inadequate. The lithos with the annotated new planimetric features are available from the Mapping Applications Center, Technical Services Section, Reston, Virginia. Please contact the Technical Services Section if you have need for further assistance.

Chief, Technical Services Section



**SAMPLE PHOTOINSPECTION CHECKLIST (1:24,000-scale)**

100K Name NEW BEDFORD # of Quads 32 Page 1 of 2  
 Project Name PI EAST I State MA Project # 1989  
 Source Year(s) 1990 Inspection Date 2-21-92

Map Source

Yr	Date	Quadrangle Name	Yes	No	RD	RR	HY	HD	LD	A	CT	L	DS	WO	M	REMARKS
74		BRIDGEWATER	X		X			X	X	X			X			Prison Expansion
74		PLYMPTON		X												
74		PLYMOUTH	X		X			X	X							
74		MANOMET		X	X			X								
71		WELLFLEET		X	X			X								
74		ASSAWOMSET POND		X	X				X				X			
74		SNIPATUIT POND		X	X	X			X							
71		WAREHAM	X		X											I-495 (Rt. 25)
77		SAGAMORE	X		X							X				I-495 (Rt. 25)
74		ORLEANS	X				X									Shoreline - inlet open/closed
75		NEW BEDFORD N.		X	X			X	X				X			New Prison
74		MARION		X	X				X							
66		ONSET	X		X			X						X		80% Water
77		POCASSET	X		X			X					X	X		
71		SANDWICH	X		X			X					X			
77		HYANNIS	X		X			X	X	X						
73		HARWICH		X	X			X	X				X	X		
73		CHATHAM	X				X									2 mile Coastline
74		NEW BEDFORD S.		X	X			X								
74		SCONTICUT NECK		X												
66		WOODS HOLE		X	X			X								
77		FALMOUTH	X		X			X	X				X			
73		COTIUT	X		X			X					X			
73		DENNIS	X		X			X	X				X	X		
74		MONOMOY POINT		X				X								
			Y	N	RD	RR	HY	HD	LD	A	CT	L	DS	WO	M	

RD = Roads      RR = Railroads      HY = Hydrography      HD = Residential (HDBA Tint)      M = Miscellaneous  
 A = Airport/Airfield      CT = Contours      L = Linear Features      DS = Disturbed Surface      WO = Woodland/Orchard  
 LD = Low Density Built-Up Areas (e.g. industrial parks)

**SAMPLE PHOTOINSPECTION ANNOTATED MAP (1:100,000-scale)**

**SAMPLE PHOTOINSPECTION ANNOTATED MAP (1:100,000-scale)**

