



NAUTICAL CHART MANUAL - VOLUME 1 - POLICIES AND PROCEDURES
Seventh (1992) Edition

CHAPTER 4 - HYDROGRAPHY

U.S. Department of Commerce
Office of Coast Survey



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

SEPTEMBER 22, 2000

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Chapter 4

Effective immediately, the attachment replaces Chapter 4 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition in its entirety.

Chapter 4 is revised as follows:

1. Outdated procedures are deleted.
2. Acronyms are revised.
3. Pages are renumbered.
4. The ENC Object, Dredged Area, is updated as follows:
 - A. Correctly identifies those shoaling areas (within a dredged area) which contain soundings and depth contours as depth areas.
 - B. Explains which MCD channels should actually be collected as Fairways.
 - C. Includes a Table of Contents and an Example Index.
 - D. Changes the page numbering system of the Dredged Area NOS/ENC Object Specifications.
5. Cartographic Orders and Memorandums are embedded in the text. The following Cartographic Orders were not previously distributed, but are now embedded in Chapter 4.

A. **Cartographic Order 026/00**, filed in Section 4.4:

- Subject: (1) Updating of Nautical Chart Manual Information on Depth Curves;
(2) Nautical Chart Manual Incorporation of ENC Objects: **Depth Contour** and **Depth Area**;
(3) **Depth Area** NOS/ENC Object Specifications Pages

The Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, pages 4-41 to 4-61 are revised and the ENC Object Specifications' section pages 4-i, 4-ii and 4-DA1 to 4-DA94 are added to Chapter 4. Updated information on depth curves and depth contours is added to the Nautical Chart Manual. Information is embedded about the ENC objects **Depth Contour** and **Depth Area**. Chapter 4 includes the corresponding NOS/ENC Object Specifications pages for the Depth Area ENC object. The NOS/ENC Object Specifications pages for the Depth Contour ENC object will be provided as an attachment in a separate cartographic order.

Please note the new name and numbering system of the specifications (ENC), "ENC Extraction Specification" is now entitled "NOS/ENC Object Specifications". The new numbering system will now incorporate two (2) letters from each ENC object name.

B. **Cartographic Order 031/00**, filed in Section 4.2.4:

Subject: Danger to Navigation Reports

NOS field units (vessels, contractors and navigation response teams) are required to submit a Danger to Navigation Report upon discovery of any of a variety of dangers listed in Section 4.2.4. Historically, these dangers have been reported directly from the field unit to the U.S. Coast Guard (USCG) and the National Imagery and Mapping Agency (NIMA) for inclusion in the Notice to Mariners (NM).

This policy has changed and Danger to Navigation Reports shall now be processed according to the procedure detailed in Section 4.2.4. Danger to Navigation Reports shall be evaluated for chart application in the Marine Chart Division. MCD shall submit information evaluated and applied from the Danger to Navigation Reports to the USCG and NIMA for inclusion in the NM.

It should be noted that the attachment requires that Danger to Navigation Reports must be processed immediately and NM items generated from a Danger to Navigation Report should be submitted to USCG and NIMA within one week, at most, after receiving the document in MCD.

C. **Cartographic Order 032/00**, filed in Section 4.13.5:

Subject: Platform Sign Designations

The Eighth Coast Guard District has discontinued publishing new and revised platform sign designations

Effectively immediately, within the area of the Eighth Coast Guard District's jurisdiction, sign designations shall be removed from charts going forward for printing. The positions of platforms and other oil/gas structures will continue to be charted and updated.

Sign designations shall be charted for platforms that fall within the areas of all other Coast Guard Districts.

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4 HYDROGRAPHY

4.1 General

Natural hydrographic features are charted after a thorough study of the configuration of the bottom as portrayed by surveys, primarily [NOS hydrographic surveys](#). Submarine relief must be presented clearly, and important objects must not be obscured by other data. A dangerous [rock](#), an [islet](#), or the [least depth](#) over a [shoal](#) must be shown prominently; small islets and rocks should be exaggerated, if necessary, to make them easily discernible.

The graphic portrayal of hydrographic information on a chart is represented by depth [soundings](#), their associated depth [contours or curves](#), depth-dependent color designations (blue tints), and notes showing the controlling depth of [improved channels](#). Together these must convey adequate depth information to enable the chart user to navigate safely. Labels describing the [character of the bottom](#) are particularly important in [harbors](#) and other [anchorage areas](#), but are also useful to fishermen. Symbols and labels depicting the existence of such natural dangers as [ledges and reefs](#) and isolated [rocks](#), as well as man-made [obstructions](#) ranging from [fish havens](#) to [cribs](#) and [platforms](#) to [submarine cables](#) and [pipelines](#), are also charted.

Guidelines published in the Hydrographic Manual, Fourth Edition, 1976, and Wire-Drag Manual, Publication 20-1, are designed to ensure that basic [NOS hydrographic surveys](#) (as defined in [Section 4.2.1](#)) supersede all previous NOS surveys in the area covered. The proper charting instructions must be clearly stated, and exceptions shall be noted in the [Descriptive Report \(DR\)](#), for the application or removal from charts of [wrecks](#), [dangers](#), [least depths](#), or [wire-drag clearances](#), etc.

Data handling throughout the system must be prompt and thorough to ensure timely dissemination of information to chart users. Questionable recommendations for charting action must be referred for resolution to HSD through the Chief, NDB. When applying hydrography, the cartographers must constantly be alert for items that should be included in the [NM](#). This is most important since failure to recognize a potential navigational hazard and to alert mariners via the NM could result in a major marine disaster. Additionally, early requests for supplemental information to facilitate the processing of these items is critical. NDB shall be notified immediately of any requirement for data to rectify discrepancies and deficiencies which may preclude safe disposition of critical items or eventual assimilation of the source into the data base. Items requiring immediate attention for charting action or publication in the NM should be applied and a NM issued pending such resolution. The mariner must always be informed of any dangers suspected, whereas final corrective action can be taken later. A questionable feature is usually charted as "Rep" (reported) until it has been resolved. When applying reviewed basic surveys to the charts, the cartographer must also take care not to inadvertently remove items dating from sources more recent than the survey. Conflicts between

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contemporary [hydrographic](#) and [topographic surveys](#) in the delineation of the low water line, or the height rocks awash actually uncover, should be resolved by giving greater weight to the information on the reviewed hydrographic survey. More care is required in evaluating unreviewed hydrographic surveys because of the development of increasingly sophisticated photogrammetric methods (e.g., infrared photography and photobathymetry) to record these hydrographic details.

Hydrography shall be applied from the largest- to the smallest-scale charts, with the larger-scale portrayal serving as the source for the next-smaller scale. Detail is eliminated and generalized as scale is reduced. Yet critical [shoal soundings](#), [rocks](#), and other [dangers](#) must be retained when applying surveys through the scales. Significant submerged features should not be generalized, and generalization must never compromise navigational safety.

To aid in navigating by echo-sounding apparatus, [depth curves](#) are given special prominence on nautical charts in areas where modern [hydrographic surveys](#) have been made. The more accurately the chart depicts deepwater submarine relief, the more certain the navigator can be of the vessel's position.

Note that hydrographic features are always labeled using slant (italic) type whereas topographic features are labeled with vertical type.

4.2 Hydrographic Surveys

The principal objective of hydrographic surveys conducted by NOS, with few exceptions, is to obtain basic data for the compilation of nautical charts. Emphasis is on those features that may affect safe navigation. The accuracy and adequacy of a nautical chart depend on the quality of the hydrographic surveys from which it is compiled and the skill of the cartographer in applying this information.

Generally, only basic surveys and field examinations are assigned "[H](#)" or "[FE](#)" registry numbers and are archived. However, upon occasion, [special-purpose](#) hydrographic, [reconnaissance](#), or [evaluation/test surveys](#) are assigned a "D" registry number in conformance with requirements set forth in the project instructions developed for that survey. A "D"-numbered survey may be assigned a Chart Letter or Blueprint designation for storage and retrieval.

The Office of Marine and Aviation Operations (OMAO) is responsible for the management of the NOAA fleet, which conducts the hydrographic surveys. Regional management and operational support for the fleet is provided through the Atlantic Marine Center (AMC) in Norfolk, Virginia, the Pacific Marine Center (PMC) in Seattle, Washington, and their several satellite facilities. The ships usually operate in the northern waters during the summer and southern waters during the winter.

Project instructions are prepared for each hydrographic survey and supplement the general instructions given in the Hydrographic Manual and other manuals. The details of the project instructions vary from specific to general depending on the nature, the locality, and the unique

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requirements of the survey.

Ordinarily, the project instructions for [hydrographic surveys](#) will be divided into discussions of some or all of the following subjects; general, control, photogrammetry or topography, hydrography, tides or water levels, currents, magnetics, oceanography or limnology, and miscellaneous.

Hydrography is begun by sounding along a predetermined system of lines that will delineate the submarine relief in the most thorough and economic manner. A series of evenly spaced parallel sounding lines is usually the best method to accomplish this objective. In general, the sounding lines are run normal to the depth contours. Vessels equipped with modern computers and automatic plotters have the flexibility of running arcs or straight lines with equal positive control. Straight lines are generally used because of greater flexibility in the selection of direction. The spacing of sounding lines required to develop an area properly depends upon the depth of the water, the topographic configuration of the bottom, the general nature of the area, and the purpose of the survey. As depths increase and survey scales decrease, the line spacing increases. Least depth over pinnacles or other significant sharp features usually require supplemental observations such as direct depth measurements by divers or drift soundings supplemented with lead-line depths.

Echo sounders used for hydrographic surveying produce a permanent graphic or analog record of the bottom profile. Every record is thoroughly, carefully, and conscientiously scanned and checked by experienced field personnel to ensure completeness and accuracy.

A separate [DR](#) is written for each hydrographic survey sheet completed. The DR serves as a narrative document that describes the conditions under which the work was performed and discusses various factors affecting the adequacy and accuracy of the results. The primary purposes are to direct attention to important results and to supplement the hydrographic sheets and sounding records with information that cannot be shown clearly, concisely, and graphically on the sheet or in tabular form.

4.2.1 NOS Surveys

1. Types of Surveys

a. Basic Hydrographic Surveys (H)

A basic survey is one that is so complete and thorough it does not need to be supplemented by other surveys. For charting purposes, a basic hydrographic survey must be adequate to supersede all prior surveys of the same area. A basic survey shall verify or disprove the existence of all charted or reported features of significance. It must also satisfy the following requirements:

- (1) The area has been systematically covered with accurately located depth measurements sufficient to reasonably ensure that all dangers to navigation

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have been found.

(2) The configuration of all underwater features including [channels](#), [shoals](#), [banks](#), and [reefs](#) has been determined, and [least depths](#) have been determined over all dangers to navigation.

(3) [Aids to navigation](#) and [landmarks](#) have been described and located.

(4) Contemporary [tidal or water-level observations](#) have been made and soundings reduced to the appropriate [chart reference datum](#).

(5) Calibration and correction data have been applied to the observed depths and positions.

(6) [Bottom samples](#) have been obtained with sufficient frequency to reveal the general physical characteristics of the bottom.

(7) Charted information and prior survey findings in disagreement with or not supported by present survey data have been thoroughly investigated and resolved.

(8) Other necessary operations such as field editing of shoreline manuscripts, accumulation of data to be published in the [Coast Pilot](#), and measurement of magnetic variations have been completed if they are required.

b. Bathymetric Surveys

A Bathymetric Survey is a track-line or multibeam survey run in a systematic pattern of wide-line spacing, e.g., 2 miles. It is used primarily to define bottom topography and as a source of fill soundings. In deep ocean areas, Track-Line or Bathymetric Surveys may constitute the only available information.

c. Chart Evaluation Surveys (CES)

The CES program is designed to accomplish the following:

(1) Resolve all deficiencies in charted hydrography and other selected chart information. (A deficiency is a weakness in charted information that can be corrected through field examination or by similar methods.)

(2) Evaluate the adequacy and accuracy of hydrographic information on existing charts.

(3) Verify or revise information published in the appropriate [Coast Pilot](#).

(4) Conduct user evaluation and public relations efforts to provide a public awareness of NOS and its products, and to obtain user input.

d. Geophysical Surveys (see [Track-Line Surveys](#))

e. Navigable Area Surveys (NAS)

NAS provide hydrographic information in areas where existing chart data is inadequate. By restricting the area of coverage of these surveys, yet retaining the basic hydrography concept within the surveyed waters, there will normally be a more rapid progression of field work and availability of data. The coverage is reduced by normally omitting requirements for: (1) development of the 0-foot curve and foul nearshore areas not considered navigable and (2) complete field edit of the survey area. Prior to 1973, these surveys were called "Corridor Surveys" (CS).

f. Reconnaissance Surveys

Reconnaissance Surveys determine the extent of change in an area since the last survey. Comparison of the results of a Reconnaissance Survey with prior surveys provides the information needed to classify and design new survey requirements.

g. Revisory Surveys

A Revisory Survey is similar to a CES, but with emphasis on topography rather than hydrography. Historically, hydrography on such surveys has been of a reconnaissance nature and has usually been limited to verification of charted information in channels, harbors, and approaches.

The primary objective of a revisory survey is to field inspect and, when necessary, to revise the topographic and hydrographic features shown on the published charts so that [New Editions](#) are as up-to-date and accurate as possible.

h. Special Surveys

A hydrographic survey is classified as a special survey if the general requirements or specifications do not logically fall into any of the standard categories. A special survey may cover small areas for limited purposes such as to prove or disprove the

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existence of reported dangers or obstructions, to provide data for harbor development, or to supplement prior surveys for construction of a large-scale chart. Other surveys, regardless of size of area, may be classified as special if significant deviations from line spacing or degree of coverage requirements are authorized. Special surveys include the following:

(1) Field Examinations (FE)

These are investigations of specific features, such as [obstructions](#), [rocks](#), and [wrecks](#), or basic hydrographic surveys of limited extent.

(2) Additional Work (Ad. Wk.)

These provide additional development of specified features as a supplement to a basic hydrographic survey.

(3) Tag-Line Surveys

When detailed surveys of important [docks](#), [anchorage](#)s, or [restricted areas](#) are needed, Tag-Line Surveys often prove to be the most efficient and accurate method available. They are generally of large scale (1" = 100') with very closely spaced soundings and sounding lines. This type of survey, if required, will most often be accomplished as part of a basic hydrographic survey or registered as a field examination.

i. Track-Line Surveys

The NOAA survey vessels occasionally obtain soundings along their line of travel on extended voyages from port to project areas for bathymetric mapping or to provide fill soundings for small-scale charts. Track-Line Surveys are obtained when there is a specific need for the data and are controlled using the most accurate positioning system available to the vessel. The track lines are plotted either on Ocean Survey Sheets (OSS series) or on U.S. Navy Bathymetric Charts (as specified in the project instructions).

(1) H-7100 Track-Line Series

This is a series of small-scale ocean survey plotting sheets previously maintained by NOS for use as a master collection base for the transfer and adjustment of various track-line data gathered by NOAA ships traveling to and from their working areas. Maintenance of these sheets has been discontinued.

(2) Geophysical Surveys

Geophysical surveys are occasionally conducted to obtain depths of the bottom sediment layer, gravity and magnetic information, along with soundings, at wide-line spacing. The soundings may be used as a chart source.

j. Wire-Drag Surveys (WD)

The purpose of a wire-drag survey is to discover and chart all obstructions of small extent such as pinnacle rocks, boulders, sharp ledges, coral formations, and wrecks which may be dangerous to navigation and which standard [hydrographic surveys](#) frequently fail to reveal.

In general, the drag is used for the following four classes of work:

- (1) to determine whether or not apparently clear areas are free from obstructions;
- (2) to find all obstructions in a [shoal area](#);
- (3) to obtain the controlling depth in a [channel](#); and
- (4) to locate and determine depths over submerged [wrecks](#). Wire-drag information is used to supplement regular hydrographic surveys in charting.

k. Wire-Sweep Surveys

A wire sweep survey is a modification of the wire drag and is used in areas where the general depths are greater than the depths to be verified and where few, if any, obstructions are expected. The sweep has fewer buoys and weights than a drag. This permits a faster speed through the water and permits its use in strong currents although the positions of any obstructions encountered and the depths determined are much less precise than with the drag. The sweep must also be supplemented by the drag in the examination of obstructions discovered by the sweep. However, these disadvantages are outweighed by the speed of sweep investigations. Sweeps up to 20,000 feet wide are possible while the drag width does not usually exceed 12,000 feet. (See also [Section 4.15.2.](#))

l. Side Scan Sonar

Side scan sonar surveys are used primarily to supplement conventional echo

sounding surveys and to investigate reported dangers to navigation. Side scan sonar is being used in place of a wire drag for many investigations of reported dangers to navigation.

2. Processing of NOS Surveys

In 1975, the Hydrographic Evaluation Group (HDEG) at NOS established a system for classifying a group of surveys which had not been fully processed up to that date. That same year all the processing of data gathered from NOS hydrographic surveys was transferred from NOS headquarters to [AMC](#) and [PMC](#). As a result, NDB now receives only the final approved smooth sheet of a survey.

a. Pre-1975 Survey Classifications

(1) Category 1 Surveys

No further processing is planned for Category 1 surveys unless it is specifically required to prove or disprove a charted feature. No title or name appears on these surveys. They are not considered to be basic surveys since critical information from prior surveys has not been transferred and final processing has not been completed. For chart applications, these surveys are useful in supplementing charted information and for revising the charted delineation of the bottom in "changeable" areas. However, these surveys may not be used as the basis for revising least depths on features or other critical charted information, particularly in areas with stable bottom, without specific study by the compiler. These surveys are not accompanied by a written report.

Included in Category 1 are unverified surveys (smooth-plotted surveys in pencil) and verified, but unreviewed, surveys. A verified survey has all correctors applied to the soundings and all soundings inked. A reviewed survey has been certified as complete and accurate by a more experienced cartographer.

(2) Category 2

These surveys require a limited amount of processing to include all pertinent data. These are in general the latest basic surveys of areas included in general projects for basic coverage. They are sufficiently important and of good enough quality to warrant some additional processing prior to being placed in Category 1. Specific recommendations are made for each survey.

(3) Category 2a (Wire-Drag Surveys)

Limited processing remains to be done. Verification will be limited to hangs, groundings, and least depths prior to placing these surveys in [Category 1](#).

(4) Category 3

Processing has yet to be completed. This group of surveys is essential in providing necessary basic data to satisfy charting requirements.

(5) Category 3a

Some priority processing will be done on the survey before placing it in [Category 1](#). Specific recommendations are made for each survey.

(6) Category 4

These surveys have been reviewed, but have not been given a complete inspection. Nevertheless, they can be fully applied to a chart.

(7) Category 5

These surveys have been reviewed and given a preliminary inspection and are considered approved without further processing.

(8) Category 6

These surveys have been given a preliminary verification and review, and have been approved for complete application to the chart. No further processing will be done. The smooth sheet for these surveys shall include a note such as the following: "Survey given a preliminary verification and review, no additional processing planned".

b. Pre-1975 Survey Applications

Category 1 Surveys

When a hydrographic survey is designed [Category 1](#), the cartographic application of the survey will be made as follows:

If the [Category 1](#) survey had been previously partially applied, the cartographer may write off the survey as ADEQUATELY APPLIED on the

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[History of Cartographic Work](#). Additionally, the cartographer must retrieve the appropriate [Descriptive Report \(DR\)](#) and register the adequate application on the DR's Record of Application to Charts (NOAA Form 75-96).

If the [Category 1](#) survey has not been partially applied, the cartographer must examine the survey, and DR for all critical corrections only and write off the survey as ADEQUATELY APPLIED on the History of Cartographic Work. Additionally, the cartographer must register the adequate application on the DR's Record of Application to Charts.

Categories 2, 2A, 3, 3A, 4, 5, 6 Surveys

When a hydrographic survey is designed Category 2-6 (inclusive) A, the cartographer must retrieve the appropriate DR to ensure that no further processing has been performed in HSD and that the original classification of Category 2-6 (inclusive) is still in effect.

Some formerly classified Category 2-6 (inclusive) surveys have received additional HSD processing and have been reclassified as Category 1. The only way to confirm a reclassification is to inspect the DR for additional classification notations.

If the examination of the [DR](#) indicates that the survey has been reclassified as Category 1, follow the recommendations under [CATEGORY 1](#).

If the examination of the DR indicates that the survey remains classified as Category 2-6 (inclusive), the survey number should be forwarded to the Chief, Nautical Data Branch (NDB).

The NDB will submit written requests to HSD requesting recommendations for chart application.

The response from HSD will be processed into a source document and cited by the cartographer on the applicable History of Cartographic Work as the authority for subsequent chart application.

c. The Descriptive Report (DR)

All hydrographic surveys conducted by NOS are accompanied by a DR, a narrative document that describes the survey work performed. It discusses the factors affecting the adequacy and accuracy of the results while serving as a reference and index of all records and reports applicable to the survey.

The DR is a valuable component of the hydrographic survey and must be consulted

by the cartographer when applying hydrographic information from the survey sheet to the chart. Although the DR contains technical information concerning the acquisition of hydrographic data which will not be of immediate concern to the cartographer, numerous items pertaining to hydrographic evaluation and application should be considered. Among those of particular interest to the cartographer are these:

- (1). Hydrographic title sheet -- A brief description of the survey location, date, scale, registry number, depth units, etc.
- (2). Area surveyed -- A description of the area covered by the survey and the adjacent coast, general locality, approximate limits, and inclusive dates.
- (3). Shoreline -- A listing of the topographic or shoreline manuscripts applied to the field sheet with a description of field edit procedures and applications.
- (4). Junctions -- A description of where the present survey junctions with contemporary surveys and a comparison of soundings within the junction areas. Contemporary surveys are listed by registry number or field number.
- (5). Comparison with prior surveys -- A reference to important features or depths from prior surveys whose existence has been disproved and which should be deleted from the chart. Prior surveys are listed by registry number, scale, and date.
- (6). Comparison with the chart -- A comparison of survey features with those shown on the edition of the chart listed in the project instructions. Charted features bearing the notation "Reported", "SD" (sounding doubtful), "PA" (position approximate), "ED" (existence doubtful), or "PD" (position doubtful), charted pilings, wrecks, and obstructions are investigated resulting in specific recommendations as to how the feature should be charted.

Each charted feature selected for investigation as a presurvey review item that falls within the limits of the survey is listed with a recommendation on disposition for charting, replotting, revised symbolization, etc. Included are the least depths over all submerged features with a brief description of each feature including geographic positions.

Newly found dangers to navigation investigated by wire drag, diver, or other methods are identified with their clearances or least depths and accompanying geographic positions. Also, hydrographic features of special note are

mentioned.

(7). Adequacy of survey -- A statement as to whether the survey is sufficiently complete and adequate to supersede all prior surveys for charting purposes. It identifies any portion of the survey that is incomplete or substandard.

(8). Aids to navigation -- This section contains a reference to any correspondence with the USCG regarding the location or establishment of floating aids in the surveyed area. All aids to navigation located during the survey that are not shown in the latest edition of the "Light List" are addressed, i.e., the position description, and apparent purpose of the aid. A statement is made whether charted aids adequately serve their intended purpose. A copy of NOAA Form 76-40, "Report on Landmarks for Charts and Nonfloating Aids to Navigation" is included in the [DR](#). [Bridges](#), [overhead cables](#), and [overhead pipelines](#) not shown on the chart are listed with clearances determined by the survey party or furnished by an authoritative source, i.e. the USCG or USACE. [Submarine cables](#), [pipelines](#), and [ferry routes](#) are also mentioned.

(9). Miscellaneous -- Significant information not covered in previous sections that may warrant special consideration for charting purposes, such as unusual submarine features, currents, or magnetic anomalies.

(10). Geographic Names List (NOAA Form 76-155) -- A list of selected geographic names that fall within the limits of the survey as approved for charting by the Chief Geographer.

(11). Evaluation Report -- As the final step in the marine center processing of a basic hydrographic survey, a detailed examination of the survey is performed to evaluate the reliability and completeness of all hydrographic data in the surveyed area. The Evaluation Report which is appended to the DR is a summary of the results of this examination and includes a detailed comparison with prior surveys and charts. Subject matter in the report pertinent to the chart compiler consist of the following:

(a). Statements as to whether any information entered in the DR by the hydrographer was revised during the evaluation.

(b). Sources of shoreline data and the registry number, date, and classification of shoreline manuscripts used for final comparison.

(c). Junctions effected with adjacent surveys and their position relative to the present survey. Where butt junctions were necessary to be made



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JANUARY 5, 2001

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Chapter 4

Effective immediately, the attachment replaces the following Chapter 4 pages of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition:

1. Page 4-13 / Page 4-14
2. Page 4-19 / Page 4-20
3. Page 4-25 / Page 4-26
4. Page 4-57 / Page 4-58
5. Page 4-77 / Page 4-78
6. Page 4-249 / Page 4-250
7. Page 4-271 / Page 4-272
8. Page 4-275 / Page 4-276
9. Page 4-DA13 / Page 4-DA14 (*ENC Object Specifications section*)
10. Page 4-DA15 / Page 4-DA16 (*ENC Object Specifications section*)

In an effort to bring the analog edition of the Nautical Chart Manual into agreement with its digital counterpart, the attachment contains only minor grammatical changes to the information provided.

The digital version of the Nautical Chart Manual can be accessed on the Web using either of the two following addresses:

1. <http://ocsnet.ncd.noaa.gov/mcd/chartman/index.htm>
or
2. <http://ocsnet.ncd.noaa.gov/mcd.htm>

Attachment

because of differences in depth, the condition of the bottom is noted. The registry numbers and dates of the adjacent surveys are given.

(d). Results of prior survey comparison and statements that ensure that all prior information has been superseded. Items brought forward from the prior surveys to supplement the present survey are discussed. Prior surveys listed by registry number, scale, and date.

(e). A comparison is made with the largest scale chart or charts having the same edition number as that available to the hydrographer at the time of the survey. This discussion includes a detailed comparison with charted information unless soundings and features were adequately discussed and properly disposed of in the field section of the DR. Items may remain for which sources cannot be determined and which have not been verified or disproved by the present survey. These items are noted with specific recommendations for retention on the chart or for final disposition by the chart compiler. A comparison is made with controlling depths in dredged channels and the adequacy of aids to navigation in marking survey features is evaluated. A canceling statement is made indicating the adequacy of the present survey to supersede charted information. This statement is often qualified by recommendations for retention of specified charted features.

(12). Record of Application to Charts (NOAA Form 75-96) -- The cartographer who applies the survey data to a chart shall complete this form, making separate entries for each chart and for each application to a chart. This form should be added to any DR that does not already have one.

d. Routing and Care of Hydrographic Survey Smooth Sheets

The field sheet (formerly called the "boat sheet") is the hydrographer's working copy of a survey compiled and plotted during field operations from preliminary data. It is subject to final office verification, review, quality control inspection, and administrative approval. The smooth sheet is the final, smooth-drafted accurate plotting of the field sheet.

Incoming smooth sheets and [DRs](#) are received from the field ([AMC](#) and [PMC](#)) upon completion of verification, evaluation, and approval. Each sheet is registered, labeled, and added to the surveys diagram by the Data Control Section, HSD, and a reduced film negative is made. The smooth sheet and DR are routed to the Operations Section, HSD, for [Automated Wreck and Obstruction Information System \(AWOIS\)](#) and Surveys Users

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Request File checks. The survey is then routed to the Chief, NDB, for logging and diagraming on the appropriate nautical Standard for future chart applications by the cartographer. NDB forwards the inspected smooth sheet to the production branches for application to charts.

Upon completion of office processing (e.g., verification of all field data, review of the verification process, and final inspection to ensure that quality control standards have been adhered to) and administrative approval, the smooth sheet becomes the official permanent graphic record of a hydrographic survey and is the principal authority for hydrographic detail that appears on NOS nautical charts.

It is the responsibility of the cartographer to check the nautical chart Standard to ensure that all appropriate smooth sheets applicable to a New Edition have been appropriately applied.

When the smooth sheet has been completely applied to the charts, the sheets and DRs are routed to the vault for permanent storage.

The hydrographic survey smooth sheets constitute the basic source material for NOS's charting program, and in some cases, are irreplaceable in their original state. They are permanent records which should not be marked or mutilated in any manner. Users must exercise the precautions in handling and storing survey smooth sheets to avoid damaging them.

See [Section 4.15](#) for information concerning the processing of wire-drag surveys and the charting of wire-drag and wire-swept areas.

e. Use of Preliminary Surveys

Cartographers may request advance or preliminary copies of a field sheet or smooth sheet from the appropriate marine center at any stage of survey processing when it has been determined that a particular chart is deficient in hydrography and where interim data will suffice until final survey processing has been completed. These preliminary copies, when documented into the chart source system as a "Blueprint," shall be stamped with the following warning:

CAUTION
Preliminary Survey Information
Subject to Office Verification

Preliminary survey data may be requested under the following circumstances:

- (1). To fill areas on charts where hydrographic voids exist.

- (2). To supplement areas where the charted hydrography is known to be from older surveys not considered adequate by contemporary standards.
- (3). To supplement areas on the chart where the hydrography is known to be subject to frequent change sufficient to affect safe navigation.
- (4). Preliminary survey data that is determined to be critical shall be announced in the [NM](#). Such data must be applied through the scales to all affected charts in the common area for inclusion in the weekly NM chartlets. This will provide the mariner with important interim information between chart editions.

4.2.2 USACE Surveys

The [USACE](#) administers Federal laws enacted for the protection and preservation of navigable waters of the United States. For work seaward of the shoreline, the USACE is authorized to approve plans and issue construction permits for structures of any kind, establish harbor lines, and remove sunken vessels and obstructions endangering navigation. The navigable waters of the United States over which USACE jurisdiction extends include all ocean and coastal waters within a zone 3 geographic (nautical) miles seaward from the coastline. Wider zones of 3 leagues (9 nautical miles) are recognized in some areas of the Gulf of Mexico and the Caribbean (see 33 CFR 329.12 - .14 for more details).

Copies of surveys made by the USACE are furnished to NOS for application to nautical charts and will generally be accepted and registered as chart source documents. Suspected significant errors in control data, various limit lines, plotted sounding lines, depths, and other charting data shall be brought to the attention of the USACE for rectification if these errors cannot be resolved unequivocally within NOS. This procedure shall not affect the routine scanning of the submitted data for publication of suspected dangers in the NM.

1. Initial Screening and Application

All USACE surveys shall be forwarded to the production branches immediately after being registered and indexed.

a. Expediting Critical Items

USACE surveys shall be screened for items affecting the safety of navigation immediately upon receipt in the production branches. Surveys on which critical items appear shall be assigned first

priority for application to the digital chart files. Critical items must be applied promptly and [NM's](#) written.

In addition to promptly applying critical items, the production branches must also expedite the processing of USACE surveys and channel depth reports that affect tabulated depths and depth legends on existing charts.

b. Delineation of Depth Contours and Curves

The placement of [depth contours](#) or [curves](#) and the avoidance of ½-foot soundings on USACE surveys shall be consistent with the guidelines established for NOS hydrographic surveys (see [Section 4.4.2, Depth Contours](#) and [½-Foot Soundings](#)).

2. Classifications of USACE Surveys

The relative degree of chart application required will depend on the status of the USACE hydrographic survey being applied.

- a. Reconnaissance -- a general survey to determine whether a channel has shoaled to lesser depths than the approved project or to determine the need for a more detailed survey.
- b. Condition and Examination -- a more detailed survey to determine the current condition or the controlling depth of a channel and to plan future maintenance dredging and preparation of channel condition statements to be issued to navigation interests.
- c. Preliminary -- a detailed survey to determine the condition of a channel; plans and specifications for future dredging work are based on this survey.
- d. Contract drawing -- a survey furnished to a contractor specifying the area and depth to be dredged (or work to be accomplished) to fulfill contract terms.
- e. Predredging -- a survey made immediately before commencement of dredging to determine the latest condition of the channel.
- f. Afterdredging -- a survey made immediately after completion of dredging to determine the latest condition of the channel and to determine whether additional dredging is required to meet the terms of the dredging contract.
- g. As-built -- a survey certifying that the channel has been dredged or a structure has been built in accordance with the contract plans. An as-built survey normally is used to show a feature as it was actually constructed.

3. In Galveston Bay and the Houston Ship Channel

Depths (including [Channel Tabulations](#), [Channel Legends](#) and [Channel Depth Notes](#)) are referenced on nautical charts to a specified [vertical datum](#). In Galveston Bay, the Houston Ship Channel and in the vicinity of Freeport, Texas the vertical datum is [Mean Lower Low Water \(MLLW\)](#). Recent information received from the U.S. Army Corps of Engineers (USACE) is referenced to a local dredging reference - Mean Low Tide (MLT). These two vertical references are not equivalent.

Combined with measured subsidence of the bottom, it has been determined that an approximate conversion value of 1 foot needs to be added (making depths deeper) to USACE hydrography referenced to Mean Low Tide. This information is typically provided by USACE in tabulated form or as channel profile (crosscut) graphics.

DESIGNATED GEOGRAPHIC AREA:

All USACE projects referenced to MLT and located within the following designated area shall subscribe to these specifications. The designated area is as follows:

An area encompassing all of Galveston Bay, from and including the Galveston Bay Entrance Channel and the Houston Ship Channel in its entirety.

Inside Galveston Bay, along the axis of the INTRACOASTAL WATERWAY, the eastern limit includes all USACE projects west of longitude 94°28'00.63"W (which is equal to the western neatline dimension of Chart 11332). The western limit extends to longitude 95°50'01.65"W (which is equal to the western neatline dimension of Chart 11321) and encompasses all of Freeport Harbor, from and including the Freeport Harbor Channel.

DEPTH INFORMATION:

USACE depth information is portrayed on NOS charts as (1) a Channel Tabulation, (2) a Channel [Legend/Channel Depth Note](#), or (3) as [Soundings](#). All USACE sources in the designated area referencing Mean Low Tide (MLT) shall be applied according to the following specifications.

(1) CHARTED CHANNEL TABULATIONS:

USACE depth information, referenced to MLT, provided in tabular or graphic form shall be applied to the charted channel tabulation as is without the application of the approximate conversion value.

All charted channel tabulations within the designated area shall subscribe to this format. There are no conditions where a charted channel tabulation contains a combination of different datums within the same tabulation.

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The header in the tabulation currently reading:

"CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)"

shall be revised to

"CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOW TIDE (MLT)"

A modification statement shall be added at the bottom of each channel tabulation when MLT data is used.

The following statement, in upper case letters, shall be inserted below the bottom horizontal line of the tabulated data table and above the note

"NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION."

INFORMATION IN THIS TABULATION HAS BEEN PROVIDED TO NOAA BY THE U. S. ARMY CORPS OF ENGINEERS. DEPTHS ARE REFERENCED TO A LOCAL DREDGING REFERENCE CALLED MEAN LOW TIDE. FOR AN APPROXIMATE CONVERSION TO MEAN LOWER LOW WATER, ADD 1 FOOT TO EACH DEPTH IN THE TABULATION.

When the charted tabulation has footnotes, the statement noted above shall be inserted after the last footnote.

(2) CHARTED CHANNEL LEGENDS AND CHANNEL DEPTH NOTES:

USACE depth information, referenced to [MLT](#), provided in tabular or graphic form shall be applied to revise/update a charted channel legend or channel depth note. The approximate conversion value of 1 foot shall be added to the MLT value. The resultant charted value will be 1 foot deeper than the MLT value. Note: When a legend is used to describe a channel, a spot sounding located within a channel must also be converted.

(3) CHARTED SOUNDINGS LOCATED OUTSIDE CHARTED CHANNEL LIMITS:

Soundings referenced to MLT and located outside charted channel limits shall be converted using the approximate conversion value of 1 foot. The resultant charted value will be 1 foot deeper than the MLT value. Note: Depth curves originating on any USACE source referenced



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

MARCH 14, 2002

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Nautical Chart Manual Correction Page - [Figure 4-1: Source Diagram](#)

Effective immediately, the following attachment replaces pages 4-19 through 4-22 in the Nautical Chart Manual, Volume 1, Part I, Seventh (1992) Edition, and serves to correct the following graphic error introduced to the Nautical Chart Manual during its conversion to digital format:

Nautical Chart Manual Volume	Nautical Chart Manual Page	Errors Introduced during Digital Conversion
1	4-20 (Figure 4-1)	Source Diagram Illegible

Pages 4-19 through 4-22 are to be inserted into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition immediately after page 4-18.

Attachment

to [MLT](#) must not be used. Depth curves should be regenerated after applying the approximate conversion value of 1 foot to individual soundings.

4. Charting of [Aids to Navigation](#) and [Topography](#)

The survey base used by the USACE to plot hydrography usually does not show current topographic information. The USCG aids to navigation, especially fixed aids, generally appear on USACE surveys in their location at the date of the original base even if they have since been relocated or removed. A specific request to the USACE is usually required to obtain current locations of fixed aids. Positions of aids provided by the USACE must be approved by the USCG before they are charted.

NOS cartographers shall compare all fixed aids to navigation appearing on USACE surveys with their charted positions. Any suggested revisions to aids included in a Light List shall be brought to the attention of [NM Update Service](#), which will seek USCG approval of the recommended charting action which is required before charted aids are changed.

USACE surveys may be used as the charting source for features not listed in the Light List such as privately maintained aids, dredging markers, piles, stakes, and similar objects that can affect surface navigation. This information should be used if it is current.

USACE surveys may also be used as the source for shoreline changes when they are supported by hydrography or when the date of the survey base is more recent than that shown on other available sources. The approximate shoreline symbol ([C 2](#)) shall be charted in this case unless the shoreline datum is considered to be reasonably well defined.

5. Charge-out of Sources

When using registered source documents, cartographers must fill out a charge-out slip to be filed with NDB. The cartographers are responsible for protecting documents that are charged out to them. The charge-out slip should be removed from the file when the item is returned.

6. [Source Diagrams](#)

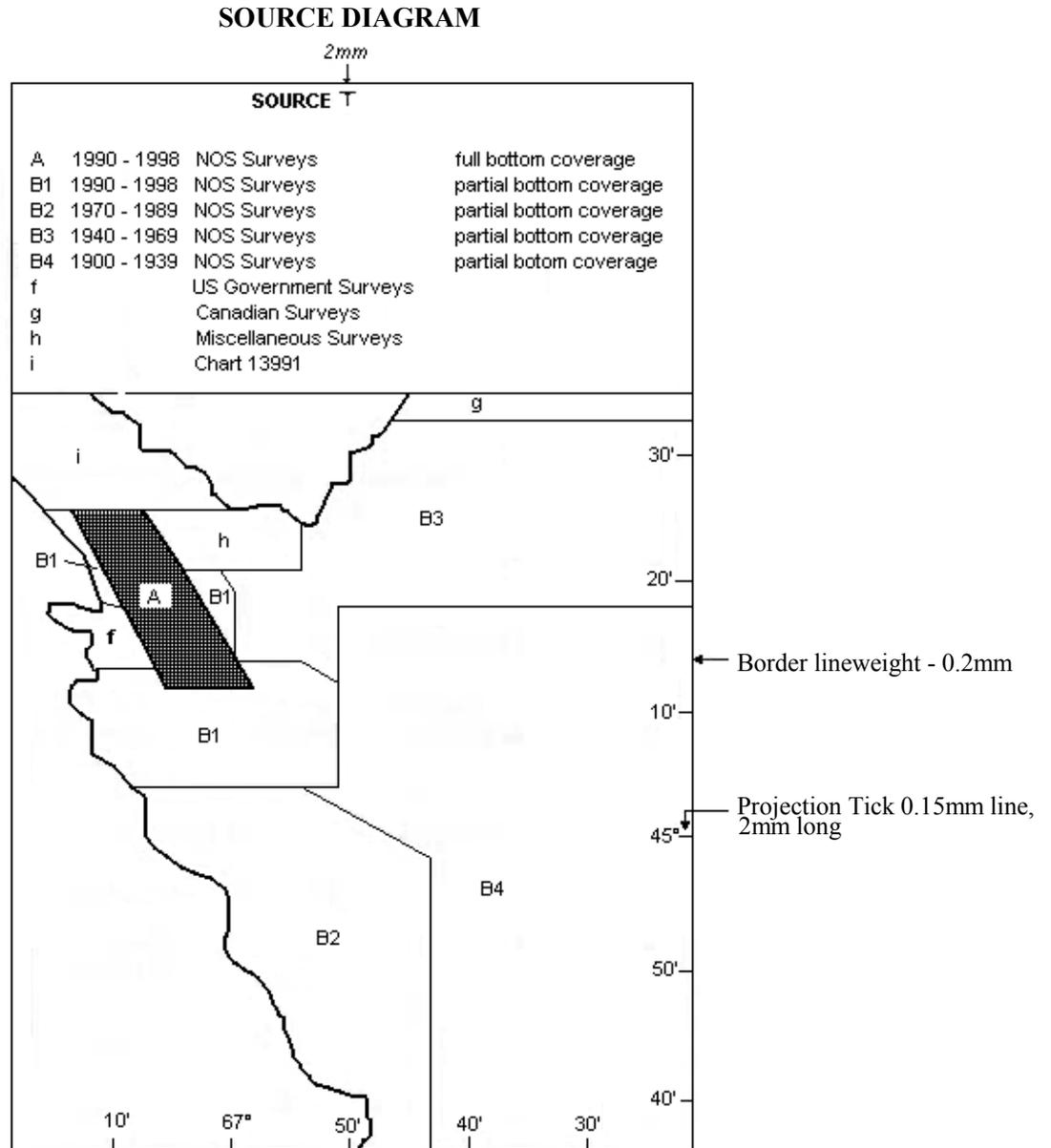
Source diagrams, as used on NOS nautical charts, consist of a graphic delineating the limits of the most recently available hydrographic survey information that has been evaluated for chart application, and the associated textual information.

Source diagrams shall be added to all charts 1:500,000 scale and larger unless specifically excluded by the Chief, Marine Chart Division. Source diagrams shall be revised as subsequent hydrographic source documents are evaluated.

Section 4.2.2

NAUTICAL CHART MANUAL

The "Authorities" note shall not be used in lieu of a source diagram. Graphic and textual specifications for source diagrams are detailed in the following paragraphs. A typical source diagram is shown in [Figure 4-1](#).



Outside Border Dimensions 75mm x 110mm
(for chart with neatlines 750mm x 1100mm)

Figure 4-1

a. Specifications of Graphics

The overall linear dimensions of the [graphic](#) shall be one-tenth of the chart's neatline dimensions. A 0.2 mm black outline shall be used for the diagram's border. The normal coastline (0.2 mm, black) shall be shown within the diagram with all land areas tinted gold. The survey area limits shall be shown by a solid black 0.15 mm line. Identifying letters or references shall be placed in the approximate center of the survey area in 7 pt. Swiss Light.

A screened 25 percent blue tint fill shall be used to identify areas of 100 percent bottom coverage. All other water areas shall be white.

Survey limits shall not be delineated in areas where hydrography is not charted. The limits of large scale charts may be delineated and survey limits omitted within the larger scale chart outlines, in source diagrams shown on charts smaller than 1:100,000 scale. An alpha identifier, in 7 pt. Swiss Light, shall be placed in the approximate center of each outlined larger scale chart. The outline of large scale charts may be used only in congested areas in source diagrams for charts at 1:100,000 scale and larger. The limits of surveys conducted by USACE in maintained channel shall not be included in source diagrams. USACE surveys covering large areas shall be delineated.

A circle, 0.3 mm in radius, shall be used as a minimum size outline for Field Examinations and other surveys covering small areas. A leader shall be used to connect an alpha identifier with the corresponding minimum size outline.

Projection ticks 2.0 mm in length, 0.15 mm line weight, shall be shown along the inside border and labeled in 6 pt. Swiss Light. The intervals of these ticks shall be such that each projection line on the base chart is represented by a tick on the diagram. Preferred placement of the ticks and labels is along the east and south limits of the diagram. Shoreline and survey limit lines shall be broken for labels and ticks. The projection value labels on the base chart shall be used as a guide for labeling the ticks on the source diagram. For example, if the label on the base chart included degrees and minutes then degrees and minutes shall be used on the diagram (see [Figure 4-1](#)).

For charts with insets or extensions: the inset shall be shown in the diagram if it is of substantially larger scale (at least four times larger than the base chart) and the area is covered by more than two surveys. If the area within the inset is covered by one or two surveys only, the diagram for the base chart is sufficient. Extensions shall always be shown in the diagram. The inset or extension limits shall be shown by a 0.2 mm line similar to the diagram border. Procedures for adding graduation ticks and values to insets and extensions are the same as for the base diagram.

b. Specifications of Text

Textual information for source diagrams shall be arranged in tabular form in an area directly above the graphic, under the heading "SOURCE" and outlined by the same 0.2 mm border as the graphic. The heading shall be in 8 pt. Swiss Regular type. All other text shall be in 7 pt. Swiss Light. The height of the bordered text area is variable depending on the number of references but shall extend at least 2.0 mm above the heading.

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The minimum width of this tabulation shall be equal to the width of the graphic. In some cases, it may be necessary for the width of the tabulation to exceed the width of the graphic. The tabulation shall print against a white background.

Tabulated text shall include the date band identifier, origin, and whether the bottom coverage is full or partial for each survey or group of surveys referenced to one alpha or alphanumeric identifier. Adjacent surveys, regardless of scale, collected within the same time bands and with the same type of coverage, shall be grouped under one identifier.

Surveys shall be identified according to the following classification scheme:

- A. 1990 to the present (where full bottom coverage was achieved). These surveys used side scan sonar or multibeam technology and differential GPS positioning.
- B1. 1990 to the present (where partial bottom coverage was achieved). These areas were surveyed using single beam echo sounder technology and may utilize differential GPS positioning.
- B2. 1970 to 1989. Partial bottom coverage was achieved using single beam echo sounder technology and primarily electronic positioning.
- B3. 1940 to 1969. Partial bottom coverage was achieved using single beam echo sounder technology and primarily visual positioning.
- B4. 1900 to 1939. Partial bottom coverage was achieved using primarily lead line technology and visual positioning.
- B5. Pre-1900. Partial bottom coverage was achieved using primarily lead line technology and visual positioning.

Actual dates of surveys shall not be used. For example, if surveys used to compile the hydrography on a particular chart were conducted in 1946, 1955, 1956, 1971, and 1976, they could be grouped under two alphanumeric identifiers. One identifier, B2, would label the area covered by the 1971 and 1976 surveys and be referenced in the textual information using the dates 1970-1989. Another identifier, B3, would label the area covered by the 1946, 1955, and 1956 surveys and would be referenced in the textual information using the dates 1940-1969. Surveys from different time bands shall not be grouped together.

If a survey was conducted in more than 1 year and those years transcend time bands, the time band that would apply to the most recent work shall be used.

For time bands dated from 1990, the date of the most recent survey in that category shall be used as the ending date for that time band. For example, if the most recent survey providing full bottom coverage on a particular chart was conducted in 1997, the resulting time band in the tabulated text shall read, 1990-1997.

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When a time band dated from 1990 is used, the ending date of that time band shall not be advanced with each new edition. If a new edition is produced in the year 2000, and the latest survey providing full bottom coverage is still 1997, the ending date of that time band shall remain 1997.

The ending date of a time band dated from 1990 shall change when more recent hydrographic source is applied to the chart.

The type of coverage for each survey or group of surveys shall be identified in the textual source tabulation according to the following terminology: "full bottom coverage" for surveys that utilized side scan sonar or multibeam throughout the entire survey or "partial bottom coverage" for surveys that utilized single beam echo sounder or lead line. A survey that utilized a single beam echo sounder with side scan sonar within a limited area shall be listed as having partial bottom coverage. Surveys with full bottom coverage shall not be grouped with surveys achieving partial bottom coverage.

A category for miscellaneous surveys may have to be included to cover areas where surveys are too numerous to identifying or to cover areas that would otherwise not be covered. Such areas shall be identified "Miscellaneous Surveys" and the dates shall be omitted. Dates shall also be omitted from references to large-scale charts.

The term "U.S. Government Surveys" shall be used to refer to government sources other than NOS. This term shall include USACE surveys of large areas. Dates and type of bottom coverage shall be omitted from references to these surveys.

Surveys conducted by foreign governments shall be listed separately from U.S. sources. Dates and types of bottom coverage shall be omitted from references to foreign surveys.

Surveys detailing full bottom coverage shall be listed first. All other NOS surveys shall follow, listed chronologically, with the most recent first. References to larger scale charts should appear last.

The following note shall be added to all charts displaying a source diagram.

SOURCE DIAGRAM

The outlined areas represent the limits of the most recent hydrographic survey information that has been evaluated for charting. Surveys have been banded in this diagram by date and type of survey. Channels maintained by the U.S. Army Corps of Engineers are periodically resurveyed and are not shown on this diagram. Refer to Chapter 1, United States Coast Pilot.

The note shall print in black and in 7 pt. Swiss Light. Placement of the note shall be in the following order:

1. Directly above the diagram.
2. Directly below the diagram.
3. Any other location in close proximity to the diagram.

4.2.3 Miscellaneous Surveys

Depth Information is received from many sources other than NOS, [USACE](#), and [DOD](#). This information may range from substantial state and local government surveys to a single uncontrolled line of soundings from an individual without correctors for tide or transducer depth.

All such information must be carefully screened prior to chart application to separate valid and sufficiently complete data from data that should be rejected as inadequate. Every effort shall be made to obtain sufficient additional information to salvage an otherwise useless survey if it is judged to be potentially useful.

Great care must be exercised in the application of private surveys to make certain that all relevant positioning factors involved are considered for adequacy, that the date and time of the survey work are available for construction of a tide curve for derivation of tide correctors, and that all soundings are corrected for the depth of the transducer. Failure to consider the depth of the transducer can result in charted depths that are shallower than the actual depths.

Depths charted from non-authoritative sources should include the word “reported” and the date of the survey as a legend or note, as appropriate, until they can be verified by an authoritative survey. Two examples of such disclaimers follow:

3 ft shoaling rep 1999

_____ Creek

Hydrography in the _____ Creek from the entrance to the railroad bridge is reported from a private survey of 1999.

4.2.4 Danger to Navigation Reports

NOS field units (vessels, contractors and navigation response teams) are required to submit a Danger to Navigation Report for:

Significant uncharted [rocks](#), [shoals](#), [wrecks](#) and [obstructions](#).

Depths which are found to be significantly shoaler than charted depths and features.

Uncharted or inadequately charted clearances for [bridges](#) and [overhead cables](#) or [pipes](#).

Other submerged or visible features, or conditions considered dangerous to navigation.

In general, Dangers to Navigation Reports are no longer submitted directly from NOS field units to the USCG and [NGA](#) for inclusion in the [NM](#). NOS policy dictates that in most cases, these reports shall be forwarded immediately to the Marine Chart Division (MCD) through the Atlantic Hydrographic Branch (AHB) or the Pacific Hydrographic Branch (PHB). A copy shall also be sent to the Hydrographic Surveys Division Operations Branch. If a significant danger to navigation is discovered and is an immediate danger to vessel traffic, the field unit or COTR shall submit the information as quickly as possible to the Captain of the Port, USCG and pilots. The information shall also be submitted as described above.

The necessity for prompt action in evaluating and charting an item from a Danger to Navigation Report cannot be overemphasized. Immediately upon receipt of a Danger to Navigation Report, the Nautical Data Branch (NDB) shall process the report as a source document and indicate “priority” status with a hand stamp on the first page of the report. The report shall then be immediately forwarded to the appropriate production branch for application to all affected charts. NDB shall notify the chief of the appropriate production branch and the Chief of the Coast Pilot Branch, by electronic mail, that a priority source document is available for chart application. NDB shall forward a copy of the source document to the Coast Pilot Branch.

If corrections are complex, a chartlet may be prepared for issue. Notice to Mariners items generated during application of a Danger to Navigation Report shall be submitted to the [NM Update Service](#) without delay. The reviewer of the priority source document in the production branch shall alert NM Update Service, by electronic mail, that one or more priority items are being submitted for inclusion in the NM. The NM Update Service shall promptly process and transmit the submission to USCG and NGA for inclusion in the next issue of the NM. Danger to Navigation Reports must be processed immediately and every effort shall be made to transmit the submission to USCG and NGA within one week, at most, after receiving a Danger to Navigation Report in MCD. The NM Update Service shall also forward a copy of the NM submission to [AHB](#) or [PHB](#).

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Reports of inadequately charted clearances for bridges and overhead cables or pipes shall be referred to the cognizant authority by the NDB. Chart application will depend upon the authority's response to the NDB inquiry.

NOS field units are also required to report the following information to the USCG in a timely manner for a "Broadcast to Mariners."

Floating wreckage, logs, derelicts or other similar objects that are menaces to navigation.

A fixed or floating aid to navigation found to be off station to an extent that the aid does not serve its purpose adequately.

A fixed or floating aid to navigation showing significantly different characteristics than those charted or described in the Light List.

A Danger to Navigation Report will also be prepared for these conditions and it will be forwarded to MCD through [AHB](#) and [PHB](#).

Unanchored floating dangers are not charted due to their constantly changing positions and temporary nature. However, such hazards may be of immediate interest to mariners. Therefore, any reports of hazardous unanchored floating dangers received by an MCD production branch from a Danger to Navigation Report shall be promptly referred by that production branch to the [USB](#). The USB shall verify whether or not the unanchored floating dangers were reported to the USCG. The USB shall notify AHB or PHB when the USCG has been contacted concerning a Danger to Navigation Report.

Reports of aids to navigation that do not adequately serve their intended purposes and aids to navigation showing different characteristics from those shown on the chart, or in the in the Light List, may also be received by an MCD production branch. Such items shall be promptly referred by that production branch to the USB. When the USB receives reports of such items, it shall verify whether or not the information was reported to the USCG. The [NM Update Service](#) shall notify AHB or PHB when the USCG has been contacted concerning a Danger to Navigation Report.

4.2.5 Litigation Copies

NOS maintains copies of nautical charts in a special file for use in litigation cases. Images of most superseded nautical chart editions may be obtained from one of the following sources: the archive of raster nautical chart editions maintained by NDB, the historical nautical chart collection maintained by OCS or photostatic copies from charts on file at the National Archives.

4.3 Soundings

The soundings and related depth curves (see [Section 4.4](#)) are the most important information charted. Soundings and depth curves must be selected to portray the character of the bottom clearly and accurately, as well as to correctly reflect the adequacy (density) of the source. Even very deep soundings and curves must be charted since areas of charts lacking hydrographic information will suggest nonexistent, sparse, or inadequate data. Depth information must be shown for the entire chart, if available; it should not be limited to channels or passages.

[Shoal areas](#) are important because they represent navigational hazards. But deepwater submarine relief is also important to the navigator in determining a vessel's location. The more faithfully the chart depicts this relief, the more effectively the navigator can relate depth readings obtained by the depth sounder to the chart, and the more certain the navigator will be of the vessel's location. Depth soundings also depict natural channels between shoal areas and into harbors and anchorages. See [Section 4.6](#) for the charting of soundings in improved channels.

[NOS hydrographic surveys](#) of the east coast and Puerto Rico begun after October 23, 1980, use [MLLW](#) as the sounding datum rather than [MLW](#)) as in the past. Because the differences between MLLW and the chart datum (MLW) are minor, surveys can be fully applied without making any adjustments in the soundings, shoreline, low water line, or clearance heights.

4.3.1 Bottom Features

An accurate depiction of bottom features is the primary function of soundings and [depth curves](#) on charts. The following features should be charted so as to be easily recognized by chart users.

1. Shallow Areas

Shallow areas are large expanses of shoals or of shallow water where the changes in depth are relatively slight. Some bays fed by river systems are shallow throughout.

2. Shoals and Banks

Shoals are shallows that constitute offshore hazards to navigation. They are defined as having a depth of ten fathoms or less and may be composed of any material except rock or coral. A shoal may be an isolated feature or part of a shoal area composed of two or more shoals. A bank is an area of relatively shallow water which is, however, of sufficient depth for safe navigation. Bars are ridges of sand or gravel, often at the mouth of a river, which may obstruct navigation. Note that shallow areas of rock and coral are charted as ledges and reefs and labeled, rather than being delineated solely by depth indicators.

3. Irregular Bottoms

Irregular bottom areas may consist of shoals, shallows, passages, [deeps](#), etc., and are characterized by relatively large abrupt depth differences throughout the region.

4. Smooth Bottoms

Smooth bottom areas are expanses where variations in depth are gradual and are relatively small compared to the size and depth of the area as a whole.

Smooth areas in relatively deep water are the least important feature shown on charts. Generally, they pose no navigational hazard. They are depicted to provide "bottom detail" to navigators, rather than to enhance boaters "safety".

5. Navigable Channels and Passages

A channel or passage is a relatively deeper navigable route through an otherwise shallow area. Natural channels or passages are important features which contribute to the navigational value of a chart.

Natural channels may constitute routes from deep water into shore or harbor areas, or routes between deepwater areas through shoals or bordering shallow areas.

In general, all natural channels are charted using both soundings and depth contours. When the chart scale is too small to illustrate all the channels shown on the survey, the most important routes shall be retained at the expense of the less important or more restrictive alternate routes.

6. Deeps

Deeps are local deformations in the bottom configuration characterized by a significant increase in depth when compared to the surrounding areas.

The boundary of a deep is the zone which separates the deep area from the surrounding shallower water. The size of the zone depends on how well the deep can be distinguished from the surrounding area. Criteria similar to those for shoals can be used to establish the boundary zone.

Deeps do not constitute the same navigational hazards as shoals. Nevertheless, deeps must be charted to aid mariners in determining a vessel's position (by comparing a line of soundings from a depth recorder with the depths on the chart) and, in shallower areas, for purposes of anchoring, swimming, and landing. Representative deeps must also be shown to indicate the character of the bottom.

4.3.2 Selection and Spacing of Soundings

The density of soundings shown on the chart is usually considerably reduced from that shown on the sources. The selection process must ensure that the overall presentation of depth data is accurate, complete, and will be quickly and easily understood by mariners (see Figure 4-2).

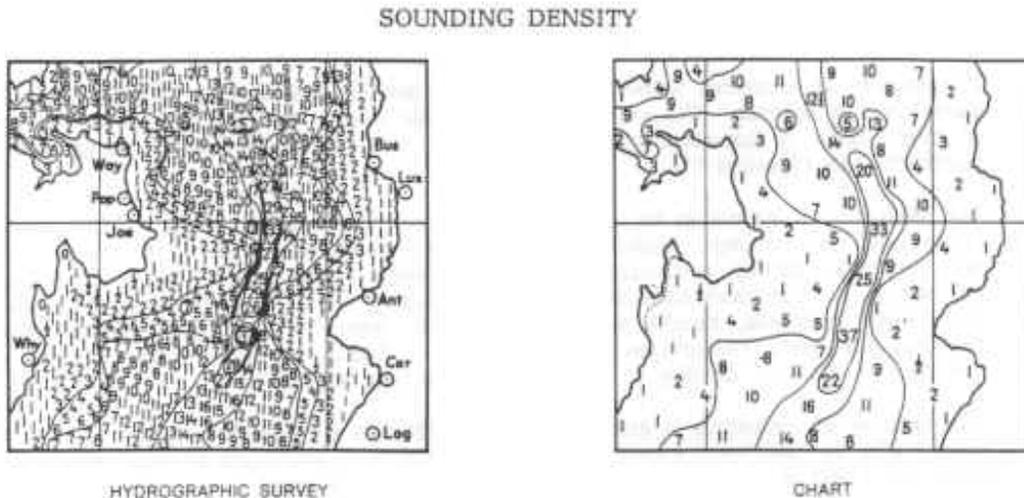


Figure 4-2

The selection of soundings to be shown on a chart is one of the most critical aspects of nautical cartography. Maintaining a balance between clear and safe interpretation and complete survey presentation is a challenge for even the most experienced cartographer. Emphasis must be placed on selecting a sufficient density of soundings for natural channels, shoals, or other hazardous areas to adequately highlight these features for quick recognition by the mariner. Additional supportive soundings are selected at a lesser density to complete the bottom description.

The spacing of soundings is also significant. Whereas fill soundings (over flat bottom areas) will be relatively widely spaced, the density of soundings in shoal areas helps draw the chart users attention to potentially dangerous areas.

Bottom contouring and feature identification are necessary predecessors to sounding selection. The order in which soundings are selected from sources depends upon the bottom features of the area being charted and their relative significance to the overall bottom shape. As a rule, selection of soundings should begin with shoal areas and natural navigational channels and work toward deeper water.

The selection of soundings must accomplish the following:

1. All shoal areas that might impede surface navigation must be identified.
2. Information about natural channels between or through shoal or hazardous areas must be provided.
3. The configuration of the bottom must be graphically portrayed.

Note, on all compilation drawings, Figures denoting soundings shall be of uniform size (not larger than 2 mm or smaller than 1.5 mm).

1. Least Depths

Least depth soundings over features which are delineated by depth curves (such as pinnacles, domes, or ridges) should always be identified first because they often are associated with hazardous shoal areas. They also prove valuable in identifying navigable passages. When selecting least depth soundings, cartographers should keep in mind that the primary function of a nautical chart is to provide safe navigation.

A least depth sounding must be selected for each shoal feature charted. When more than one shoal feature exists in an area, selection of soundings begins with the shoalest feature in the area. When two adjacent features are at about the same depth, the selection of soundings should begin with the one that is most critical, that has the greatest depth differential, or is nearest the most prominent navigation route. This procedure of selecting features based on their relative importance prevents conflicts from occurring later between the various supportive soundings which may exist outside the depth curve.

When applying hydrography from larger to progressively smaller scales, a series of shoals may have to be generalized into a single shoal feature. When this is necessary the shoalest sounding from the group shall be selected to represent the least depth over the generalized shoal.

The least depth for a natural channel (also termed "controlling depth") must also be charted. This provides information about the minimum limiting depth in an approach or channel. Every natural channel has at least one controlling sounding which identifies the minimum depth of the channel. Careful selection of this sounding is extremely important in providing for safe navigation.

2. Critical Soundings

Within each isolated feature bound by a depth curve, the shoalest seaward sounding must be selected. This sounding is, by definition, a critical sounding, and therefore, must be selected even if it is a sounding with the same value as the curve. Critical soundings represent least depths in proximity to known or potential navigational routes. Such soundings are normally considerably shallower than their surrounding depths. Note that while a critical sounding is almost always a least depth, a least depth is not always a critical sounding; the soundings location is also an important factor.

A chart user should be able to assume that the water depth between two adjoining critical soundings is no less than the lesser of those two soundings. To satisfy this requirement, many closely spaced and equivalent critical soundings may have to be selected in shoal areas if the chart scale permits. Critical soundings may be spaced very close together to increase the amount of detail presented to the chart user; however, they shall not be closer than about 6 mm.

3. Deep Soundings

Deeps, like shoals, are local deformations in the bottom shape. Deeps are significantly deeper than the surrounding area and must be represented by at least one sounding that shows its maximum depth.

Soundings which are approximately 10 to 20 percent deeper than their surroundings are considered important soundings and will usually be selected by cartographers. However, a deep sounding shall not normally take precedence over an adjacent critical shoal sounding.

The boundary of a deep may be considered to be the deepest regular curve that encloses the area, thus separating it from the surrounding area. Defining this boundary will assist the cartographer in selecting soundings to describe the bottom.

4. Supportive Soundings

Supportive soundings (sometimes termed "developmental soundings," but not to be confused with "[fill soundings](#)") supply additional information to the user about the shape of the bottom. They are also used to provide periodic identifiers for depth curves and to show changes in bottom slope away from shoals or deeps.

The most important function of supportive soundings is to provide depth information for navigation between shoals, islands, and other obstructions. They are also used to provide information about the shape and size of shoals and the slope of the bottom. They are also valuable in determining a vessel's position by the "line of soundings" method. Since more soundings are required to provide this type of detail on slopes than in flat areas, the increased density of soundings also serves to draw the chart user's attention to the shoal. Therefore, supportive soundings have two purposes with respect to [shoals](#) -- they

alert the chart user to the shoal and provide information about the shoal.

Supportive soundings for shoal areas are selected after least depths and critical soundings have been selected and then by working toward the boundary zone of the shallow area in a series of steps largely determined by the number of intermediate depth curves that enclose or limit the area. Selection starts within the closed depth curve around a least depth sounding. Generally, if the enclosed area is small and smooth (i.e., the distance from the shoalest sounding to any point on the depth curve is less than 10 mm), no supportive soundings are required. If the area can accommodate additional soundings without sacrificing clarity then those soundings which convey bottom shape and changes not captured by the depth curves should be considered for selection. Inside the depth curve, supportive soundings should be selected around the critical sounding to show the sloping characteristics and to help define the depth curve.

Supportive soundings are also used to portray significant deep areas. [Deep soundings](#) which are selected, but not enclosed by a depth curve, should be surrounded by a ring of irregularly spaced supportive soundings. Usually, support soundings selected around deeps are separated by greater spacing than for support soundings selected around a comparably sized shoal. Without this ring, a chart user could easily misread the depth of the water between a critical deep and a nearby fill sounding. Depth curves around very small isolated deeps are usually not charted unless to do so would serve a specific purpose. When a depth curve is drawn, the first sounding selected is the deepest. If the chart scale permits, supportive soundings are selected to describe the deep in greater detail, helping to show the character of the bottom.

Important bottom structures not captured by least depth and critical soundings will help determine the placement of supportive soundings. In general, supportive soundings should be at least 10 mm apart when critical soundings are not present.

Supportive soundings also portray the detailed structure of natural channels. When scale permits, these should be selected in a pattern with enough density to illustrate the recommended channel route by delineating both the width and the depth of the navigable portion. Water depths between adjacent selected supportive soundings must be the least depth in the immediate area which they represent.

Depth curve anomalies, such as relatively long but narrow departures into shallower water from a depth curve's normal gentle curve, are given credibility by the inclusion of supportive soundings along and near the end of the extension, as chart space permits. Long, sinuous, deep depth curve anomalies which are too narrow to include a sounding are sometimes eliminated in favor of chart simplicity, although it is preferable to show them.

Soundings adjacent to depth curves are often considered [fill soundings](#), but they are really supportive soundings. These soundings imply the value of the depth curve. This is important since a depth curve's label may be some distance from the area of interest to a chart user. Also, depth curves which enclose small areas are generally not labeled. Thus this use of supportive soundings eliminates the necessity of

labeling every curve frequently and thereby simplifies the chart.

Where possible, supportive soundings should not be chosen at the same depth as a charted depth curve (shallow side) or one unit (foot or fathom) greater than the curve value (deep side) since these soundings present little additional information from what the curve itself presents. For example, an 18- or 19-foot sounding near the 18-foot depth curve is almost superfluous; however, a 15-foot sounding near the curve would be unexpected and therefore should be selected in place of a nearby 18-foot sounding. Note that as the scale of the chart becomes smaller, it becomes easier to select supportive soundings at different depths than the depth curve. The spacing between two supportive soundings or between a supportive and a fill sounding is somewhat less than the typical separation between fill soundings. Spacing between supportive soundings should be between 40 and 100 percent of the spacing between fill soundings, with the distance depending on the relative importance of the supportive sounding. (The greater the difference in depth between the sounding and the depth curve, the more important the sounding.)

Supportive soundings are generally used to provide additional information to the chart user about critical soundings or to indicate the value of depth curves. Supportive soundings are usually selected to form a ring around a critical sounding. As the depth differential between the critical sounding and these adjacent soundings increases, the spacing between the critical sounding and the surrounding supportive soundings decrease. Because this spacing is less than for fill soundings, supportive soundings provide a more detailed representation of bottom features. In addition, this decrease in spacing (hence, increase in the density of soundings) helps draw the user's attention to potentially dangerous areas.

Closely spaced supportive soundings outside the depth curve of an isolated shoal are used to indicate the slope of the sea bottom near the shoal. The density of these soundings is also used to increase the visibility of a small but dangerous shoal.

5. Fill Soundings

Fill soundings are used to portray smooth bottoms areas or deep areas between shoals that are not adequately defined by supportive soundings. Normally, fill soundings provide information about large, gradually sloping depressions that are not deep enough to be enclosed by a depth curve. Ideally fill soundings radiate away from the deep sounding.

Fill soundings are used to complete the portrayal of bottom shape. They reflect the water depth in the neighborhood of the supportive sounding. When compared with nearby soundings, they indicate the general slope of the area. It is desirable to select a symmetric pattern of fill soundings in areas separated by depth curves. However, this is not absolutely necessary nor always possible.

For large, relatively flat areas, no sounding is unique and all of the selected soundings will be of this type. The spacing between selected soundings should be constant to reflect the smooth character of

the bottom. The pattern of selected soundings should smoothly blend with the selection pattern in neighboring regions; however, the spacing should be somewhat greater than in more irregular areas. This increase in spacing should occur gradually in the transition region between flat areas and the less flat areas of the chart. Fill soundings generally are from 15 mm to 30 mm apart.

Depth curves and fill soundings are used to depict the general trend of the ocean bottom, whereas critical and supportive soundings are selected to indicate departures from the trend. Thus they are usually placed closer together than fill soundings.

6. Channel Range Soundings

When a range is charted to show the centerline of a channel, a line of soundings shall be selected on the range. This policy shall not apply to dredged channels where depths are stated by tabulation or note (see [Section 4.6](#)).

7. Nonjunction Soundings

When the application of a recent survey to a chart reveals conditions so changed that a satisfactory junction cannot be made with the hydrography of former surveys, a blank band of approximately 5 mm shall be left beyond the limits of the more recent survey and a note added such as "Hydrography to (eastward) from surveys of 1934." Care should be taken that no critical data from the earlier surveys are deleted by the blank band.

8. Changeable Areas

All hydrographic detail, including soundings and floating aids, may be omitted from areas known to undergo continual and rapid change, such ocean inlets and openings between barrier islands. If charting this information would present a false (hence unsafe) picture because of its changeability, the area shall be tinted blue No. 1 and an explanatory note shall be charted.

9. Soundings Omitted Within Groups of Rocks or Coral Heads

On small-scale charts, soundings within a group of rocks or coral heads through which there is no apparent channel should be omitted.

10. Soundings in Slips and Around Piers

Soundings in [docks](#), [slips](#), and around [piers](#) should be shown where space allows. The cartographer should select soundings far enough off piers to provide depths at the keel lines of vessels which use these piers. A dated depth legend, if available, may be shown in lieu of hydrography if space allows and a survey is not available.

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 002/03

January 21, 2003

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.3.2

TO: All Cartographers
Marine Chart Division

SUBJECT: Placement of Soundings

APPLICATION: All Affected Nautical Charts

Effective immediately, the attachment shall replace pages 4-35 through 4-38 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The location of soundings has been defined in Section 4.3.2.1.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

11. Depths Over Rocks

A sounding over an isolated rock shall have the label "Rk" placed next to it.

12. No-Bottom Soundings (I 13)

When no bottom is found, the measured depth shall be shown under a bar with a small dot over it, but this type of fill sounding shall be avoided whenever possible.

13. River Depths

The shoreline shall be broken for soundings such as for narrow rivers where the sounding units would touch the shoreline because of the size of the feature at chart scale. When applying hydrography in navigable tributaries, the cartographer must select soundings that indicate controlling depths in conjunction with those that portray the best navigable channel. Along narrow streams, the controlling depths as stated in USACE reports should be shown.

Where feature size or chart scale does not allow for the representation of both controlling depths and channel depths, the controlling depths shall take precedence. Depth legends shall be added to identify small navigable tributaries when the cartographer determines that depth representation by soundings will not adequately describe the feature at chart scale (Ic). When adding a legend, the controlling depth for the entire feature must be used. When the depth information is questionable, the term "Reported" shall be added to the legend, e.g., *7 feet reported 1999*. These legends shall be in slant type.

When necessary, notes may be used in conjunction with charted hydrography to describe navigable tributaries. Notes shall include only the controlling depth.

CLEARWATER BEACH

The controlling depth was 5 feet for a mid-width of 50 feet to the turning basin at Clearwater Beach and 7 feet in the turning basin.

Nov 1999, May 2000

Such notes shall be in vertical type (7 pt. Swiss Light) set 2" or 3½" wide.

4.3.2.1 Placement of Soundings

Soundings shall be charted in their exact geographic positions. The visual center of the whole number (one or more digits) is always considered the geographic position of the charted sounding, including a whole number with a fractional component and a whole number with a subscript component. The visual center of the bar between numerator and denominator is always considered the position of the charted fractional soundings without a whole number component.

Soundings are rarely moved from their geographic positions. When it is necessary, the maximum position displacement from its exact geographic position is 1/2 the height of the charted whole number not including fractional or subscript components.

4.3.3 Sounding Conversion Tables

All sounding units on any one chart shall be expressed in the same depth unit: i.e., feet, fathoms (or fathoms and feet to 11 fathoms), or meters (with decimeters to 20.9 meters and half-meters from 21 to 30.5 meters). This policy shall apply to large-scale plans (insets) on a chart and to all of a group of plans forming a chart. The only exception to this rule shall apply to channel legends and controlling depth tabulations which may be expressed in feet on charts showing soundings in fathoms and to certain existing general charts in the Great Lakes which show feet to depths of 30 feet and fathoms in greater depths.

Note that soundings in fractional units without a whole number shall show a bar between the numerator and the denominator, e.g., $\frac{1}{2}$

Fractions preceded by a whole number shall have the bar omitted -- e.g., $3\frac{1}{2}$

When soundings plotted on surveys must be converted to different units of measurement for charting, the following sounding conversion tables shall be used.

1. Converting Soundings to Fathoms and Feet.

[Table A of Figure 4-3](#) shall be used when converting soundings plotted on NOS surveys in fathoms and tenths of fathoms to fathoms and feet on the chart.

On charts constructed prior to 1948, sounding units shown in fathoms were expressed in fathoms and 1/4-fathoms up to 7 fathoms, then in fathoms and 1/2-fathoms up to 8 fathoms. Fractions were not used for depths greater than 8 fathoms except adjacent to the 10-fathom curves where, in flat bottom, 10 1/2-fathom soundings were used to avoid displacement of the curve. When extensive hydrographic

revisions are made to these charts, the sounding units shall be changed to fathoms and feet in depths less than 11 fathoms.

2. Converting Soundings to Feet

[Table B of Figure 4-3](#) shall be used when converting tenths of feet on surveys to half or whole feet on the chart.

Note that the use of ½-foot soundings should be avoided. Their use is permitted only when clearly useful as a controlling depth in dredged or natural channels. In this application, the decimal values of 0.28 (0.3) to (through) 0.77 (0.7) shall be shown as ½ foot.

3. Converting Soundings to Fathoms and Fractions of Fathoms

[Table C of Figure 4-3](#) shall be used when converting tenths of fathoms on the survey to fractions of fathoms on the chart.

When soundings in whole feet or fathoms and feet or in feet and tenths of feet are to be charted in fathoms and fractions of fathoms, the feet remaining after converting into whole fathoms (6 feet equals one fathom) shall be converted to fractions of fathoms using [Table D of Figure 4-3](#).

4. Rounding Metric Soundings

Depths charted in meters shall be shown by rounding off the surveyed soundings as follows: to meters and decimeters for depths between 0.1 and 20.9 meters, to the nearest half-meters for depths from 21 to 30.5 meters, then to whole meters for depths 31 meters and greater. The break points are .07/.08 for rounding to tenths of meters, and .77/.78 for rounding to whole meters. The decimal values .28 through .77 shall be rounded to a half-meter (.5).

Examples of these roundings follow:

To Meters and Tenths (0.1 to 20.9)	To Half-Meters (21 to 30.5)	To Whole Meters (31 meters and deeper)
15.37 = 15.3	26.27 = 26	35.77 = 35
15.38 = 15.4	26.28 = 26.5	35.78 = 36
	26.77 = 26.5	
	26.78 = 27	

SOUNDING CONVERSION TABLES

Table A: Fathom to Feet
Survey to Chart

<u>On the Survey</u> (Tenths of a fathom)	<u>On the Chart</u> (Feet)
0.1	0
0.2	1
0.3	2
0.4	2
0.5	3
0.6	3
0.7	4
0.8	5
0.9	5

Figure 4-3

Table B: Tenths of Feet to Whole and Half Feet
Survey to Chart

<u>On the Survey</u> (Tenths of a foot)	<u>On the Chart</u>	
	(1/2-foot)	(Whole feet)
0.1	0	0
0.2	0	0
0.3	1/2	0
0.4	1/2	0
0.5	1/2	0
0.6	1/2	0
0.7	1/2	0
0.8	1	1
0.9	1	1

Table C: Tenths of Fathoms to Fractions of Fathoms

Survey to Chart

<u>On the Survey</u>	<u>On the Chart</u>		
Fathoms	1/4 fm.	1/2 fm.	Whole Fathoms
0.1	0	0	0
0.2	1/4	0	0
0.3	1/4	0	0
0.4	1/4	1/2	0
0.5	1/2	1/2	0
0.6	1/2	1/2	0
0.7	1/2	1/2	0
0.8	3/4	1/2	1
0.9	3/4	1	1

Figure 4-3

Table D: Feet and Tenths to Fractions of Fathoms

Survey to Chart

<u>On the Survey</u>	<u>On the Chart</u>
(Feet and tenths)	(1/4-fathoms)
0.0 to 0.9	0
1.0 to 2.4	1/4
2.5 to 4.0	1/2
4.1 to 5.4	3/4
5.5 to 5.9	1
 (Feet and tenths)	 (1/2-fathoms)
0.0 to 1.9	0
2.0 to 4.9	1/2
5.0 to 5.9	1
 (Feet and tenths)	 (Whole fathoms)
0.0 to 4.9	0
5.0 to 5.9	1

Figure 4-3

5. [NGA](#) Publications

NGA issues three publications for use in compiling NGA charts and for use in applying U.S. Navy surveys and foreign chart data to NOS charts.

1. Table No. 1

NGA policy requires that hypsography (elevations) on NGA nautical charts be changed to the metric system when derived from other sources showing units in feet. During the transition period of converting elevations from feet to meters, elevations will be charted in both systems. NGA Standard Conversion Table No. 1: U.S. Customary and International Feet to Meters and Meters to Feet (DADMS Stock No. Standcontable 01) provides standard conversions between the two systems of measurement. These tables are based on the National Bureau of Standards Miscellaneous Publication No. 286, dated May 1967.

2. Table No. 3

DMA Standard Conversion Table No. 3: Fathoms, Fathoms and Feet, Feet to Meters, Meters and Decimeters; Fractions of Fathoms to Meters and Decimeters (DADMS Stock No. Standcontable 03) is used for converting soundings to the metric system. In January 1970, NGA began compiling the depths on nautical charts in meters and decimeters. Simultaneously with this conversion of soundings to metric measurements, the assumed speed of sound in salt water used for NAVOCEANO surveys was changed from 800 fathoms (1,463 meters) per second to 820 fathoms (1,500 meters) per second. This change in the assumed speed of sound in salt water is included in the conversion of fathoms or fathoms and feet or feet to meters.

In January 1972, NGA announced its intention to discontinue the use of decimeters on U.S. Navy survey sheets and resultant charts to depths up to 21 meters. With the publication of these revised tables, NGA nautical charts compiled from U.S. Navy sources express depths in meters and half-meters (5 decimeters) to a depth of 31 meters, and in whole meters for greater depths.

3. Table No. 4

DMA Standard Conversion Table No. 4: Fathoms and Feet to Feet to Meters and Decimeters from 0.0 to 29.9 meters; Fathoms to Meters from 30 to 9,215 meters (DADMS Stock No. Standcontable 04) provides conversion from fathoms and feet to meters and decimeters beginning with 1 foot (shown as 0.1) and continuing in 1-foot increments through 16 fathoms and 5 feet (shown as 16.5). However, the bulk of this publication serves as an aid in conversion from fathoms to meters and decimeters at 1-fathom increments from 17 fathoms (31 meters) through 5,039 fathoms (9,215 meters). In the fathom column 0.1 = 1 foot. In the meter column 0.1 = 1 decimeter.

3. [USACE](#) and [Canadian Hydrographic Service](#)

Soundings applied to NOS charts from USACE hydrographic surveys and nautical charts or hydrographic surveys of the CHS do not require the use of conversion tables with implied velocity correctors. These sources are considered to have already been corrected, unless they specifically state otherwise. The conversion tables located in the appendix should be used as needed when applying sounding units from these sources.

4.4 Depth Contours and Curves

The selection of depth contours or curves to be charted is given on the chart specification sheet compiled for each chart. Supplemental depth contours or curves not listed on the chart specification sheet shall not be charted without approval of the Chief, NSD (see [Sections 4.2.2](#) and [4.4.3](#) for a list of standard and supplemental contours and curves). The selection of tint contours or curves will be based on the draft of vessels expected to use the chart and will be given on the chart specification sheet. Depth contours are screened and should not be used on charts showing depth curves, but should be used on new or reconstructed charts only.

Depth contours or curves are best used on charts to illustrate [shallow areas](#), [shoals](#) and [banks](#), [irregular bottoms](#), navigable [channels](#) and passages, and [deeps](#). Depth contours and curves are particularly useful to navigators using echo sounding apparatus.

Bottom features are more readily identified by the mariner when soundings and contours are both shown. The configuration of the bottom in areas of constant or near-constant slope is represented by depth curves. Depth curves in these areas are parallel, and the separation decreases with increasing slope. Thus closely spaced depth curves show rapidly changing depth.

Depth contours and curves are differentiated as follows:

A **depth contour** is a line connecting points of equal water depth. Depth contours represent bottom configuration at the time of the survey, subject only to generalization for clarity at smaller scales.

A **depth curve** is a line approximating points of equal water depth. It is sometimes significantly displaced outside of soundings, symbols, and other chart detail for clarity as well as generalization. Depth curves therefore represent an approximate location of the line of equal depth as related to the surveyed contour line delineated on the source.

The term “curve” is often used collectively for both depth curves and depth contours. The distinction may be important only cartographically.

ENC Bulletin. RE: Depth Contours

Within the ENC environment, there is to be no differentiation between a depth contour and a depth curve. Depth contours and depth curves are considered to be the same object. The only IHO/S-57 object class which is to be used when encoding those depth curves *or* depth contours to be charted on National Ocean Service ENCs is “**Depth Contour**” (IHO/S-57 object acronym: **DEPCNT**).

ENC Bulletin. RE: Depth Areas

The *ENC Object: Depth Area (DEPARE)* is defined by the IHO/S-57 as “a water area whose depth is within a defined range of values”. The most common depth area is the area falling between 2 depth contours (i.e. the area between the 6 foot depth contour and the 12 foot depth contour is a *depth area with a defined range of 6 to 12 feet*. Six (6) feet is the *minimum* depth range value and twelve (12) feet is the *maximum* depth range value.) ENC depth areas may be created as area features or as linear features.

Depth Area (area)

Depth contours will typically be the nautical feature which will define the boundaries of those depth areas which are to be encoded as area objects--- the values of the depth contours will usually provide the respective ranges. However, it must be noted that *area* depth areas may also be formed from the boundaries of other ENC objects, [e.g., the zero (0) depth contour (i.e. low water line) and coastline, areas of omitted bathymetry, and the navigable portion of rivers, lakes and canals.] This ENC Bulletin and the *NOS/ENC Object Specifications* Section 4.30.12 will concentrate mainly on the formation of depth areas from depth contours. See Section 4.30.12 for a full listing of all nautical features which may form ENC depth areas.

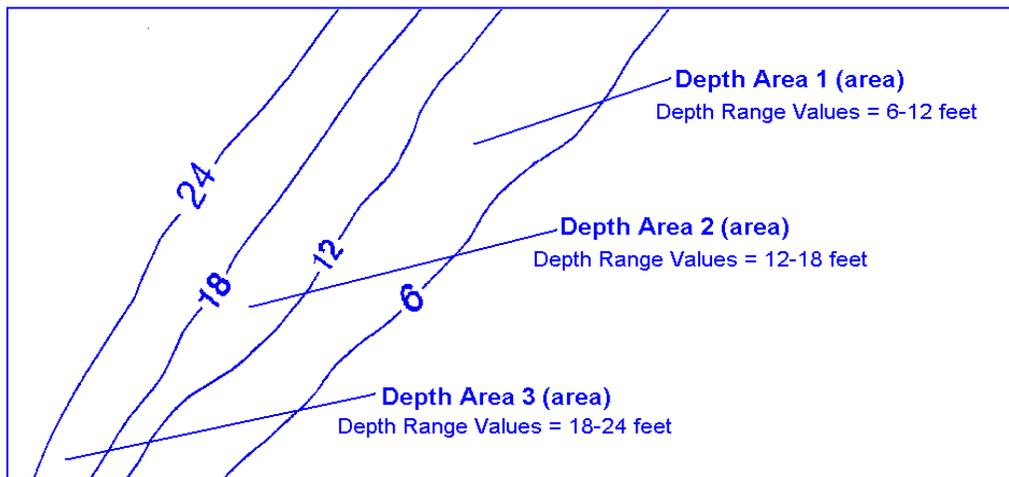


Figure 4-4a

NOTE: An Electronic Charting and Display System (ECDIS) also allows the display of depth areas which are not formed from the boundaries of any particular ENC object, but are based on a depth range entered into the system by the navigator. For example: A NOS ENC may have as its standard depth contour interval 6 ft, 12 ft, 18 ft, 24 ft. An ECDIS allows a user to display an interim depth area whose depth range may fall *between* any two of the standard interval values for the ENC (e.g. the ECDIS may display a depth area whose depth range is 6 to 8 ft or 6 to 10 ft, provided that these intermediate depth areas are also encoded in the ENC).

(continued)

Group 1 (and Group 2) Area Objects:

Within the ENC environment, all *geo-feature objects belong to one of two (2) groups (i.e., Group 1 or Group 2).

All ENC area objects which belong to Group 1 are said to be the “skin of the earth” objects. That is, these objects provide total and continuous coverage of the earth and therefore **must not**

1. intersect with themselves, or
2. overlap each other, or
3. have gaps in coverage

To not intersect with itself means that the Group 1 object must define the boundary of an area and be totally enclosed, with no overshoots or intersections of boundary lines (gaps between boundary lines also are not allowed). “To not overlap with each other” is a self explanatory term which also means that there can only be one (1) boundary line between two individual but adjoining Group 1 objects. The objects affected will have “**coincident geometry**”, representing the “sharing” of the same boundary line. To not have gaps in coverage means that all geographic areas affected by an ENC must be covered by a Group 1 object.

A Depth Area (area) is a Group 1 object. A Depth Area (line) is a Group 2 object. The following list contains those ENC objects which are considered Group 1 objects:

- | | | | |
|-------------------------|----------|---------------------|----------|
| 1. Depth Area (area) | (DEPARE) | 5. Land Area (area) | (LNDARE) |
| 2. Dredged Areas | (DRGARE) | 6. Pontoon (area) | (PONTON) |
| 3. Floating Dock (area) | (FLODOC) | 7. Unsurveyed Area | (UNSARE) |
| 4. Hulk (area) | (HULKES) | | |

All other geo-feature objects are considered Group 2 objects.

*** A geo-feature object per the IHO/S-57 is a “feature object which carries the descriptive characteristics of a real world entity”. It is the ENC object which is synonymous to a particular nautical feature.**

(continued)

Depth Area (line)

The ranges of the 3 depth areas previously identified in Figure 4-4a portray a configuration of the ocean bottom which has a constant and even slope. However, geological forces aren't always so accommodating to the safe and prudent navigator. Although relatively little is known of the relief below the surface of the sea, (a surface which covers nearly 71 percent of the earth), enough has been discovered to indicate that the unseen topography beneath the oceans has all the characteristics of the topography above. Both have mountains extending to amazing heights above their surroundings, depressions deeper than the Grand Canyon, rolling hills, vast plains and numerous ridges. This lack of uniformity in the ocean floor results in a lack of continuity in the succession of ocean depths, that is, an area may exist which has a configuration of constant and even slope, then suddenly and rapidly this configuration may fall away to much greater depths.

When individual depth areas cannot be adequately portrayed at the ENC's compilation scale, this discontinuity in the succession of ocean depths may be taken into account by the creation of a depth area of the type *line*.

An ENC *linear depth area* will be created in the following situations:

1. When two or more depth contours merge to form a single contour at the scale of an ENC;
2. When depth contours (including the zero value contour) merge with the coastline;
3. When depth areas adjoin man-made constructions which are always bare at the shoreline plane of reference (SPOR) (i.e. wharves, double-line piers);
4. When depth areas adjoin non navigable waterways.

An ENC *linear depth area* will be created in the following situations **only** when discontinuity in the succession of the depth range values exists:

5. When depth areas adjoin a dredged area.
6. When dredged areas adjoin dredged areas.

The most important concept about the formation of all depth areas is that the overall succession of depth areas and their defined depth ranges **must be continuous**. There can be no overlaps or discontinuity in the depth range values of connecting depth areas.

A linear depth area is basically created to eliminate an occurrence of "discontinuity" in the succession of the *maximum* to *minimum* depth range values of adjoining Depth Area objects.

Depth Area Concepts and Terms:**The Maximum to Minimum Concept:**

The *maximum* depth range value of one depth area **must** be the *minimum* depth range value of the next deeper and successive depth area.

The Depth Range Succession:

The *depth range succession* which must **not** be “discontinuous” is the **standard depth curve interval** of the particular ENC.

A “Continuous” Succession Example

A “continuous” succession of maximum to minimum depth range values of an ENC having a depth curve interval of: *0 (low water), 6, 12, 18, 24* (feet) would be: *0-6, 6-12, 12-18, 18-24* (feet). This “continuous” succession illustrates the required **maximum to minimum** concept mentioned above (i.e. the *maximum* depth range value of one depth area is the *minimum* depth range value of the next deeper and successive depth area).

When Does a “Discontinuous Succession” (i.e. “Discontinuity”) Occur?

A “discontinuous succession” generally occurs in those situations requiring a linear depth area. (See previous page). However, to numerically identify a “discontinuous succession”, a “discontinuous succession” will occur when the *maximum* depth range value of a depth area **does not equal** the *minimum* depth range value of the *deeper, succeeding and adjoining* depth area.

For example, assume the following:

FACT 1 -- Depth Area 1 has a depth range value of 6-12 feet

FACT 2 -- The deeper, successive and connecting depth area (Depth Area 2) has a depth range value of 18-24 feet.

A “discontinuity” has resulted in the succession of depth range values because the maximum depth range value of Depth Area 1 → 12 ft, does not equal the minimum depth range value of Depth Area 2 → 18 ft. A linear depth area having a depth range of 12-18 feet must be created along the boundary between Depth Area 1 and Depth Area 2 to eliminate the “discontinuous succession”.

Several graphic examples (with the accompanying explanations) of depth area (areas) and depth area (lines), and the determination of the respective depth range values have been provided in the *NOS/ENC Object Specifications* section of this manual. See Section 4.30.12.

When applying survey data to charts where the hydrography is represented by depth curves, the curves shall include within their limits all soundings of the same depth as the curve. Depth curves shall not touch the sounding figures and shall be drawn around rocks and other symbols for natural features. This policy shall not apply to [New Charts](#) or [Reconstructions](#) where the hydrography has been recompiled and where depth contours are used.

Wherever necessary, additional depth curves shall be added to existing charts at the time of extensive hydrographic corrections. Written approval should be submitted by the Chief, NSD, identifying the approved curves. The required interval for New or Reconstructed charts is stated in the chart specification sheet prepared for each chart.

When shoreline is revised without the application of new [hydrographic surveys](#), the depth curves may require modification to show a reasonable relationship to the new shoreline. Approximate depth curves may be used if necessary.

ENC Bulletin. RE: Shoreline Revisions and Depth Areas

When there is a revision of shoreline the *Depth Area* which was previously formed from the limits of the old shoreline and the zero (0) depth contour (i.e. low water line) must also be revised to reflect the new shoreline location. If a zero (0) depth contour is not charted, then the depth area limits previously formed from the old shoreline and the first successive depth contour must be revised.

ENC Bulletin. RE: Depth Contour Modification and Depth Areas

Whenever depth contours are modified, the corresponding *Depth Areas* which were formed from the *old* depth contour limits, must be revised to reflect the new location of the depth contours.

Not all depth contours on a source are generalized to depth curves on a chart. Only those determined by specific application, such as congestion or interference with a critical feature or sounding, are considered for generalization.

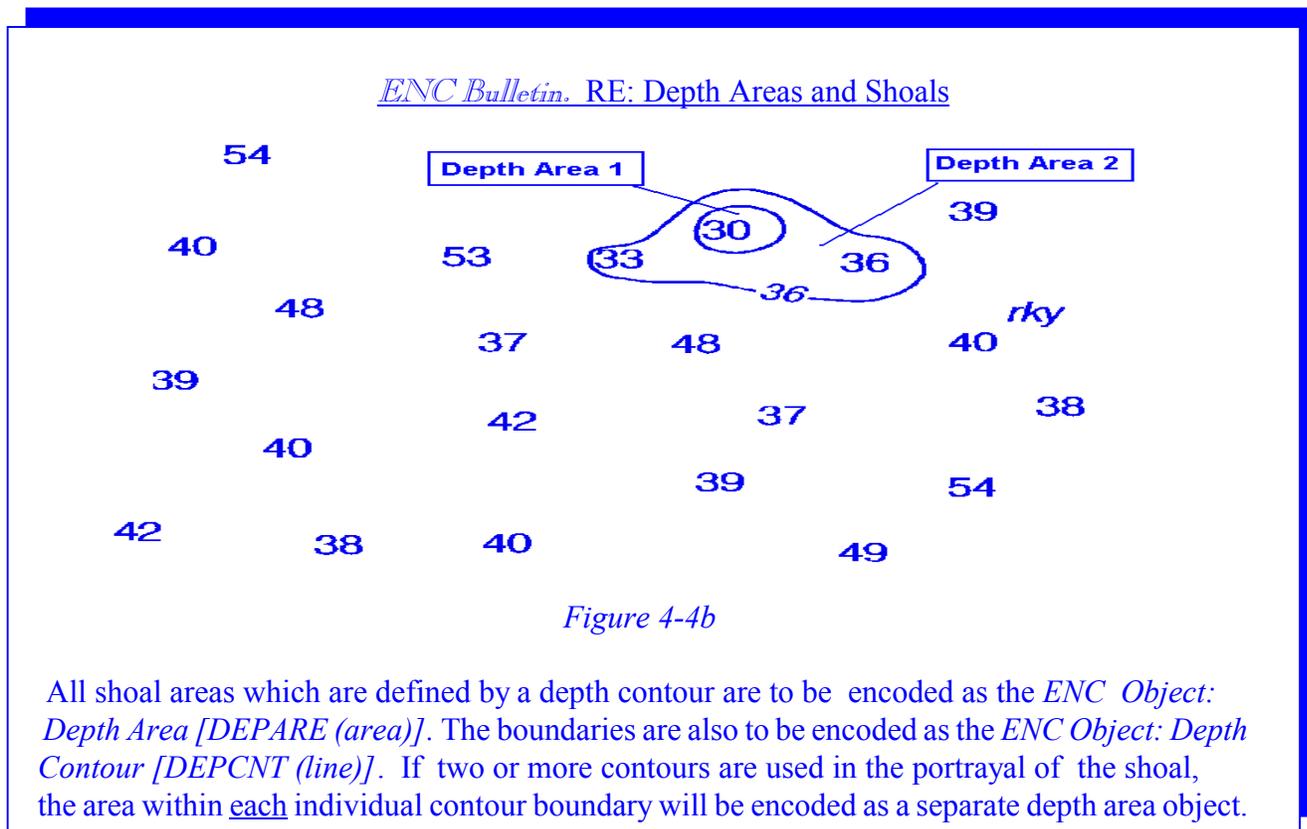
4.4.1 Guidelines for Applying Depth Curves

1. Depiction of Bottom Features

The development of depth curves varies according to the particular bottom feature being charted. In analyzing the survey data to be represented on the chart, the cartographers should be aware of the following: Large shallow areas are generally represented by a sparsity of depth curves, while banks, bars and isolated shoals are represented by a series of closely spaced depth curve closures.

Isolated shoals are usually considered relatively dangerous navigational features. The least depth over a shoal is enclosed by the shoalest curve portraying the shoal. Shoal boundaries are defined by the deepest depth curve that is attributed to the shoal deflection and the next deeper curve. Inflection zones associated with shoals represent areas where there is a definite change in the relative density of adjacent intermediate depth curves.

Shoal areas are defined by a group of depth curve closures, one for each shoal, where scale permits. Generally, the number of closed depth curves for each shoal is less than if it were an isolated shoal, since the deeper depth curves must display the blending of one shoal into another. The boundary of a shoal area is defined by the deepest depth curve that approaches the depth of the surrounding general depths in the area.



Irregular bottoms consist of shoals, shallows, passages, deeps, etc and are characterized by relatively large depth differences that occur abruptly throughout the region. In areas with irregular bottoms, depth curves must be selected for each isolated shoal's least depth. Supportive soundings and depth curves are then selected to reinforce this least depth as well as to define zones between the shoals. This will aid in conveying to the chart user the large depth variations in the area.

Smooth bottom areas exist where the depth varies gradually from place to place across the area. Usually variations are relatively small compared to the size of the area and the regional depth. They are characterized by smoothly flowing and relatively widely spaced depth curves with occasional closures where shoals may exist.

Depth curves are particularly useful in showing natural channels from deep water into shore or harbor areas and routes between deepwater areas through shoals. When the chart scale is too small to illustrate all the channels shown on the survey, the most important routes shall be retained at the expense of the less important or more restrictive alternate routes.

Depth curves are usually not shown around charted isolated deeps in shallow areas unless the deep is part of a natural channel. Depth curves will usually be shown with charted deeps in deeper water. Isolated deep curves must always be supported with a sounding inside.

ENC Bulletin. RE: Depth Areas and Deeps

A depth area is also formed when a depth contour surrounds a deep sounding.

Depth curves around depressions are of little value and, in general, should be omitted, but they shall be shown when they reveal features which may have some value in navigation, or when they indicate on which side of a river the deepest water may be found (see [Figure 4-5](#)).

As illustrated in [Figure 4-6](#), short sections of broken curves on the survey sheets should be connected if the configuration of the bottom revealed by other curves in the area being charted indicates that it would be logical.

DEPTH CURVE DEPICTION

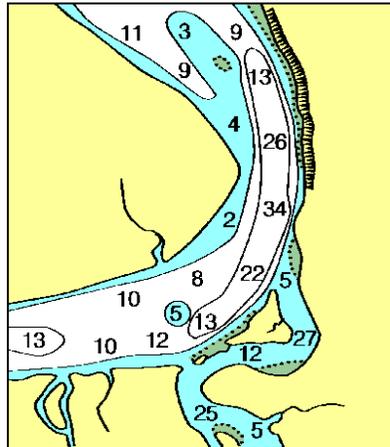
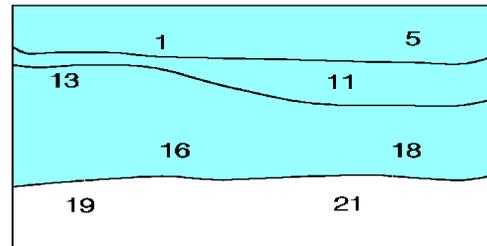


Figure 4-5

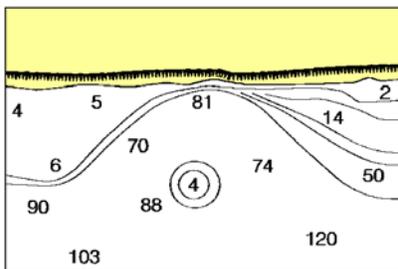
4	1	1	6	5
13	14	14	11	10
14	15	15	13	15
15	16	16	14	18
19	21	21	21	20
21	24	24	24	21



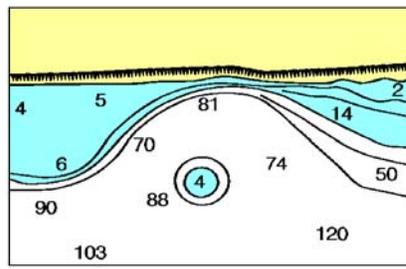
HYDROGRAPHIC SURVEY

CHART

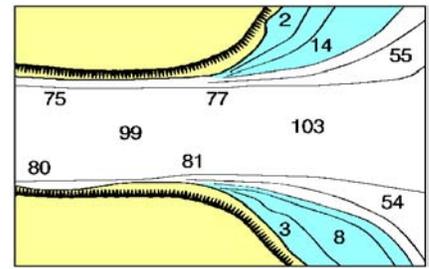
Figure 4-6



Deepest and Shoalest Curves
(No Tint Involved)



Tint Curve Unbroken
(18 ft. Curve)



Deepest Curve
Maximum Width Channel

Figure 4-6a

When it becomes necessary to omit some depth curves on steep slopes, the deepest curve (and the shoalest, if space permits) should be retained and the less important intermediate ones omitted. Curves must never run abruptly into each other or into the shore, but must be curved to make them parallel as is the case in nature. The curve to which the blue tint is to be shown shall be given preference over all other curves and shall be as complete as possible (see [Figure 4-6a](#)).

2. Solid vs. Screened Printing

In recent years, NOS has been using screened continuous depth contours on all [New](#) and [Reconstructed Charts](#). This permits depth contours to be taken directly from the hydrographic survey with only minor generalization. Screened depth contours are not broken for other charted detail, such as type, soundings, symbols, etc., as are depth curves.

a. Depth Curves Printed in a Solid Line

The following guidelines for depth curves and contours can be applied regardless of chart scale:

Ideally, the charted depth curves shall follow those shown on the hydrographic survey as conditions permit.

Bottom detail that is too minute to be usefully displayed on the chart may be generalized. However, generalized depth curves must not cross areas shoaler than the depth curve value. Curves for very narrow winding features may be generalized toward the deeper side, or even terminated and closed at the origin.

Where generalization is necessary, the curve shall always be displaced toward deeper water, except where this may close or seriously reduce the width of a navigable channel. The minimum width between depth curves identifying a natural channel shall be 0.3 mm.

Two or more [shoals](#) may be merged to appear as one larger shoal if the channels or passages between them cannot be clearly depicted at the chart scale. However, care must be taken not to close off what may be a useful navigational channel.

Depth curves may be merged or deleted to avoid undue confusion in the chart presentation (e.g. on steep slopes or isolated shoals). When omitting depth curves, the shoalest, the deepest, and the tint curve (i.e. danger curve) shall be retained and the intermediate curves omitted. The blue tint danger curve shall be retained in preference to all other depth curves and shall be as complete as possible.

ENC Bulletin. RE: Merging Depth Contours

If two or more depth contours are merged, a *linear depth area* is created at the location of the merging.

A depth curve may be smoothly and slightly bent toward deeper water if the curve overprints an important selected sounding—such as where it would align with a sounding digit 1.

Depth curves must never run abruptly into each other or into the shore but must be curved to make them parallel as is the case in nature.

b. Depth Contours Screened on New and Reconstructed Charts

The following guidelines shall apply to [New Charts](#) and [Reconstructions](#):

Depth contours shall be shown by continuous lines screened in blue or black as given in the chart specification sheet.

Depth contours may be generalized at small scales when bottom features become too minute to visualize or the lines are too sinuous to be usefully displayed.

Depth contours shall be broken only for contour labels and notes and shall overprint all other chart features, e.g. soundings, symbols, type, etc.

ENC Bulletin. RE: Depth Contours and Breakage

ENC depth contours shall never be broken for contour labels or notes during their application to an ENC. The value of the contour is entered in the attribute VALDCO (*Value of Depth Contour*).

c. Blue Depth Contours and Curves

Contours and curves are usually printed in black. On occasion, blue or a combination of blue and black may be used on the same chart. A requirement for exceptions to black contours and curves is stated in the chart specification sheet.

On [New Charts](#) and [Reconstructions](#), where the hydrography is recompiled, depth contours shall be continuous blue or black lines, screened as required by the chart specifications.

Depth curves are symbolized by dots and dashes on those charts that have not been modernized and by continuous solid or screened black or blue lines on charts that have been modernized. Continuous lines should be substituted for dotted and dashed depth curves as the workload permits.

ENC Bulletin. RE: Depth Contour Symbolization

The [IHO Special Publication 52 - Specifications for Chart Content and Display Aspects of ECDIS \(IHO S-52\)](#) is the IHO document which contains the required color and symbol specifications for all ENC objects to be displayed on a ship's Electronic Chart Display and Information System (ECDIS). In accordance with IHO/S-52 specifications, all ENC depth contours which bound a ship's designated ENC blue tint areas are highlighted as a wide gray line. All ENC depth contours which fall in all other hydro areas will be displayed as solid black lines (if the depth contour has not been encoded as approximate).

On [New](#) or [Reconstructed Charts](#), depth contours shall be shown with an 0.10-mm (49 percent, 200-LPI) biangle screened line as required by the chart specifications.

The screening of depth curves or contours on the chart will not include the low water line (zero value curve). The low water line will continue to be depicted by a dotted line.

ENC Bulletin. RE: The Low Water Line and Symbolization

Within the ENC environment, the low water line is also considered (and encoded) as a **depth contour with a value of 0**, however it will display on an ECDIS as a **solid black line**.

4.4.2 Depth Curve Placement

Depth curves are generally drawn between the .2 and .3 foot units. This conforms to the rounding standard used to obtain whole soundings, places the depth curves on the proper side of these soundings, and allows the direct scaled transfer of depth curves and soundings from [USACE hydrographic surveys](#) to the chart compilation without major adjustment. In the case of [NOS surveys](#), depth curves are already provided. Where depth curves need to be drawn, the guidelines presented in the [NOS Hydrographic Manual](#) shall be followed.

Sources expressed in fathoms and tenths of fathoms for use on charts in units of fathoms and feet shall be drawn at the 0.1 fathom value. This conforms to the rounding system for converting fathoms and tenths of fathoms to fathoms and feet.

4.4.2.1 Depth Contour Placement

Depth contours are drawn between the .0 and .1 foot units by definition.

4.4.3 Selection of Depth Contour and Depth Curve Intervals

The tables in [Figure 4-7](#), [Figure 4-8](#) and the appendices are to be used for selecting standard depth contour and curve intervals for sounding units charted in feet, fathoms, fathoms and feet, or meters. In addition to the standard curves, a 3 foot curve is also used in some shallow water areas, such as the Florida Keys.

ENC Bulletin. RE: Depth Contour Intervals

If a raster/paper chart is the source for the encoding of depth contours, the interval of depth contour selection for ENCs is to agree with the interval currently being portrayed on that raster/paper chart which represents the largest scale coverage for the particular geographic region.

If high resolution data is the source for the encoding of ENC depth contours, the interval of depth contour selection is to agree with the interval currently being portrayed on the high resolution source document.

1. Feet and Fathoms

For depth contours or curves where the charted sounding units are feet, fathoms, or fathoms and feet, use the intervals presented in [Figure 4-7](#).

2. Meters

For depth contours or curves where the charted sounding units are in meters or meters and decimeters, use the intervals presented in [Figure 4-8](#).

4.4.4 Labeling of Contours/Curves

Depth contour and curve designators shall be in 6 pt. Swiss Light Italic. The contour or curve lines shall be broken for the designators with the designator centered on the line. Where depth contours or curves are screened, the designator shall also be screened.

As a general rule, designators shall be placed along the lines at 10-cm to 15-cm intervals so they will not interfere with soundings, symbols, type, compass roses, etc. In congested areas, designators may be staggered along the lines if this improves the legibility of the chart. In all cases, the shoalest curves, the deepest curves, and the tint curves must be labeled. All depth contours and curves shall be labeled in the same unit as the soundings shown on the chart.

Designators for depth contours and curves on metric charts with italic soundings shall be in 6 pt. Swiss Light type.

ENC Bulletin. RE: Depth Contours and Labeling

The value of a ENC depth contour is entered in the attribute VALDCO (Value of Depth Contour).

4.5 Shallow Water Tints

In association with depth contours and depth curves, a blue tint No. 1 (8 percent 120-LPI screen), shall be shown on the chart to emphasize shoaler water areas considered dangerous to navigation. The depth contour or depth curve selected as the boundary for the tinted area shall be determined by the chart scale, the prevailing depths available, and the draft of vessels expected to navigate within the charted area. This policy shall apply to all charted areas expected to be navigated.

Beyond the area tinted blue No. 1, a deeper contour or depth curve may be selected as the boundary of an area to be emphasized by the lighter blue tint No. 2 (3 percent 120-LPI screen). This second depth zone will expand the usefulness of the blue-tinted “danger area” to another group of chart users.

On charts where two blue tints are shown, the darker tint shall represent the shallower water. The selection of blue tints in association with depth contours or depth curves shall be stated on the chart specification sheet.

ENC Bulletin. RE: ENCs and Blue Tints

The area(s) tinted blue on a NOS raster/paper chart may not always agree with the area(s) tinted blue on its NOS ENC counterpart (i.e. when the ENC is viewed using ENC display software). The depth contours which are displayed as the boundaries of a particular ENC's blue No. 1 and/or blue No. 2, are determined by a ship's Electronic Charting and Display System (ECDIS) and the value entered (into the ECDIS) as the draft of the particular vessel. What may be considered blue water for one vessel may not be considered blue water for another. **Therefore, the blue water designation for all ENCs depends on the individual characteristics of a ship.** There is no mechanism (when compiling an ENC) by which the cartographer may indicate shoaler water through the use of blue No.1 and/or blue No. 2.

Blue tint No. 1 shall also be used to emphasize offshore features considered dangerous to navigation, generally in depths of 11 fathoms (20 meters) or less, when they are enclosed by a dotted danger line and not supported by depth contours, depth curves and/or soundings, e.g., [wrecks](#), [rocks](#), [obstructions](#), [foul areas](#), etc., that are outside of the charted blue tint curve.

ENC Bulletin. RE: Depth Areas and Wreck Areas, Rock Areas, Obstruction Areas, Foul Areas

Wrecks, rocks, obstructions and foul areas shall be encoded as their respective or synonymous ENC object **and** shall also be encoded as the *ENC Object: Depth Area (area)* when these objects are to be charted as ENC area objects.

On charts where two blue tints are used in conjunction with depth contours and/or depth curves and where dangerous offshore features, e.g., [shoals](#), [submerged reefs](#), etc., are supported by depth contours, depth curves and soundings, the actual depth over the feature will determine which blue tint shall be shown.

The area inside the low water line (intersection of the established low water datum and the shore) shall be shown on the chart with a green tint derived by combining (trapping) gold 20 percent, 120 LPI (land tint) and blue 8 percent, 120 LPI (shoal water tint) as an overprint.

All hydrographic features, including foreshore [ledges and reefs](#), shown on Office of Coast Survey charts that bare at the [chart sounding datum](#) shall carry a green tint derived by using this overprinting method.

4.5.1 Feature Removal From the Chart

A charted depth contour or depth curve shall not be removed until an established authority provides conclusive evidence that the contour or curve does not exist in the charted position. Non-authoritative sources (e.g. U.S. Power Squadron and U.S. Coast Guard Auxiliary Reports, photo revisions without field edit), do not have sufficient authority to declare a feature non-existent.

Specific instructions to field parties call for basic hydrographic surveys to supersede all previous surveys made by this agency in the areas covered. When applying reviewed basic surveys to the charts, all prior depth curves shall be removed. Care must be taken not to remove curves charted after the date of the survey.

ENC Bulletin. RE: Removing ENC Depth Contours

As new depth contours are revised, added to and/or deleted from an ENC from official source documents, it will be the cartographer's responsibility not only to accurately portray and encode the limits of the new/revised associated depth areas, but to also ensure that all pre-existing depth areas which are **not** currently indicated on the official source document as requiring addition or revision, are also revised as appropriate.

To be revised as appropriate refers to the modification of those depth areas which have or will have an indirect relationship to the new or revised ENC depth area(s) by the sharing of "**coincident geometry**".

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DEPTH CONTOUR/CURVE INTERVALS

Feet and Fathoms

Feet	Fathoms
0	0
3	0
6	1
12	2
18	3
24	4
30	5
36	6
60	10
120	20
180	30
240	40
300	50
600	100
1,200	200
1,800	300
2,400	400
3,000	500
6,000	1,000
12,000	2,000
18,000	3,000

Figure 4-7

DEPTH CONTOUR/CURVE INTERVALS

Meters, Meters and Decimeters

Meters		
0	90	1,500
2	100	2,000
5	200	2,500
10	300	3,000
20	400	3,500
30	500	4,000
40	600	4,500
50	700	5,000
60	800	5,500
70	900	6,000
80	1,000	6,500
		7,000

To convert fathoms to meters for the intervals listed above, see the table in the appendix.

Figure 4-8

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 018/03

September 12, 2003

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.6.1

TO: All Cartographers
Marine Chart Division

SUBJECT: Columbia River - Channel Tabulations and Tabulation Diagram

APPLICATION: Columbia River Charts - 18521, 18523, 18524, 18525, 18526 and 18531

Due to the changeable nature of the Columbia River, from its mouth at the Pacific Ocean to the Bonneville Dam, the U. S. Army Corps of Engineers conducts frequent hydrographic surveys of the main channel. The time frame involved in the processing of this data (from the generation of analog hydrographic surveys, receipt of surveys by the Marine Chart Division, compilation of Channel Tabulations and subsequent publication in Local Notice to Mariners) may extend beyond the date of a new hydrographic survey. Because of this condition, it is difficult to consistently provide the mariner with the most up-to-date controlling depth data.

The U. S. Army Corps of Engineers, Portland District, now provides a web site of controlling depths for the main channel of the Columbia River consistent with the format of current Marine Chart Division Channel Tabulations. Controlling depths are rounded to the nearest foot. The quality, accuracy and completeness of data contained on this web site resides with the U. S. Army Corps of Engineers. This web site is updated monthly and can be accessed (Note that Netscape Navigator users must use Version 7.0 or a newer version) at:

<https://www.nwp.usace.army.mil/op/n/chpubs.htm#pubs-status-reports>

The Marine Chart Division, in order to provide the same controlling depths for the main channel of the Columbia River, has implemented the following changes to facilitate the dissemination of this information to the mariner in a more timely manner. These specifications and procedures are applicable **ONLY** to the main channel of the Columbia River and the associated channel tabulations on charts 18521, 18523, 18524, 18525, 18526 and 18531.

(1) The U. S. Army Corps of Engineers web site for the main channel of the Columbia River is considered the equivalent of a U. S. Army Corps of Engineers controlling depth report. The Marine Chart Division shall accept U. S. Army Corps of Engineers controlling depth reports generated from this web site, revise designated channel tabulations and publish updated channel tabulations consistent with current policy. This includes controlling depth and Date of Survey values. Reference: [Nautical Chart Manual](#), [Section 4.6.1, Tabulations, Legends and Notes](#), 1. [Tabulations](#). This policy reads, in part:

“MCD will continue to accept and publish USACE controlling depth reports on federal projects, subject to examination of the surveys when provided graphically (blueprints) or digitally (DD). Where this examination reveals an apparent error or need for significant change to the report, NDB will contact the USACE to correlate Office of Coast Survey action with USACE evaluation before revising the channel depth on the chart.”

The U. S. Army Corps of Engineers will send e-mail notification to the Nautical Data Branch when the web site has been updated. The Nautical Data Branch will immediately extract this information from the web site and generate a Chart Letter for updating charted channel tabulations.

Production Branch personnel shall **NOT** compile directly from the web site. Compilers shall use **ONLY** the Chart Letter generated by the Nautical Data Branch for updating the specified channel tabulation/s. See [Section 4.6.1.1.1, “Columbia River Main Channel Tabulations”](#).

(2) Existing Channel Tabulations shall be modified in accordance with the attached specification. This specification also requires the addition of a footnote to the existing designated channel tabulations on charts 18521, 18523, 18524, 18525, 18526 and 18531. See [Section 4.6.1.1.1, “Modification of Existing Tabulations”](#).

(3) A Columbia River Tabulation Diagram (depicting how the U. S. Army Corps of Engineers quarters their data) shall be added to each affected chart. See [Section 4.6.1.1.2, “Columbia River Tabulation Diagram”](#).

(4) These changes shall not affect legends, soundings outside the main channel or other charted tabulations such as Ilwaco Harbor or the Clatskine River. Depths outside the improved channel shall continue to be compiled from analog and digital surveys in accordance with current specifications.

Effective immediately, the following attachment revises Pages 4-62 through 4-64, 4-69.4 through 4-69.9 and adds Pages 4-65 through 4-69.3 and Page 4-69.10 to the [Nautical Chart Manual](#), Volume 1, Part 1, Seventh (1992) Edition. The attachment provides the specifications for modifying existing tabulations and for adding the Columbia River Tabulation Diagram.

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

4.6 Improved Channel

An improved channel is part of a body of water where the bottom has been dredged deep enough for navigation through an area not otherwise suitable. Channels represent the deepest and safest navigable passages in rivers and harbors, at harbor entrances and across bars and shoals. The location, length, width and controlling depth in channels are a primary concern to the mariner. Channels shall be charted and controlling depths indicated. The side limits of improved channels are shown on charts by dashed lines ([I 22](#)).

Federal channels are under the jurisdiction of the United States Army Corps of Engineers (USACE), and are maintained to provide an assigned controlling depth. Other channels may be under the jurisdiction of state governments, local governments or private authorities.

A controlling depth is the least depth in the channel or approach to an area, such as a [port](#) or [anchorage](#), governing the maximum draft of vessels that can enter. Except when tabulated or noted, the controlling depth, as well as the width and date ascertained, is shown within or adjacent to the channel. Surveys, Monthly Reports, Annual Reports, and letters from the USACE are the principal sources of information for charting controlling depths in federal improved channel projects. Letters from private sources usually provide information for nonfederal improved channels. Controlling depths shall be charted in feet on nonmetric charts and in meters and decimeters on metric charts. The necessity for clear labeling of charted channels cannot be overemphasized. On charts showing soundings in fathoms, the depth unit “feet” should not be abbreviated when used for channels and associated areas.

ENC Bulletin. RE: Dredged Areas

The ENC terminology for a channel and each of its divisional parts (i.e. quarter, middle half, full width) is: *dredged area* [the S-57 acronym is *DRGARE*]. The IHO Dictionary, SP32, 4th Edition defines a dredged area as “an area of the bottom of a body of water which has been deepened by dredging.”

(The remainder of this page is intentionally blank.)

4.6.1 Tabulations, Legends and Notes

4.6.1.1 Tabulations

Charted tabulations are tables furnishing controlling depths in federally maintained channels, as well as dates of the surveys and project dimensions.

In addition to surveys, the USACE furnishes detailed information on depths in the major dredged channels in tabular form. These reports contain the project dimensions, controlling depth in each quarter and the date of survey for channels 400 or more feet wide. The same information is given for channels from 100 to 399 feet wide, except the controlling depth is given for the middle half and for each outside quarter. These tabulated reports are used to update chart tabulations and are also published in the Local and [Weekly Notice to Mariners](#).

The channel reaches listed in the charted tabulation shall be the same as those furnished by the USACE. Coordination with the USACE shall be conducted to establish a common format.

In general, the USACE does not submit tabular forms for channels less than 100 feet in width or for channels having a project depth of less than 10 feet, except for coastal inlets and harbors of refuge. Controlling depths reported for these channels are based on at least 80 percent of the project width.

USACE project maps often include channel depth information that can be used as a chart source if they are more recent than other available sources and if the surveys cannot be obtained. This type of source shall be documented as a Chart Letter for file registry.

MCD will continue to accept and publish USACE controlling depth reports on federal projects, subject to examination of the surveys when provided graphically (blueprints) or digitally (DD). Where this examination reveals an apparent error or need for significant change to the report, NDB will contact the USACE to correlate Office of Coast Survey action with USACE evaluation before revising the channel depth on the chart.

MCD will thoroughly examine USACE surveys to determine controlling depths inside the channels when surveys are received without reports.

Chart tabulations should not be published in the [NM](#) unless a similar tabulation is charted. However, USACE tabulated reports for the Intracoastal Waterway are published periodically in the [LNM](#), although they are referred to by a project depth note on the charts. In addition, critical items may be derived from USACE tabulated reports for NM publications even though the channel is not tabulated on the chart.

Section 4.6.1.1

NAUTICAL CHART MANUAL

Charted tabulations shall include the actual depths from reports or surveys, even when they exceed project depths if the project depth is also shown in the tabulation. Project depths may be obtained from the Project Maps by USACE District, a set of publications on file in NDB. New data not included in these publications advising of new or revised projects is routinely listed as a source document on the chart standard.

Chart tabulations are generally to be shown when USACE surveys include such tabulated depths and conditions of the improvement warrant it. However, cartographic judgement must be used to ascertain the best method of presenting the controlling depth information to the public. Critical shoals along the edges of the channels should be described by a footnote in the tabulation.

USACE improved channels for which graphic surveys are received and which are 400 feet or more in width (type 1) for their major portion should be tabulated by quarters; channels 100 feet to 399 feet wide (type 2) should be tabulated by outside quarters and middle half; and channels less than 100 feet (type 3) should be tabulated by full width. These same rules will also generally apply to those channels for which a depth report, but no surveys, is received from the USACE.

ENC Bulletin. RE: Tabulated Information

To facilitate the ENC processing of updated tabulated information, the raster production branches are to provide to the ENC project, copies of the affected *Tabulation Update Form(s)*. All revised information is to be indicated on the form in **red**, and must include the identification and date of the source document(s) which will serve as the authority for the revision. (See [Figure 4-ES7](#) in section [4.30.14](#) of the *NOS/ENC Object Specifications* section of this document for an example.)**[Note: This procedure is to remain in effect only until the MCD Tabs Database is placed on line throughout the Division.]**

Controlling depths in the tabulated form based on actual surveys shall not be superseded by examinations consisting of a few sounding lines only. Footnotes should be used for depths derived from examinations. Centerline depths shall be given as a footnote on the tabulated form if they are appreciably deeper than the tabulated depths.

ENC Bulletin. RE: Controlling Depths

The controlling depth of each dredged area is presented in the ENC *attribute*: DEPTH RANGE VALUE 1 [DRVAL1]. An ENC *attribute* is a category of characteristics about an ENC object.

4.6.1.1.1 Columbia River Main Channel Tabulations

An **EXCEPTION** to standard procedures for charting channel tabulations exists for the Columbia River. This change affects charted channel tabulations for the main channel of the Columbia River on Charts 18521, 18523, 18524, 18525, 18526 and 18531.

Due to the changeable nature of the Columbia River, from its mouth at the Pacific Ocean to the Bonneville Dam, the U. S. Army Corps of Engineers conducts frequent hydrographic surveys of the main channel. The time frame involved in the processing of this data (from the generation of analog hydrographic surveys, receipt of surveys by the Marine Chart Division, compilation of Channel Tabulations and subsequent publication in Local Notice to Mariners) may extend beyond the date of a new hydrographic survey. Because of this condition, it is difficult to consistently provide the mariner with the most up-to-date controlling depth data.

The U. S. Army Corps of Engineers, Portland District, now provides a web site of controlling depths for the main channel of the Columbia River consistent with the format of current Marine Chart Division Channel Tabulations. Controlling depths are rounded to the nearest foot. The quality, accuracy and completeness of data contained on this web site resides with the U. S. Army Corps of Engineers. This web site is updated monthly and can be accessed (Note that Netscape Navigator users must use Version 7.0 or a newer version) at:

<https://www.nwp.usace.army.mil/op/n/chpubs.htm#pubs-status-reports>

The Marine Chart Division, in order to provide the same controlling depths for the main channel of the Columbia River, has implemented the following changes to facilitate the dissemination of this information to the mariner in a more timely manner. These specifications and procedures are applicable **ONLY** to the main channel of the Columbia River and the associated channel tabulations on charts 18521, 18523, 18524, 18525, 18526 and 18531.

General Requirements

The following changes have been made to facilitate this process:

(1) The U. S. Army Corps of Engineers web site for the main channel of the Columbia River is considered the equivalent of a U. S. Army Corps of Engineers controlling depth report. The Marine Chart Division shall accept U. S. Army Corps of Engineers controlling depth reports generated from this web site, revise designated channel tabulations and publish updated channel tabulations consistent with current policy. This includes controlling depth and Date of Survey values. Reference: Nautical Chart Manual, Section 4.6.1, Tabulations, Legends and Notes, 1. Tabulations.

Section 4.6.1.1.1

NAUTICAL CHART MANUAL

This policy reads, in part:

“MCD will continue to accept and publish USACE controlling depth reports on federal projects, subject to examination of the surveys when provided graphically (blueprints) or digitally (DD). Where this examination reveals an apparent error or need for significant change to the report, NDB will contact the USACE to correlate Office of Coast Survey action with USACE evaluation before revising the channel depth on the chart.”

The U. S. Army Corps of Engineers will send e-mail notification to the Nautical Data Branch when the web site has been updated. The Nautical Data Branch will immediately extract this information from the web site and generate a Chart Letter for updating charted channel tabulations.

Production Branch personnel shall **NOT** compile directly from the web site. Compilers shall use **ONLY** the Chart Letter generated by the Nautical Data Branch for updating the specified channel tabulation/s.

(2) Existing Channel Tabulations shall be modified in accordance with the attached specification. This specification also requires the addition of a footnote to the existing designated channel tabulations on charts 18521, 18523, 18524, 18525, 18526 and 18531. See [Section 4.6.1.1.1.1, “Modification of Existing Tabulations”](#).

(3) A Columbia River Tabulation Diagram (depicting how the U. S. Army Corps of Engineers quarters their data) shall be added to each affected chart. See [Section 4.6.1.1.1.2, “Columbia River Tabulation Diagram”](#).

(4) These changes shall not affect legends, soundings outside the main channel or other charted tabulations such as Ilwaco Harbor or the Clatskine River. Depths outside the improved channel shall continue to be compiled from analog and digital surveys in accordance with current specifications.

(The remainder of this page is intentionally blank.)

4.6.1.1.1.1 Modification of Existing Tabulations (Columbia River Charts 18521, 18523, 18524, 18525, 18526 and 18531)

Note that this modification is **NOT** for all channel tabulations contained on the above charts. It includes **ONLY** those designated channel tabulations that provide controlling depths for the Columbia River Main Channel.

Feature Recommendation for a Notice to Mariners

A revision to the controlling depths extracted from the U. S. Army Corps of Engineers web site (Chart Letter) shall **ALWAYS** result in the issuance of an updated channel tabulation as a Notice to Mariners.

This will help ensure that mariners with charts updated through Notice to Mariners, Print-on-Demand Charts issued by this agency and the U.S. Army Corps of Engineers web site are identical or potentially require only the application of one Notice to Mariners publication.

When there are revisions to the Project Dimensions, Name of the Channel segments, or a re-configuration of channel segment/s, the changes **MUST** be coordinated with the U. S. Army Corps of Engineers. Revisions of this type shall **ALWAYS** be published as a Notice to Mariners.

Line Type and Weight

Textual content revisions to an existing channel tabulation shall be 5 point Swiss Light. See "[Labels and Notes](#)".

Location and Orientation

Not applicable. The location of a Channel Tabulation shall subscribe to the general specifications applicable to **ALL** Channel Tabulations. This specification **ONLY** deals with modifications to the textual content of six (6) specific existing channel tabulations. See "[Labels and Notes](#)".

Size and Shape

Not applicable. The size and shape of the Channel Tabulation shall remain as charted. Revisions shall be made **ONLY** to the textual content of the tabulation as described in "Labels and Notes".

Labels and Notes

The following changes/revisions shall be made to the existing textual content of designated Columbia River Channel Tabulations for Charts 18521, 18523, 18524, 18525, 18526 and 18531.

(1) Channel Tabulation Title Block: The following changes shall be made to the Channel Tabulation Title Block.

When the controlling depth data is applied **ONLY** from the controlling depth report, the Title Block will assume the standard format:

TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - REPORT OF _____

(2) Controlling Depths Header: The following change shall be made to the current Controlling Depths Header. [Reference [“\(5\) Footnote”](#), below]

An asterisk, a blank space and text SEE FOOTNOTE (i.e. * SEE FOOTNOTE) shall be appended to the end of the existing text. When the existing text refers to a footnote, the footnote shall assume the plural form. See examples below for Charts 18521 and 18525:

EXAMPLE: Chart 18521

The Controlling Depths Header currently reading “* SEE FOOTNOTE”

shall be revised to the plural form

“* SEE FOOTNOTES”

EXAMPLE: Chart 18525

The Controlling Depths Header currently reading “**CONTROLLING DEPTHS FROM SEAWARD IN FEET AT COLUMBIA RIVER DATUM (CRD)**”

shall be revised to

“**CONTROLLING DEPTHS FROM SEAWARD IN FEET AT COLUMBIA RIVER DATUM (CRD)* SEE FOOTNOTE**”

(3) Tabulated Depth Values:

ALL tabulated depth values shall be entered from the controlling depth Chart Letter.

(4) Date of Survey Column:

ALL date(s) of survey values shall be entered in the conventional tabulation numeric month/year values format (i.e. 3-03).

(5) Footnote:

The following footnote [Reference “[\(2\) Controlling Depth Header](#)”, above] shall be inserted in the bottom section of the tabulation box and shall be listed first. The text shall be in upper case letters.

CONTROLLING DEPTHS ROUNDED TO NEAREST FOOT

Color and Screening

A Channel Tabulation shall **ALWAYS** chart in black.

Feature Removal from Chart

A Columbia River Channel Tabulation shall **ONLY** be deleted with the approval of the Chief, Quality Assurance, Plans and Standards Branch and requires coordination with the U. S. Army Corps of Engineers.

(The remainder of this page is intentionally blank.)

4.6.1.1.2 Columbia River Tabulation Diagram

A Columbia River Tabulation Diagram (depicting how the U. S. Army Corps of Engineers quarters their data) shall be added to the affected charts -18521, 18523, 18524, 18525, 18526 and 18531. The diagram is identical for each of the six (6) charts. The Columbia River Tabulation Diagram is available as a Digital Document (DD).

The charted Channel Tabulation for Chart 18531, in accordance with current specifications, is not quartered. It is separated: LEFT OUTSIDE QUARTER, MIDDLE HALF OF CHANNEL AND RIGHT OUTSIDE QUARTER. A customized tabulation diagram will not be developed for this chart. It shall carry the identical diagram as other designated charts. The U. S. Army Corps of Engineers web site provides channel values parallel with the currently charted tabulation.

Feature Recommendation for a Notice to Mariners

Not applicable. The Columbia River Tabulation Diagram is static (fixed) and not intended to be updated. It is designed to illustrate to the mariner how the U. S. Army Corps of Engineers quarters their data.

Line Type and Weight

A Columbia River Tabulation Diagram border, interior lines and graphic channel segments shall be charted with a 0.2 mm (.008") line weight.

Channel segments located within the Tabulation Diagram do not subscribe to the same charting specifications as navigable channels.

Location and Orientation

A Columbia River Tabulation Diagram **MUST** be located in close proximity to the associated existing channel tabulation. The diagram is intended to be used by the mariner in conjunction with the charted channel tabulation.

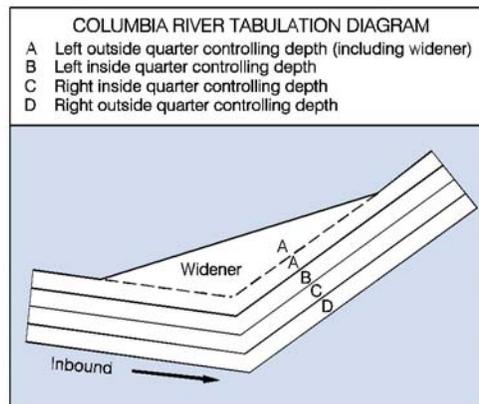
Size and Shape

The linear dimensions of a Columbia River Tabulation Diagram shall be 2.5 inches wide by 2.25 inches high. The Columbia River Tabulation Diagram is available as a Digital Document (DD).

Labels and Notes

A Columbia River Tabulation Diagram includes (already incorporated as part of the graphic) the following note in 7 point Swiss Regular black text and is centered directly below the diagram.

COLUMBIA RIVER TABULATION DIAGRAM
Columbia River main channel - Controlling depths for outside quarters include the adjacent widener/fillet when applicable.



COLUMBIA RIVER TABULATION DIAGRAM
 Columbia River main channel - Controlling depths for outside quarters include the adjacent widener/fillet when applicable.

Color and Screening

A Columbia River Tabulation Diagram shall **ALWAYS** be charted in black.

ALL text shall be charted in black and includes text within and outside the diagram.

The area located within the text box at the top of the tabulation diagram shall be white (no tint).

The area within the channel boundaries and the widener shall be white (no tint).

The area located within the bottom of the tabulation diagram, surrounding the channel/widener and extending to the border of the diagram shall chart in blue.

Feature Removal from Chart

Not normally applicable. A Columbia River Tabulation Diagram shall remain as charted. Removal of a Columbia River Tabulation Diagram is **ONLY** with the approval of the Chief, Quality Assurance, Plans and Standards Branch.

ADDED SEPTEMBER 12, 2003

4.6.1.2 Legends

A channel legend is the [controlling depth](#) information labeled on the chart to provide the mariner channel details that include controlling depth, available width and date of survey or report. Legends are used for both federally maintained channels and nonfederally maintained channels.

ENC Bulletin. RE: Legends Database

A legends database in which all channel legend information is to be stored, now exists within the Marine Chart Division. The purpose of this database (to be accessed through a user interface) is to provide a user friendly mechanism in which members of the raster production branches shall enter all appropriate ENC legend information as source documents are examined for raster compilation and revision. Appropriate ENC legend information includes the controlling depth, the greatest available width, the source and source date, an indication of graphic revisions, and the addition of new channels/channel legends.

Federally Maintained Channels

Charted legends shall not show channel depths greater than project depths unless approved by the Chief, Marine Chart Division. Project depths may be obtained from the Project Maps by USACE District, a set of publications is on file in NDB. New data not included in these publications advising of new or revised projects is routinely listed as a source item on the chart Standard.

Where the reported depth from a nonauthoritative source is less than the charted depth, an additional notation such as "*Reported shoaling in channel 2000*" should be added. This may be abbreviated if necessary, e.g., "*Rep shoaling 2000.*" In Federal project channels, the charted depth legend shall be retained. The date should be charted as an indication of data dependability.

The [controlling depth](#), width and survey date (month/year), shall be used in federal improved channels.

ENC Bulletin. RE: Footnotes

For shoaling reported in channel footnotes or additional notations, the geographic position of the shoaling should be determined. IHO S-57 specifications require that the actual location of all shoaling within a channel be graphically depicted. Therefore the use of general locator terms such as: *in the vicinity of*, *in the eastern half of*, *extending 50 FT into the channel*, shall be avoided because these terms do not facilitate the ENC processing of the necessary information.

Section 4.6.1.2

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27 FEET FOR MIDDLE WIDTH OF 150 FEET JANUARY 2000

This form of legend shall be used for channels when the tabulated form is not considered justified, and when there are shoals in the outer quarters near the edges of the channels.

The [controlling depth](#) given shall be as close as possible to the project depth and shall be for the greatest available width. Consideration shall be given to the draft of the vessels expected to use such channels when selecting the depth and width to be charted.

When the available width closely approximates the project width, the word “*MIDDLE*” may be omitted.

Additional emphasis and clarity may be attained by positioning the legend outside, but adjacent and parallel to, the channel, by the judicious and discreet use of a note positioned nearby with a leader to the area. The use of channel notes referenced by letters or numbers is not encouraged.

ENC Bulletin. RE: Controlling Depths Reported For the Greatest Available Width

Channel reaches in which the controlling depths are reported to the greatest available width will require the determination of *additional* controlling depths. These additional controlling depths will be for each of those left and right outside channel quarters which are not contained within the boundaries of the specified width. (See [Figure 4-ES1](#) in section [4.30.14](#) of the *NOS/ENC Object Specifications*.)

5 feet rep

This form of legend shall be used when the date the [controlling depth](#) was determined or the width to which it applies is not known. Inquiries for better data should be exhausted, through NDB, before resorting to this form for Federal or military projects.

Nonfederally Maintained Channels

Channel depth and date information, provided by authoritative sources and nonauthoritative sources, may replace charted channel legends. Authoritative sources include NOS surveys, USACE surveys, state and local government surveys and port authority surveys. Nonauthoritative sources include reports from pilot associations, U.S. Power Squadrons, U.S. Coast Guard Auxiliary, facility owners, managers, operators, harbor masters and private parties. Source depths must be adjusted to the chart sounding datum.

REVISED SEPTEMBER 12, 2003

“Reported” is attached to [controlling depth](#) information that has not been confirmed by an authoritative field examination or survey party. Information on these channels is shown in a channel legend on the chart. Usually, these are channels which are not federally maintained and the depth information in the channel legends is often very old. Members of recognized chart updating organizations, Office of Coast Survey Coast Pilot inspectors, chart evaluation parties, and other Office of Coast Survey hydrographic field parties usually receive these reports from private individuals while in the field, but occasionally reports from private individuals are received directly in this office. Reports from Office of Coast Survey field parties with personnel capable of evaluating positional and data accuracy, assessing sounding methods used, or interpreting indications of recent maintenance dredging should be considered more reliable than other reports.

Reports resulting from general inspections conducted for Coast Pilot revision shall not be used to revise controlling depth legends charted in channels unless they are supported by controlled, properly developed surveys. This will also apply to inspections received through the Cooperative Charting Program. See [Section 4.6.2 Updated Old Channel Depth Information](#), Charting Guidelines for Cooperative Charting Program or Nonauthoritative Source.

Data received as a result of a general inspection may be second hand information or any depth without observation or supporting data from controlled, properly developed surveys.

State and local governments, local authorities, and private parties often furnish depths in non-federal improved channels. These surveys must be evaluated for quality of data before application to the nautical charts.

In nonfederal improved channels, the [controlling depth](#) along with a survey date (year) shall be used from authoritative sources that provide a minimally acceptable survey that has been certified by a licensed surveyor, engineer, or surveying/engineering firm. For example:

6 FEET 2000

The reported [controlling depth](#), along with a survey date (year), shall be used from nonauthoritative sources that provide reports or [minimally acceptable surveys](#) in nonfederal improved channels. For example:

6 feet reported 2000

Section 4.6.1.2

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Minimally acceptable surveys must meet the following criteria:

1. Controls, [projections and grids](#), are properly labeled and identified.
2. [Horizontal](#) and [vertical](#) datums are specified.
3. The surveying method is indicated and its accuracy can be determined as it relates to the final product.

The echosounder, which produces a continuous profile of the bottom, is the best method of measuring depths. The sounding pole and leadline are other tools used for measuring depths. Time, position, and depth must be provided. Data should include any corrections to tide and transducer depth.

Positions for the measured depths are best calculated utilizing Differential Global Positioning System (DGPS). The sextant is another good positioning tool available.

4. The spacing between the survey soundings should not exceed 5mm at chart scale.
5. [Rocks](#), [shoals](#), and other dangers to navigation have been satisfactorily investigated.

When permit drawings for public or private developments indicate that dredging has been accomplished but no after-dredging survey has been furnished, a legend such as "Reported dredged 6 feet 1999" or "6 ft rep 1999", may be used. The date should be retained if possible.

Approx 5 ft rep 1999

This form of legend shall be used when it is known that tidal corrections, if appropriate, for survey and report data to be used in charting cannot be determined and applied.

Hydrography may be charted to emphasize shoaling in symbolized channels if this will increase the mariner's safety. The dashed channel limit should be broken as needed for clarity, with the same depth curves and tints used as on the body of the chart.

The shoaling charted shall not be reflected in the channel legend. Where the channel is tabulated, the shoaling shall be used as appropriate for the controlling depth or added as a footnote for that section.

Channels that have been dredged and surveyed but are not intended for general navigational use should be shown by hydrography without a legend. Examples of these are channels dredged for construction purposes and oil well development channels.

REVISED SEPTEMBER 12, 2003

4.6.1.3 Notes

A channel note is a brief comment or explanation, printed on the chart, to provide the mariner with channel details that include controlling depth, available width and date of survey or report. Notes can be used for both federally maintained channels and nonfederally maintained channels.

Charted notes shall not show channel depths greater than project depths unless approved by the Chief, Marine Chart Division.

The following note shall be added to all charts with improved channels:

CAUTION

Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

On charts where dredged channel legends and tabulations are adequately covered by larger-scale charts, the legend and tabulation shall be omitted, a “(see note)” placed in the channel, and a note (preferably on land) added similarly to the following:

BEAUFORT INLET

The project depth is 30 feet to Morehead City.
For controlling depths, use chart 11547.

When the limits of an improved channel are charted and complete tabulations or charted depth legends are not shown, the controlling depths may be indicated in a charted note.

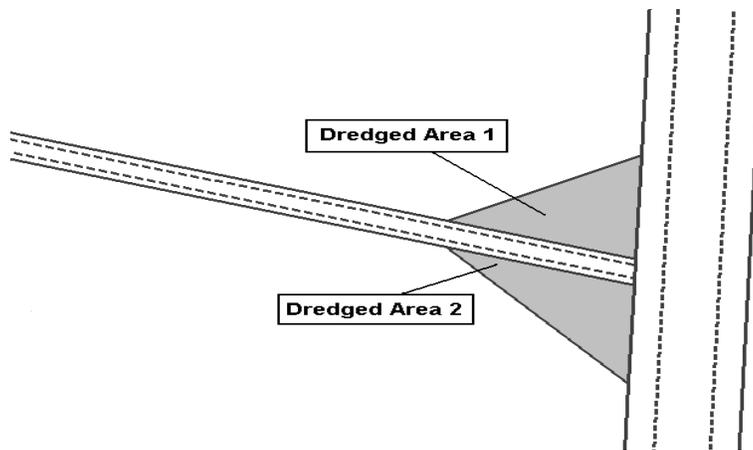
Where neither hydrography nor the limits of an improved channel are shown in a river or tributary, a note may be used to indicate the controlling depths.

(The remainder of this page is intentionally blank.)

ENC Bulletin. RE: Wideners

A channel widener is a dredged and broad body of water deep enough for navigation and generally located at the intersection of two channels. IHO/S-57 specifications require that most channel wideners be represented on an ENC as individual dredged areas. This is particularly evident for those wideners which:

1. are not currently and specifically identified in a TAB or legend,
2. are not part of the channel dimensions indicated for a particular controlling depth, or
3. are not considered a component of the maintained limits of a channel.



(Microstation ENC graphic representation)

Therefore, for those wideners which are already identified within a TAB or legend, and for which the controlling depth is continually being updated, provide all appropriate *updated* information to the ENC production branch (i.e. per the TAB update form or the MCD legends database). For those wideners which are *not* currently and *specifically* being identified in a TAB or legend, are not part of the channel dimensions indicated for a particular controlling depth, or are not considered a component of the maintained limits of a channel, the controlling depth of the widener must be separately determined. All appropriate information concerning the new wideners is also to be entered into the MCD legends database for subsequent viewing and processing by the ENC branch. Appropriate information includes the controlling depth, the source and source date, an indication of graphic revisions, and the addition of new wideners.

Figure 4-8a

4.6.2 Updated Old Channel Depth Information

The Nautical Data Branch shall notify the proper authority of the need for updated survey data when the controlling depth information is 12 years or older. Charting guidelines for old controlling depth information will depend on the response of the authority to the data requested by NDB.

Charting Guidelines for [USACE](#)/Authoritative Source

1. No reply:
 - a. Retain the charted depth [legend](#) or [note](#), or delete the channel limits and replace legend or note with the most recent hydrography.
 - b. Retain the charted [tabulation](#) or delete the channel limits and replace the tabulation with the most recent hydrography.
2. Letter provides updated [controlling depth](#) information:

Revise the controlling depth.
3. Survey provides updated controlling depth information:
 - a. Compile the charted controlling depth information from the source, or delete channel limits and compile the new hydrography from the survey if the channel is not going to be regularly maintained.
 - b. For [tabulations](#), [quarter the blueprints](#), add [least depth](#) to tab, or delete channel limits and compile the new hydrography from the survey and delete tabulation information, if the channel is not going to be regularly maintained.
4. Reply states that the dredged area is not regularly maintained:

Retain charted information or delete channel limits and replace with the most recent hydrography.
5. Reply states that the dredged area (previously maintained by USACE) is no longer a federal project.
 - a. For charted [legends](#), retain information, or delete channel limits and replace with the most recent hydrography.

- b. For charted notes, delete reference to USACE and retain controlling depth, or delete channel limits and replace with most recent hydrography.
- c. For [tabulations](#), delete channel limits and replace with the most recent hydrography, or re-fabricate the charted tabulation into a legend. The tabulation information must be deleted.

Charting Guidelines for Cooperative Charting Program
or Nonauthoritative Source

(Revisions under these guidelines require “reported” to be added to the legend or note.)

1. No reply:

Retain the charted [controlling depth](#) information.

2. Reply confirms the currently charted controlling depth:

Revise date from source.

3. Reply provides updated controlling depth information.

- a. The facility owner, harbor master, manager or operator reports a deeper or shallower depth to their facility. Revise charted depth information as indicated in the report.
- b. The pilot associations, private parties, U.S. Power Squadrons or U.S. Coast Guard Auxiliary reports a shallower depth. For depths supported by minimally acceptable survey criteria (see [page 4-40c](#)), revise the charted depth information. For general inspection (see [page 4-40b](#)), confirm the depth by the authority for the channel.
- c. The pilot associations, private parties, U.S. Power Squadrons or U.S. Coast Guard Auxiliary reports a deeper depth. Revise only the date of charted depth information until depth is confirmed by the authority for the channel.

4. [Minimally acceptable](#) or better survey (see [page 4-40c](#)) provides updated controlling depth information:

Compile the charted controlling from the source
or delete the channel limits and compile the new hydrography.

4.6.3 Revised Channel Depths

Revised channel depth information published in the [NM](#) shall be in the same format as presently charted. Revisions to the channel limits or changes in format, such as replacing a [legend](#) with [soundings](#) and [curves](#), will require a chartlet.

Revised [tabulations](#) must include all entries not superseded as well as the result of new surveys. This will permit the revised tabulation to be mounted over the charted tabulation.

A footnote shall be added to call attention to the fact that the [USACE](#) should be consulted for subsequent information on all controlling depth notes and tabulations for channels maintained by the USACE. A note such as the following will suffice:

Note: The Corps of Engineers should be consulted for changes subsequent to the above information.

(The remainder of this page is intentionally blank.)

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 014/01

JUNE 18, 2001

FILE WITH NAUTICAL CHART MANUAL VOLUME 1, PART 1, SECTIONS 4.6.5 AND 4.14.5

TO: All Cartographers
Marine Chart Division

SUBJECT: Sediment Traps

APPLICATION: All Nautical Charts

Effective immediately, the following attachment replaces pages 4-73 through 4-78 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment provides specifications for charting sediment traps on NOS nautical charts. A sediment trap is a dredged area (within a federally maintained navigation project) that is designed as a catch basin to capture shifting sediment and silt. The primary purpose of a sediment trap is to prevent excessive shoaling in an adjacent channel.

All pre-existing sediment traps which were previously charted:
(a) as navigable portions of a federally maintained channel, and/or (b) as containing soundings or a legend, are to be recommended for a Notice to Mariners upon subsequent revision to the proper sediment trap symbolization and labeling.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

4.6.4 Channel Symbols, Tolerances, and Tints

The specifications listed here should be adhered to as rigidly as possible.

1. Symbols

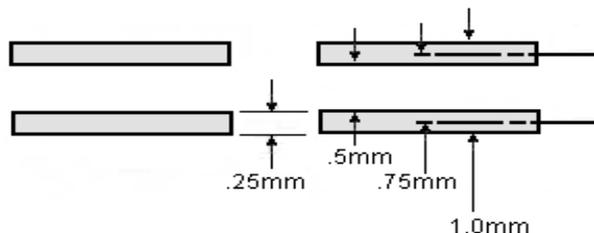
Dashed lines of the following specifications (lineweight/length of dash/space) shall be used to show channel limits and associated areas that are part of the same project:

- a. Type 1 channel (400 feet or more in width for its major portion):
0.25/6.0/1.5 mm (0.010"/0.240"/0.060")
- b. Type 2 channel (100 feet to 399 feet in width for its major portion):
0.25/4.0/1.0 mm (0.010"/0.160"/0.040")
- c. Type 3 channel (less than 100 feet in width for its major portion):
0.25/2.0/0.75 mm (0.010"/0.080"/0.030")

To ensure that each channel control or turning point is graphically shown on the chart, care should be taken to ensure that each successive control point (from seaward) begins with a dash. However, no dash shall be shorter than 1.0 mm, and spaces between dashes must be preserved.

2. Tolerances

The minimum width between the 0.25 mm channel limit lines is 0.5 mm (0.75 mm between centerline axes).



3. Blue Tint

Blue tint shall be charted inside the limits of improved channels when the project depth or controlling depth is equal to or less than the value of the charted blue tint curve or when the seaward end of an improved channel terminates in a blue tint area, regardless of channel depth. Blue tint is not required inside charted improved channel limits when the project depth or controlling depth exceeds the value of the charted blue tint curve.

4.6.5 Sediment Traps

Definition: A **Sediment Trap** is a dredged area (within a federally maintained navigation project) that is designed as a catch basin to capture shifting sediment and silt. The primary purpose of a sediment trap is to prevent excessive shoaling in an adjacent channel.

Other Names for Sediment Traps: Sediment traps may also be identified or labeled on source documents as *Impoundment Areas*, *Impoundment Basins* or *Settling Basins*. Regardless of the alternate name indicated on the source document, all shall be charted and labeled on NOS nautical charts as the feature, Sediment Trap.

General Requirements: Sediment traps are established or approved by the United States Army Corps of Engineers (USACE) and will always be a component of and adjacent to a federally maintained channel. However, because sediment traps are subject to rapid and severe shoaling, they are channel components which are **not** intended for navigation and therefore shall **not** be included in a channel tabulation either as a line item or as a footnote.

ENC Bulletin. RE: Sediment Traps

Although sediment traps are considered to be dredged areas, they shall not be encoded as the ENC object **Dredged Area [DRGARE]**. Sediment traps shall be encoded as the objects **Dumping Ground [DMPGRD]** and **Unsurveyed Area [UNSARE]** to distinguish the navigable ENC object (Dredged Area) from an ENC object that is non-navigable, serves as a perpetual catch basin for shifting sediment and silting and whose primary purpose is to prevent excessive shoaling in an adjacent channel.

The official source for the application of sediment traps will typically be USACE blueprints. Documents from sources other than the USACE and which report the establishment of a sediment trap(s), shall be forwarded to the Nautical Data Branch (NDB) for verification with the USACE. Sediment traps reported from non-official sources shall not be charted before documentation citing their USACE approval is received in NDB.

Symbolization: Sediment Traps shall be shown by a black dashed line (0.2/2.0/0.75 mm). All soundings and depth curves shall be omitted within the limits of the sediment trap and blue tint no.1 shall be added.

Labels and Notes: The following label shall be added within the sediment trap limits and shall be placed parallel to the sediment trap axis.

SEDIMENT TRAP
(see note)

The first line of the label (i.e., *SEDIMENT TRAP*) shall be shown in all capital letters, black 7 pt. Swiss Light Italic type. The second line of the label (i.e., *see note*) shall also be shown in black 7 pt. Swiss Light Italic type, however all lowercase letters shall be used. (A type size, appropriate to the size of the feature being charted and the scale of the chart, may be used as an alternate.)

A note, to be shown in black 7 pt. Swiss Light, shall be placed on the chart in a prominent location and shall read:

SEDIMENT TRAPS
Sediment traps are designed to delay shoaling of the navigable portion of a channel by trapping advancing littoral material. Sediment traps may shoal at a rapid rate spilling over into the adjacent navigation channel, therefore, mariners should exercise caution when operating near them.

ENC Bulletin. RE: The Sediment Trap Note

Within the ENC environment, the Sediment Trap Note shall be placed in an external text file whose name (for the purposes of object association and file retrieval) shall be encoded in the *TXTDSC (Textual Description)* attribute of both the **Dumping Ground [DMPGRD]** and **Unsurveyed Area [UNSARE]** ENC objects.

Inactive Sediment Traps: A sediment trap is considered “inactive” when it is no longer a component of a federal project and will not be periodically dredged.

When a sediment trap is indicated on a source document as being inactive, the limits and blue tint shall be retained on the chart and the label (*inactive*) shall be added to the charted label as follows.

SEDIMENT TRAP
(inactive)
(see note)

ENC Bulletin. RE: Inactive Sediment Traps

An ENC Sediment Trap shall be encoded as inactive by entering into the *INFORM (Information)* attribute of both the **Dumping Ground [DMPGRD]** and **Unsurveyed Area [UNSARE]** objects the term “inactive” and the date of inactivity.

Feature Removal from the Chart: The limits, blue tint and labels of a sediment trap shall not be removed from a nautical chart until a sediment trap has been determined “inactive” **and** a new hydrographic survey of the area has been received in MCD. (A new hydrographic survey of the area is a survey (from an official source) which was performed and verified **after** the date the sediment trap was determined to be inactive.

The sediment trap note shall not be removed from a nautical chart until a thorough examination of the chart results in the conclusion that all sediment trap limits have been deleted.

Feature Recommendation for a Notice to Mariners: All newly established sediment traps shall, upon application to a nautical chart, be recommended for a Notice to Mariners.

Graphic Example:

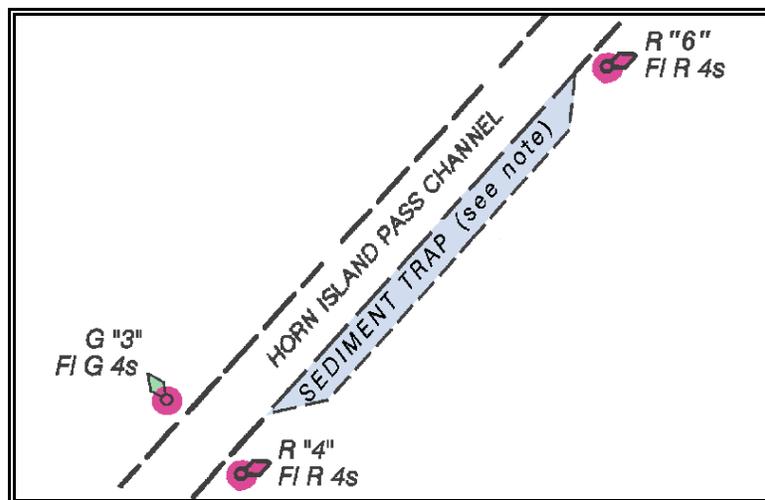


Figure 4-8b

4.7 Bottom Characteristics

The character of the bottom shall be identified on all nautical charts, particularly in [harbors](#), designated [anchorages](#), and all other areas where vessels may anchor. Besides providing information useful for anchoring, bottom characteristics are charted to provide the following information:

1. They assist fishermen in selecting areas where fish may be found and in avoiding places where nets and equipment may be damaged.
2. In tidal areas, they show where vessels may safely take the ground at low water.
3. In [shoal areas](#), they help navigators to assess the stability of shoals and to distinguish rocky areas from areas of unconsolidated materials.

4.7.1 Designated Abbreviations

The bottom characteristics and abbreviations shown in the table in [Figure 4-9](#) have been designated for use on Office of Coast Survey nautical charts and are also internationally accepted and recommended for charting. When transferring bottom characteristics from the survey to the chart, care should be taken to place the labels reasonably close to and slightly below and to the right of any adjoining sounding, provided there is sufficient space. Otherwise, the labels should be placed on or close to the source position so that they correctly represent the bottom at that location. Two descriptive words or their abbreviations will usually suffice.

Especially in harbors, in inland waters, and along the coast, the type of bottom should be charted, e.g., "rky", "hard," "M", "soft", "S", "sticky", etc. Colors of bottom materials shall be omitted since they are of little or no use to navigators. Colors may be shown only if they are of specific interest to the purpose of the chart.

Nouns and their abbreviations shall begin with a capital letter; adjectives or qualifying words and their abbreviations shall be composed of lowercase letters only. Bottom characteristics shall be charted in black 7 pt Swiss Light Italic.

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BOTTOM CHARACTERISTICS AND ABBREVIATIONS

Noun	Source Abbreviation	Chart Abbreviation
Boulders	Blds	<i>Blds</i>
Clay	Cl	<i>Cy</i>
Coral	Co	<i>Co</i>
Coral Head	Co Hd	<i>Co Hd</i>
Gravel	G	<i>G</i>
Grass	Grs	<i>Grs</i>
Mud	M	<i>M</i>
Ooze	Oz	<i>Oz</i>
Pebbles	P	<i>P</i>
Sand	S	<i>S</i>
Shells	Sh	<i>Sh</i>
Shingle	Sn	<i>Sn</i>
Silt	Silt	<i>Si</i>
Stones	St	<i>St</i>
Seaweed	Wd	<i>Wd</i>

Adjective	Source Abbreviation	Chart Abbreviation
Broken	brk	<i>bk</i>
Coarse	crs	<i>c</i>
Dark	dk	<i>dk</i>
Fine	fne	<i>f</i>
Gritty	gty	<i>gty</i>
Hard	hrd	<i>h</i>
Large	lrg	<i>lrg</i>
Light	lt	<i>lt</i>
Rocky	rky	<i>rky</i>
Small	sml	<i>sml</i>
Soft	sft	<i>so</i>
Speckled	spk	<i>spk</i>
Sticky	stk	<i>sy</i>

Figure 4-9

4.7.2 Special Bottom TypesSandwaves ([J 14](#))

Sandwaves are large wavelike sediment features composed of sand or other mobile sediment. The wavelength may reach 300 feet; heights to 30 feet are common, and heights to 90 feet have been observed. A sandwave area shall be identified using the pictorial symbol without a label.

Kelp, Seaweed ([J 13.2](#))

Kelp is a large blade-shaped, vine-like seaweed which generally grows in areas of rocky bottom and in exposed waters and is commonly found in depths up to 10 fathoms. The presence of kelp may indicate that submerged pinnacle rocks exist in the area or it may be an area that tends to collect drifting kelp. The kelp symbol shall be charted to represent kelp and other seaweed areas reported by surveys or other reliable sources when they are considered to be of a rather permanent and obstructing nature during the navigation season. A label is not necessary with the pictorial symbol.

Kelp areas should be enclosed with the limiting danger curve ([K 1](#)) when it is believed that the kelp indicates a rocky and dangerous bottom.

(The remainder of this page is intentionally blank.)

4.8 Ledges and Reefs

A ledge is a rock formation connecting and fringing the shore of an island or large land mass; it is generally characterized by a drop-off in the submarine topography. A reef is a rock or coral formation dangerous to surface navigation. Rocky reefs are always detached from the shore; coral reefs may or may not be connected to the shoreline.

Uncovering Ledges and Reefs ([J 21](#), [J 22](#), [K h](#))

The standard ledge symbol shall be used to chart ledges and reefs identified by field surveys as uncovering at the chart sounding datum. A label shall be added when scale permits to identify the feature, e.g., “*Rock*” or “*Coral*”. Labels shall be shown in slant type (6 pt. Swiss Light Italic).

On small-scale charts where the chart dimensions of uncovering ledges or reefs are less than 3mm in their greatest dimension, the [rock awash symbol](#) (O a) shall replace the ledge symbol.

Along continuous stretches of ledge or reef, the outer edge of the ledge symbol shall be substituted for the low water depth curve in the absence of any other low water curve on the source. The area between the seaward limit of the symbol and the high water line shall be tinted green on the chart.

For the purpose of chart clarity at small scales, rock awash symbols located close to uncovering ledges or reefs shall be included within the ledge symbol limits and the rock symbols shall be deleted.

Significant rocks or coral heads that bare on uncovering ledges or reefs shall be charted with the rock awash symbol.

Submerged Ledges and Reefs ([K 16](#), [K g](#))

Ledges and reefs identified by field surveys as submerged at the chart sounding datum shall be shown by a black dotted line to represent a danger limit, and blue tint to delineate the limits of the feature. Where the limits are not defined, the danger curve can be omitted and only the blue tint retained. A label shall be added to identify submerged ledges and reefs, e.g., “*Subm ledge*” or “*Subm reef*”.

Depths over rocks or coral heads within submerged ledge or reef limits shall be charted using soundings and labels, e.g., “*5 Rk*” or “*5 Co Hd*”. When the depth over these features is unknown, the submerged rock symbol ([K 13](#)) shall be used with the appropriate label.

On small-scale charts where it is not possible to chart selected depth information, the shoalest depth over the submerged ledge or reef shall be included in the legend. Labels shall be shown in slant type (6 pt. Swiss Light Italic):

“*Subm ledge (cov 6 ft at MLLW)*”

“*Subm reef (cov 6 ft at MLLW)*”



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

MARCH 28, 2003

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Elevations of Bare Rocks (Islets)

APPLICATION: Nautical Chart Manual and Chart No. 1

Effective immediately, the following attachment replaces pages 4-77 and 4-78 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment corrects the style and font of the elevation of a bare rock (islet). Textual revisions highlighted below indicate the corrections.

Page 4-77, first paragraph under Islets (K 10), the last sentence is revised to read "Elevations associated with these features shall be shown in **slanted** type (6 pt. Swiss Light **Italic**)."

Additionally, Chart No. 1, page 43, K 10, both elevations should be revised to slanted type. No correction page will be issued for this revision.

Attachment



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

AUGUST 1, 2003

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Equivalent Graphic Pages for Rocks

APPLICATION: Nautical Chart Manual

Effective immediately, the following attachment replaces pages 4-77 through 4-82 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment substitutes equivalent graphic pages for the existing illegible graphics introduced to the Nautical Chart Manual during its initial conversion to digital format.

Embedded references to subsequent Figures have also been revised.

Attachment

Oyster Reefs ([K 1](#))

Oyster reefs shall be charted using the same criteria as for submerged [ledges and reefs](#). When oyster reefs bare at the [chart sounding datum](#), green tint shall be added to the dotted danger curve. A label shall be added to identify oyster reefs, e.g., “*Oyster Bar*” or “*Oyster Reef*” in slant type (6 pt. Swiss Light Italic).

4.9 Rocks

Rocks are classified as bare, awash, or submerged. A submerged rock is potentially the most dangerous natural hazard to navigation. Thus great care must be exercised in evaluating and charting submerged rocks. A submerged rock is considered dangerous to surface navigation when it is 11 fathoms (20 meters) or less below the sounding datum in a navigable area. This guideline shall be modified, as required, for areas expected to be navigated by vessels with a draft deeper than 11 fathoms or for any other special circumstances. Dangerous rocks shall be emphasized by using a black dotted limiting danger curve ([K 1](#)) to encircle the symbol, with blue tint.

Most rocks shown on NOS nautical charts have been identified either by [NOS hydrographic surveys](#) or [topographic-photogrammetric maps](#). Where conflicts exist between these two sources, the final reviewed hydrographic survey shall be the authority for charting all offshore rock features. Other sources may be the [USACE](#), USGS, and similar authorities provided the data are judged to be reliable.

Where rocks of various types are grouped together (e.g., bare, awash, or submerged), the cartographer must select those considered most critical to navigation for application to the chart. Care should be taken to select a representative pattern that adequately portrays the area while including those that define the outermost edge of the group. See [Section 4.14.2, Foul Areas](#).

See [Chart No. 1 \(Section K\)](#), and [Figures 4-10a](#) and [4-10b](#) for the range of symbols used in charting rocks. See also, [Figures 4-11a](#) through 4-11i.

Islets ([K 10](#))

A bare rock (islet) is an extremely important positional reference for the mariner since it can be seen at all [tide stages](#). A bare rock near a submerged rock also serves as an excellent natural marker for the submerged hazard. Islets shall be shown to scale, when possible, or by the standard islet, or bare rock, symbol ([K 10](#)) for small-scale representation. Elevations associated with these features shall be shown in slanted type (6 pt. Swiss Light Italic).

When applying rocks that bare to small-scale charts, the cartographer may have to exaggerate their size in order to retain the feature. The minimum charting size for a bare rock (or islet) is 0.65 mm by 0.5 mm. This size limitation is imposed to avoid charting “dots” which could be misinterpreted as imperfections on the chart reproducibles and consequently removed in the reproduction processes. Where bare rocks clustered together prohibit complete representation at chart scale, those considered most threatening to navigation shall be charted. However, two or more bare rocks should not be merged into one symbol if they can be shown separately with some distinction.

4.9.1 Rock Symbolization Zones

The classification of rocks shown on National Ocean Service charts varies according to the geographic location of the charted area (See [Figures 4-10a](#), [4-10b](#) and [4-11a](#) through 4-11i). Thus the definitions of “bare”, “awash” and “submerged” rocks vary for the Atlantic and Gulf coasts, the Pacific coast and the Great Lakes.

4.9.2 Heights and Depths of Rocks

Especially where isolated and dangerous rocks exist, heights on rocks that are bare or awash, as well as depths over submerged rocks, shall be shown when chart scale permits. However, only the most prominent rocks that bare or are awash on rocky ledges shall be shown with their associated heights (see also [Section 4.8, Ledges and Reefs](#)). Heights associated with rocks awash shall be shown in vertical type (6 pt. Swiss Light) with an underbar.

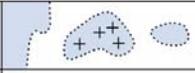
The submerged rock symbol (+) shall not be used where the depth over the rock is known, except when the scale of the chart prohibits using the depth figure. Submerged rocks obtained from non-tide-controlled photography with estimated depths derived from predicted tides shall be charted with the label “*rep*”. The date shall be included where it can be shown clearly without interfering with other charted detail.

(4 ft rep 1985) or *(4 ft rep)*

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CHART NO. 1, SECTION DESIGNATION: K

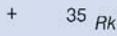
K Rocks

General		
1		Danger line, in general
2		Swept by wire drag or diver

Rocks		
	Plane of Reference for Heights → H	Plane of Reference for Depths → H
10		Rock (islet) which does not cover, height above height datum
11		Rock which covers and uncovers, height above chart datum
12		Rock awash at the level of chart datum
13		Dangerous underwater rock of uncertain depth
14		Dangerous underwater rock of known depth
14.1		in the corresponding depth area
14.2		outside the corresponding depth area

Figure 4-10a
Chart No. 1 Symbolization

CHART NO. 1, SECTION DESIGNATION: K (continued)

15		<i>Non-dangerous rock, depth known</i>
16		<i>Coral reef which covers</i>
17		

<i>Supplementary National Symbols</i>		
a		<i>Rock awash (height unknown)</i>
b		<i>Shoal sounding on isolated rock or rocks</i>
c		
d		
e		
f		<i>Sunken danger with depth cleared (swept) by wire drag</i>
g	<i>Reef</i>	<i>Reef of unknown extent</i>
h		<i>Coral reef, detached (uncovers at sounding datum)</i>

Figure 4-10b
Chart No. 1 Symbolization

ATLANTIC COAST AND THE GULF OF MEXICO

[Figure 4-11a](#) illustrates in tabular form the classification relationships between charting symbology and charting definitions.

[Figure 4-11b](#) illustrates the same relationships, described in [Figure 4-11a](#), in the form of a stylized graphic profile. Mean High Water is equal to 7 feet in this illustration. (See also, [vertical planes of reference](#))

[Figure 4-11c](#) represents the most basic of the illustrations. The graphic survey symbols are translated on a one-to-one basis, where possible, into the charted graphic. **Heights based on the variability of [Mean High Water](#) are expressed as (L), where (L) is equal to the elevation above [Mean Lower Low Water](#).**

The “[Survey Symbol](#)” column indicates the range of NOS Hydrographic Survey graphic symbolization and the “[Chart Symbol](#)” column represents the corresponding translation of the survey symbol into charting symbolization, consistent with generalization and alternative symbolization specifications.

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Section 4.9.2

NAUTICAL CHART MANUAL

ATLANTIC COAST AND THE GULF OF MEXICO: Figure 4-11a illustrates in tabular form the classification relationships between charting symbology and charting definitions.

ATLANTIC COAST AND THE GULF OF MEXICO
CLASSIFICATION OF ROCKS

<i>Bare rock</i>	<i>A rock more than 1 foot above Mean High Water</i>
	<i>Conforms to the shape of the feature</i>
○ (2)	<i>Minimum size symbol</i>
<i>Rock awash that uncovers</i>	<i>A rock exactly 1 foot above Mean High Water to exactly 1 foot above Mean Lower Low Water</i>
	<i>Conforms to the shape of the feature</i>
* (4)	<i>Standard size symbol</i>
<i>Rock awash at the sounding datum only</i>	<i>A rock less than 1 foot above Mean Lower Low Water to exactly 1 foot below Mean Lower Low Water</i>
⊕	<i>Standard size symbol</i>
<i>Sunken rock</i>	<i>A rock covered more than 1 foot at Mean Lower Low Water</i>
+	<i>Unknown depth</i>
² Rk	<i>Known depth</i>
<u>23</u> Rk	<i>Cleared depth</i>

Figure 4-11a

ATLANTIC COAST AND THE GULF OF MEXICO: Figure 4-11b illustrates the same relationships, described in [Figure 4-11a](#), in the form of a stylized graphic profile. In this example, MHW = 7 feet.

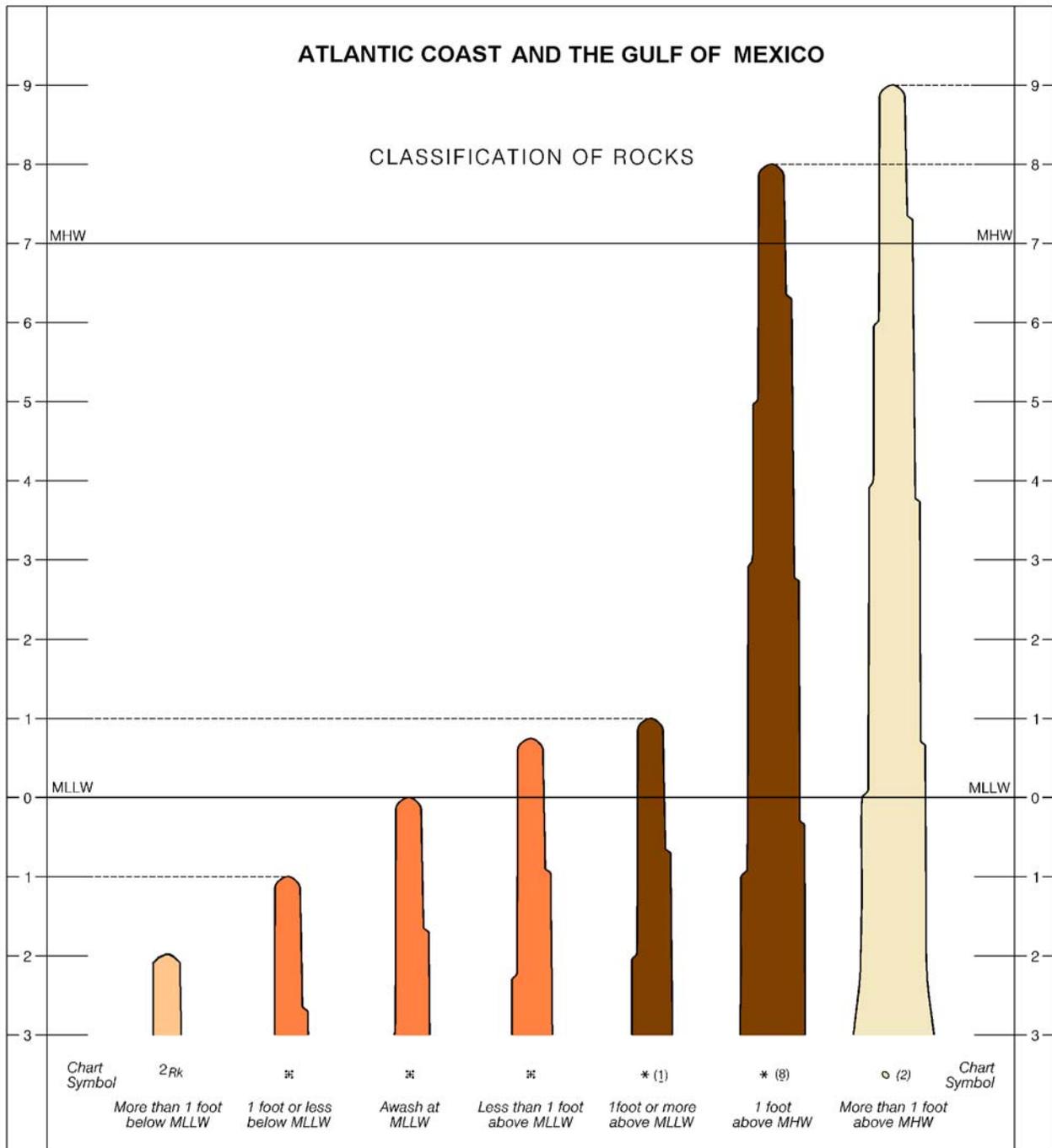


Figure 4-11b

ATLANTIC COAST AND THE GULF OF MEXICO: Figure 4-11c, Survey Symbol to Chart Symbol.

NOS SURVEY SYMBOLIZATION TO CHART SYMBOLIZATION FOR THE ATLANTIC AND GULF COASTS

SURVEY SYMBOL	CHART SYMBOL	ELEVATION OR DEPTH
○ (3)	○ (3)	3
○ (2)	○ (2)	2
* (L)	* (L)	1
* (L)	* (L)	0
<p>The vertical distance of MHW above MLLW is variable and predicated on the Hydrographic Survey.</p> <p>Survey Symbols for a rock above MLLW to and including 1 foot above MHW = * (L), where L is equal to the height above MLLW.</p>		
* (1)	* (1)	1
* (0)	*	0
¹ Rk	*	1
² Rk	² Rk	2
³ Rk	³ Rk	3

MHW

MLLW

VARIABLE DISTANCE

() around figures indicate an offset from the position symbol.

Non underlined figures in () represent elevations above MHW for a bare rock.

Underlined figures in (L) represent the height above the sounding datum. These values are sometimes referred to as negative soundings.

Figure 4-11c

PACIFIC COAST AND ALASKA

[Figure 4-11d](#) illustrates in tabular form the classification relationships between charting symbology and charting definitions.

[Figure 4-11e](#) illustrates the same relationships, described in [Figure 4-11d](#), in the form of a stylized graphic profile. Mean High Water is equal to 6 feet in this illustration. (See also, [vertical planes of reference](#))

[Figure 4-11f](#) represents the most basic of the illustrations. The graphic survey symbols are translated on a one-to-one basis, where possible, into the charted graphic. **Heights based on the variability of [Mean High Water](#) are expressed as (L), where (L) is equal to the elevation above [Mean Lower Low Water](#).**

The “[Survey Symbol](#)” column indicates the range of NOS Hydrographic Survey graphic symbolization and the “[Chart Symbol](#)” column represents the corresponding translation of the survey symbol into charting symbolization, consistent with generalization and alternative symbolization specifications.

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PACIFIC COAST AND ALASKA: Figure 4-11d illustrates in tabular form the classification relationships between charting symbology and charting definitions.

PACIFIC COAST AND ALASKA

CLASSIFICATION OF ROCKS

<i>Bare rock</i>	<i>A rock more than 2 feet above Mean High Water</i>
	<i>Conforms to the shape of the feature</i>
○ (3)	<i>Minimum size symbol</i>
<i>Rock awash that uncovers</i>	<i>A rock exactly 2 feet above Mean High Water to exactly 2 feet above Mean Lower Low Water</i>
	<i>Conforms to the shape of the feature</i>
* (4)	<i>Standard size symbol</i>
<i>Rock awash at the sounding datum only</i>	<i>A rock less than 2 feet above Mean Lower Low Water to exactly 2 feet below Mean Lower Low Water</i>
⊕	<i>Standard size symbol</i>
<i>Sunken rock</i>	<i>A rock covered more than 2 feet at Mean Lower Low Water</i>
+	<i>Unknown depth</i>
3 Rk	<i>Known depth</i>
<u>23</u> Rk	<i>Cleared depth</i>

Figure 4-11d

PACIFIC COAST AND ALASKA: Figure 4-11e illustrates the same relationships, described in [Figure 4-11d](#), in the form of a stylized graphic profile. In this example, MHW = 6 feet.

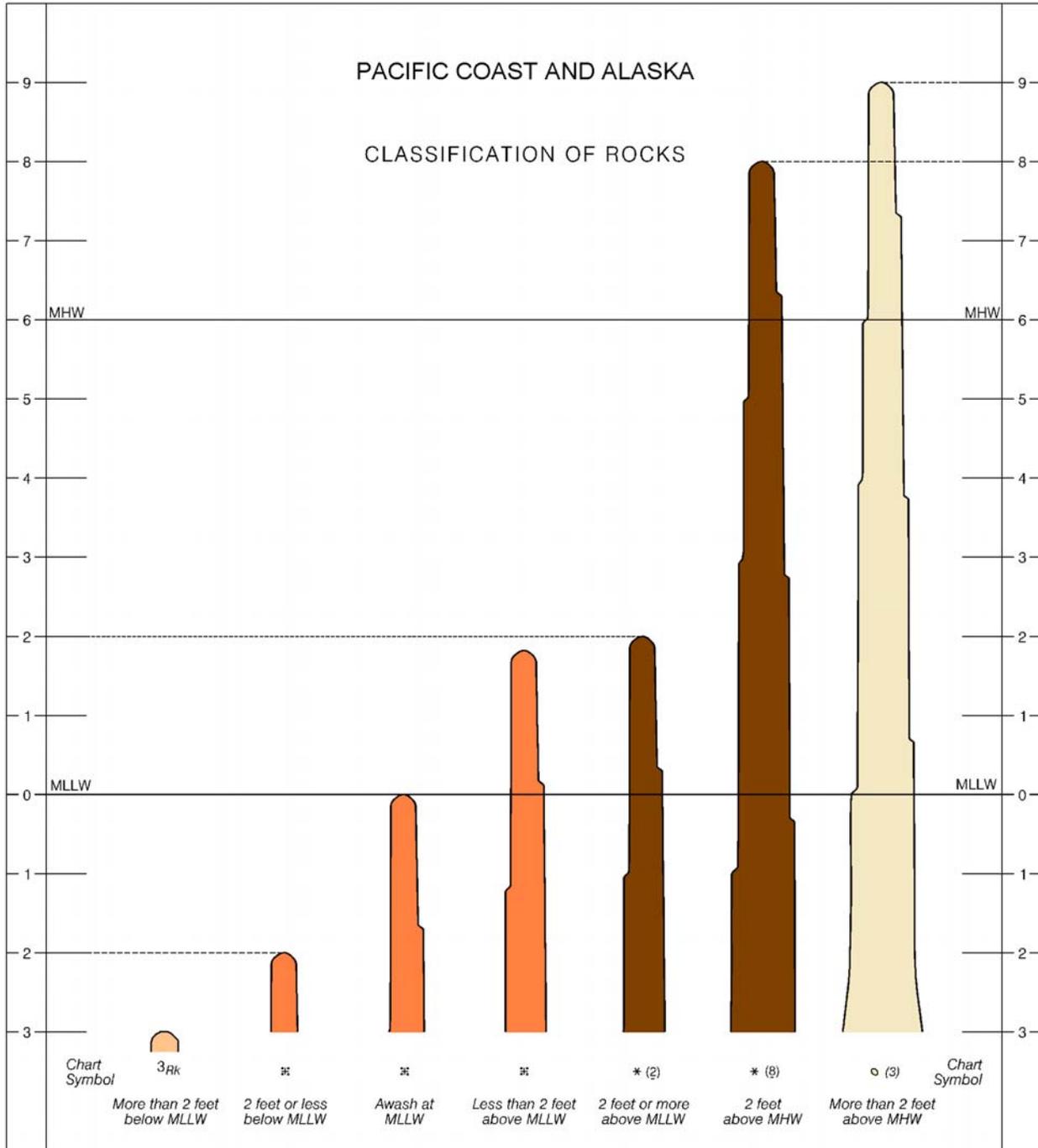


Figure 4-11e

Section 4.9.2

NAUTICAL CHART MANUAL

PACIFIC COAST AND ALASKA: Figure 4-11f, Survey Symbol to Chart Symbol.

NOS SURVEY SYMBOLIZATION TO CHART SYMBOLIZATION FOR THE PACIFIC COAST AND ALASKA

SURVEY SYMBOL	CHART SYMBOL	ELEVATION OR DEPTH
○ ⁽³⁾	○ ⁽³⁾	3
* <u>(L)</u>	* (L)	2
* <u>(L)</u>	* (L)	1
* <u>(L)</u>	* (L)	0
<p>The vertical distance of MHW above MLLW is variable and predicated on the Hydrographic Survey.</p> <p>Survey Symbols for a rock above MLLW to and including 2 feet above MHW = * (<u>L</u>), where L is equal to the height above MLLW.</p> <p>Chart Symbols for the corresponding heights, except for 1 foot above MLLW, = * (L), where L is equal to the height above MLLW.</p>		
* ⁽²⁾	* ⁽²⁾	2
* ⁽¹⁾	*	1
* ⁽⁰⁾	*	0
¹ Rk	*	1
² Rk	*	2
³ Rk	³ Rk	3

() around figures indicate an offset from the position symbol.

Non underlined figures in () represent elevations above MHW for a bare rock.

Underlined figures in () represent the height above the sounding datum. These values are sometimes referred to as negative soundings.

Figure 4-11f

GREAT LAKES

[Figure 4-11g](#) illustrates in tabular form the classification relationships between charting symbology and charting definitions.

[Figure 4-11h](#) illustrates the same relationships, described in [Figure 4-11g](#), in the form of a stylized graphic profile.

[Figure 4-11i](#) represents the most basic of the illustrations. The graphic survey symbols are translated on a one-to-one basis into the charted graphic. Compare the simplicity of this figure with one vertical (Low Water Datum) datum with the graphic illustrations in [Figures 4-11c](#) and [4-11f](#) with two vertical datums ([Mean High Water](#) and [Mean Lower Low Water](#)).

The “[Survey Symbol](#)” column indicates the range of NOS Hydrographic Survey graphic symbolization and the “[Chart Symbol](#)” column represents the corresponding translation of the survey symbol into charting symbolization, consistent with generalization and alternative symbolization specifications.

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GREAT LAKES: Figure 4-11g illustrates in tabular form the classification relationships between charting symbology and charting definitions.

GREAT LAKES
CLASSIFICATION OF ROCKS

<i>Bare rock</i>	<i>A rock more than 4 feet above Low Water Datum</i>
	<i>Conforms to the shape of the feature</i>
	<i>Minimum size symbol</i>
<i>Rock awash that uncovers</i>	<i>A rock exactly 4 feet above Low Water Datum to exactly 2 feet above Low Water Datum</i>
	<i>Conforms to the shape of the feature</i>
	<i>Standard size symbol</i>
<i>Rock awash at the sounding datum only</i>	<i>A rock less than 2 feet above Low Water Datum to exactly 2 feet below Low Water Datum</i>
	<i>Standard size symbol</i>
<i>Sunken rock</i>	<i>A rock covered more than 2 feet at Low Water Datum</i>
	<i>Unknown depth</i>
	<i>Known depth</i>
	<i>Cleared depth</i>

Figure 4-11g

GREAT LAKES: Figure 4-11h illustrates the same relationships, described in [Figure 4-11g](#), in the form of a stylized graphic profile.

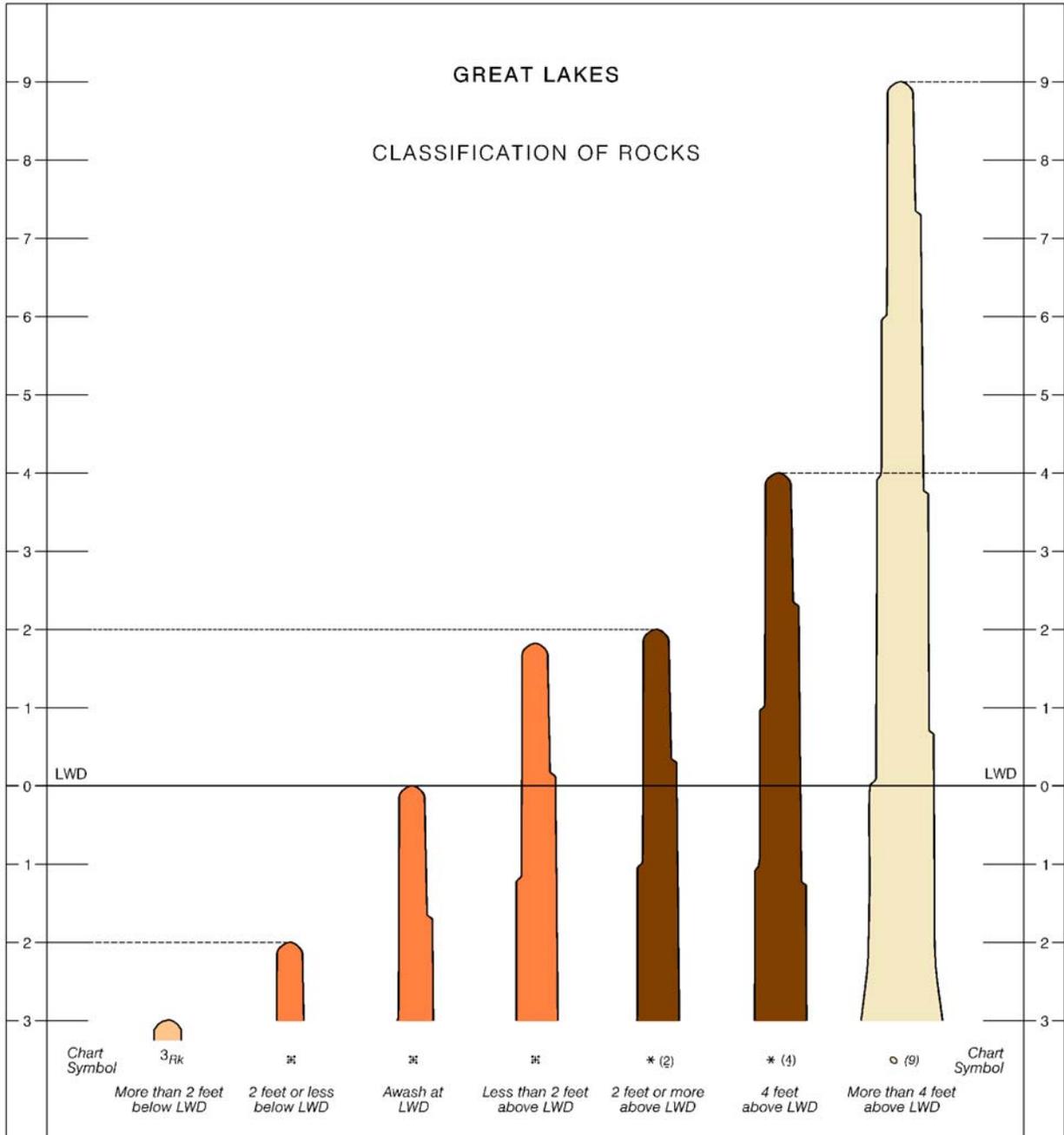


Figure 4-11h

GREAT LAKES: Figure 4-11i, Survey Symbol to Chart Symbol.

NOS SURVEY SYMBOLIZATION TO CHART SYMBOLIZATION FOR THE GREAT LAKES

SURVEY SYMBOL	CHART SYMBOL	ELEVATION OR DEPTH
○ (10)	○ (10)	10
○ (9)	○ (9)	9
○ (8)	○ (8)	8
○ (7)	○ (7)	7
○ (6)	○ (6)	6
○ (5)	○ (5)	5
* (4)	* (4)	4
* (3)	* (3)	3
* (2)	* (2)	2
* (1)	*	1
* (0)	*	0 ————— LWD
* covered 1ft at LWD	*	1
* covered 2ft at LWD	*	2
+ covered 3ft at LWD	3 <i>Rk</i>	3
+ covered 4ft at LWD	4 <i>Rk</i>	4

() around figures indicate an offset from the position symbol.

Non underlined figures in () represent elevations above the LWD for a bare rock.

Underlined figures in () represent the height above the LWD. These values are sometimes referred to as negative soundings.

Figure 4-11i

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 004/03

MARCH 24, 2003

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.10.3

TO: All Cartographers
Marine Chart Division

SUBJECT: Wreck Charting Policy Revision

APPLICATION: All Nautical Charts

Effective immediately, the attachment shall replace page 4-232 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, Section 4.10.3, Wreck Charting Policy.

Nondangerous wrecks shall be added on all charts which are intended to be used for navigation in the area where the wreck is located.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

4.10 Wrecks

Wrecks depicted on nautical charts are classified as stranded or sunken. A stranded wreck is defined as one which has any portion of the hull or superstructure above the sounding datum. Sunken wrecks are below the sounding datum or have only the masts visible. Important information received on new wrecks or changes in the status of existing wrecks shall be published in the [LNM](#).

4.10.1 Stranded Wrecks

Stranded wrecks shall be charted using the following symbol: [\(K 24\)](#). The baseline of the symbol is shown parallel to the bottom of the chart, and the circle on the baseline marks the published position of the wreck. This symbol shall not be rotated, but it can face either right or left. Where the scale of the chart is large enough, the true outline of a stranded wreck shall be shown with a solid line, land tint, and labeled: [\(K 20\)](#). Note that if a significant portion of the wreck is determined to be bare at the Shoreline Plane of Reference by source or cartographic judgment, it is considered to be a topographic (rather than a hydrographic) feature and labeled with vertical (rather than italic) type.

4.10.2 Sunken Wrecks

Dangerous Sunken Wrecks ([K 25](#), [K 26](#), [K 27](#), [K 28](#))

A sunken wreck shall generally be classified as dangerous to surface navigation when any part of it lies, or is judged to lie, at 11 fathoms (20 meters) or less below the sounding datum. This presumes the wreck to lie in an area where obstructions at such depths are considered hazardous to surface vessels capable of navigating in the vicinity. Wrecks deeper than 11 fathoms may also be considered dangerous in areas expected to be navigated by deeper-draft vessels.

Dangerous wrecks over which a precise least depth or clearance has not been determined shall be charted using the following symbol: [\(K 28\)](#). The center crosslines of the symbol mark the published position of the wreck. The symbol should be rotated to the alignment of the sunken wreck, when known; otherwise it should be oriented parallel to the baseline of the chart. For emphasis, blue tint No. 1 shall be added within the enclosing danger curve.

Sunken wrecks with only their masts visible at the sounding datum shall be charted using the same symbol as dangerous wrecks with the added label "*Masts*" ([K 25](#)).

Where the depth over the wreck is unknown, the dangerous wreck symbol may be used if no safe clearance can be reliably estimated and it is judged that the wreck may be dangerous to navigation.

A wreck over which a precise least depth has been determined shall be charted with a sounding surrounded by a dotted danger curve, blue tint No. 1, and a label: [\(K 26\)](#).

A cleared depth over a wreck obtained by a wire-drag survey shall be shown with a sounding surrounded by a dotted danger curve, blue tint No. 1, a wire-drag symbol outside the danger curve below the sounding, and the label "*Wk*" ([K 27](#)). A cleared depth obtained by wire drag will take precedence over a sounding obtained by fathometer. However, a least depth obtained by measured methods, such as by a diver, shall take precedence for charting over a wire-drag cleared depth if it is confirmed as a least depth during final processing and approval.

Where the scale of the chart is large enough, the true outline of the sunken wreck shall be shown with a dotted line, blue tint No. 1, and labeled "*Wk*." Wrecks that uncover at the chart datum and cover at the Shoreline Plane of Reference shall be charted with a dashed line, blue tint No. 1, and labeled "*Wk*."

The label "*Wreckage*" and a dotted danger curve should be used to identify areas where numerous wrecks are located or where the wreckage is scattered. Blue tint No. 1 shall be included within the danger curve ([K 31](#)).

Nondangerous Sunken Wrecks ([K 29](#))

Sunken wrecks that are not deemed dangerous to surface vessels expected to be navigating in the vicinity shall be charted with a sunken wreck symbol only: (K 29), or with a known least depth and label "*Wk*." When using the symbol the center crosslines of the symbol mark the published position of the wreck, and the symbol should be rotated to the alignment of the sunken wreck, when known; otherwise, it should be oriented parallel to the baseline of the chart. Blue tint No. 1 and a danger curve are not required.

4.10.3 Wreck Charting Policy

All [stranded](#) and [sunken](#) wrecks (dangerous or nondangerous) shall be shown on all charts which are intended for navigation. All nondangerous wrecks may not be charted. See [Section 4.11.1.1](#).

To avoid inconsistencies, the criteria to be used for charting nondangerous wrecks shall be the same for all charts. The charting of nondangerous wrecks out to the 300-fathom curve on "Wreck Charts" was discontinued in the early 1970's. Nondangerous wrecks currently shown only on the former "Wreck Charts" shall not be deleted without a recommendation from an authoritative source and documented on the Chart History. Those nondangerous wrecks shown on the charts listed below shall be charted on the overlapping, larger scale charts where hydrography is shown. The following charts were previously designated Wreck Charts: 11300, 11340, 11360, 11400, 11420, 11460, 11480, 11520, 12200, 12214, 12221, 12300, 12326, 13009, 13200, 13260, 13267, 18003, 18010, and 18022.

4.10.4 Deletion of Charted Wrecks

A wreck or other [obstruction](#) that is charted shall not be deleted until there is conclusive evidence that it does not exist or no longer exist in the charted position. Conclusive evidence of nonexistence of a wreck or other obstruction may be furnished in either of two ways:

a. A wreck or other obstruction and all references thereto shall be deleted from the charts when a report of its removal is received from the [USACE](#), the [USCG](#), a harbor master, or an equally authoritative source. If the LNM is used as the basis for chart action, the source of the report must be stated in the [LNM](#).

When the words "destroyed" or "demolished" are used by a reporting source, the wreck shall continue to be charted until its status is proved by a survey, although the symbolization could be changed, e.g., a dangerous sunken wreck could be recharted as a nondangerous sunken wreck.

b. All references to a wreck or other obstruction shall be removed from all charts when an NOS hydrographer recommends its deletion in the [DR](#) of a survey. These recommendations shall be based on the results of a wire-drag or side scan sonar survey disproving the charted wreck or other obstruction, or other conclusive determination and must be confirmed during final processing and approval.

Wrecks and other obstructions must not be removed from charts on the basis of NOS preliminary data or reports or on the basis of any other NOS data which has not undergone final processing and approval. Examples of preliminary reports which must not be used as authority for removal are the Monthly Activities Reports from NOAA survey ships and the Chart Correction Mailbox System reports. These reports may be used to add information to the charts if, for example, an older charted wreck or other obstruction is not deleted in favor of a new reported position without conclusive approved survey evidence that the older wreck or other obstruction does not exist.

Wrecks which are neither verified nor disproved by a wire-drag or side scan sonar survey will remain on the chart; if a cleared depth over the charted position has been obtained from a wire-drag survey, the notation (*cleared _____ft 1982*) shall be charted. This will permit the charting of a clearance depth regardless of a wreck's actual depth or where a wreck cannot physically be proved or disproved.

4.10.5 Automated Wreck and Obstruction Information System

The HSD maintains the Automated Wreck and Obstruction Information System (AWOIS), an automated file of information concerning wrecks and obstructions which have been or may be assigned for field investigation by a hydrographic field unit. Each unique AWOIS record is organized into four categories:

- (1) Header -- contains information about the name of vessel if known, quadrant, vessel registry number, geographic position, area, position accuracy, survey status, carto code, and chart;

Section 4.10.2

NAUTICAL CHART MANUAL

- (2) History -- chronological list of researched source documents describing the origin and latest information available about a wreck or obstruction;
- (3) Description -- sources of information not used in the nautical chart revision process, e.g., copyrighted publications, physical descriptions of a wreck; and
- (4) Survey Requirements -- provides instructions to NOS hydrographers regarding the type and extent of field work necessary to verify or disprove a wreck or obstruction.

Six [AWOIS](#) computer generated listings are available covering all U.S. coastal waters. Special areas, usually a subset of data contained within or overlapping with any one of the six standard area printouts, can also be produced simply by furnishing the geographic limits of the relevant area in latitude and longitude.

The AWOIS file is not considered a complete source of information, and additional wreck and obstruction data may exist elsewhere within NOS.

Information charted on the basis of AWOIS data or other lists of wrecks that do not originate from the NM, NOS field parties, or other sources accepted as authoritative shall carry the label "Rep".

4.11 Obstructions

4.11.1 Miscellaneous Dangers

Generally, anything that would hinder marine navigation may be classified as an obstruction. More specifically, an obstruction on a nautical chart is usually considered to be a hard, unyielding isolated object located in generally deeper depths that would endanger or prevent the safe passage of vessels. The term "obstruction" is often used as a preliminary label for unknown reported dangers until they can be identified and properly labeled. "Rep" and "PA" (see [Section 4.11.3](#)) shall be used to label obstructions as appropriate.

The majority of items charted as obstructions are reported to the NOS through the LNM and from USCGAUX and USPS reports. The USACE requires the removal, if possible, of man-made obstructions considered dangers to navigation.

The guidelines for classifying an obstruction as dangerous to surface navigation are the same as for sunken wrecks and sunken rocks. Generally, those lying at 11 fathoms (20 meters) or less below the sounding datum are considered hazardous. However, these guidelines shall be modified, as required, for areas expected to be navigated by deeper draft vessels.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

MARCH 14, 2002

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Nautical Chart Manual Correction Pages - [Fathoms and Tenths](#)
Sounding Units Symbolization

Effective immediately, the following attachment replaces pages 4-235 and 4-236 in the Nautical Chart Manual, Volume 1, Part I, Seventh (1992) Edition, and serves to correct the following cartographic error introduced to the Nautical Chart Manual during its conversion to digital format:

Nautical Chart Manual Volume	Nautical Chart Manual Page	Error Introduced during Digital Conversion
1	4-235	Incorrect representation of a fathom and tenth sounding

Pages 4-235 and 4-236 are to be inserted into the Nautical Chart Manual, Volume 1, Part I, Seventh (1992) Edition immediately after page 4-234.

Attachment



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

JANUARY 20, 2004

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Note *A* on NOS Hydrographic Surveys

Effective immediately, the following attachment replaces page 4-236 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, and serves to revise the vertical “A” to an italicized “*A*” in Note A where used on page 4-236. Pages 4-235 and 4-236 are to be inserted immediately after page 4-234.

Attachment

Obstructions ([K 40](#), [K 41](#), [K 42](#))

Obstructions are charted with a danger curve and blue tint No. 1. A least depth obtained by a reliable surveying method shall be charted within the danger curve, if available. The label "*Obstn*" and the year reported shall be charted when the type of obstruction and its least depth are not known. The label shall be charted in 6 pt. Swiss Light Italic.

A cleared depth over an obstruction obtained by a wire-drag survey shall be shown with a sounding surrounded by a dotted danger curve, blue tint No. 1, the proper label, and a wire-drag basket symbol inside the danger curve, see Chart No. 1 ([K 41](#)). A cleared depth obtained by wire drag will take precedence over a sounding obtained by fathometer. However, a least depth obtained by measured methods, such as by a diver, shall take precedence for charting over a wire-drag cleared depth if it is confirmed as a least depth during final processing and approval. Features which are neither verified nor disproved by a wire-drag or side scan sonar survey, but where a cleared depth over the charted position has been obtained from a wire-drag survey, will carry the charting notation (*cleared _____ ft 1982*). This will permit the charting of a clearance depth regardless of actual depths or where disapproval of an item is not physically possible.

Obstructions discovered by NOS hydrographic field parties that are not examined to determine the type of object, the least depth, nor an accurate position shall be charted with a danger curve, blue tint No. 1, and labeled:

Obstn PA
Unexam

Included in this category are items found during examination of side scan sonar records after completion of a project.

Some noninvestigated side scan sonar estimated depths may be retained on the final smooth sheet. For example, an estimated depth retained on the smooth sheet from a survey conducted in fathoms and tenths would be identified by a label and note thusly:

1⁶ *Obstn (A)*

(A) Depths on these obstructions were estimated by scaling heights off the bottom from side scan sonar records. Positions were determined by computer offsets from the vessel's track.

This obstruction shall be charted as follows:

Chart in fathoms and fractions		<i>Obstn Rep 1989</i>
Chart in fathoms and feet		<i>Obstn Rep 1989</i>
Chart in feet		<i>Obstn Rep 1989</i>
Chart in meters and decimeters		<i>Obstn Rep 1989</i>

An unidentified submerged object that is not considered to be the remains of a submerged wreck and is not considered to be a danger to surface navigation shall be charted with a 1-mm circle and labeled "Snag". If a least depth over the debris has been determined by a lead-line sounding or similar precise, surveying method, the sounding will be charted in lieu of the 1-mm circle, but will still be labeled "Snag".

Critical dangers to navigation located under [bridges](#) (such as [rocks](#) and [shoal soundings](#)) shall be charted in their correct positions on the largest-scale chart coverage. The bridge symbol shall be broken to clear the charted danger.

Deletion of charted obstructions shall comply with the guidelines established for deletion of charted wrecks (see [Section 4.10.4](#)). See also [Section 4.10.5](#), Automated Wreck and Obstruction Information System.

Note A on NOS Hydrographic Surveys

Some field investigations conducted with side scan sonar have "Note A" which states that certain depths obtained over rocks, wrecks, and obstructions are approximate. The Marine Chart Division (MCD) has charted these depths with the notation "reported." The hydrographic survey processing centers are no longer referencing rocks with Note A. They are being shown as rocks with a known depth over them.

MCD cartographers shall chart the sounding without the word, "reported," and without the accompanying date, when applying surveys prior to 1995 where depths over rocks are referenced by Note A.

Existing reported notes on rocks applied through earlier side scan survey may be removed as time permits. These "reported" must be verified through examination of surveys.

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 003/03

FEBRUARY 18, 2003

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.11.1.1

TO: All Cartographers
Marine Chart Division

SUBJECT: Surveyed Areas with a High Concentration of Obstructions and/or Sunken
Wrecks

APPLICATION: All Affected Nautical Charts

Effective immediately, the attachment (pages 4-236.1 and 4-236.2) shall be inserted after page 4-236 of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

Since hydrographic surveying has advanced to full bottom coverage that detects most objects on the sea-floor, some surveyed areas will have a high concentration of submerged obstructions and sunken wrecks. Many of these obstructions and sunken wrecks may be only a foot or so above the bottom, positioned on a sloping bottom, and pose no real threat to surface navigation. If all were charted, they would needlessly clutter the chart and perhaps dissuade the mariner from transiting the area. The attachment provides charting guidelines for this situation.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

4.11.1.1 Full Bottom Coverage Surveyed Areas with a High Concentration of Obstructions and/or Sunken Wrecks

Advances in hydrographic surveying technology have resulted in full bottom coverage that detects most objects on the sea floor. Numerous submerged features are being detected, surveyed and labeled as obstructions on hydrographic surveys with this new technology. Many of these obstructions are not hazards to surface navigation and should not be shown as such. There are three accepted compilation practices for charting areas with full bottom coverage surveyed areas with a high concentration of obstructions and/or sunken wrecks:

(1) All obstructions of unknown depth shall be charted. Chart **all** surveyed obstructions along with a selection of soundings that reflects the depths of the natural bottom in the area. Obstructions with least depths of 66 feet or less shall be emphasized by using a black dotted danger curve that encircles the sounding, with blue tint No. 1, and labeled. Obstructions more than 66 feet shall have the sounding labeled only. This guideline shall be modified, as required, for areas expected to be navigated by vessels with a draft deeper than 11 fathoms or for any other special circumstances.

(2) All obstructions of unknown depth shall be charted. Make a selection of least depths over obstructions and natural bottom depths. Attach the appropriate label such as *Obstn* or *Wk* to each charted obstruction. Charting all obstructions and sunken wrecks existing in the area is not required.

(3) All obstructions of unknown depth shall be charted. Make a selection of least depths over obstructions **determined** to be hazards to surface navigation and natural bottom depths. Attach the appropriate label (e.g., *Obstn* or *Wk*) to each charted obstruction. Charting all obstructions and sunken wrecks existing in the area is not required.

Any surveyed obstruction or sunken wreck may be emphasized with a dotted danger curve, blue tint No.1, and a label at the discretion of the cartographer.

Labels and Notes: When choosing the second or third practice that results in three or more obstructions not being charted, a label and note shall be added to the chart.

A label, shown in black 7 pt. Swiss Light Italic, shall be placed inside the area with a high concentration of obstructions and /or sunken wrecks. The limit of the area will not be charted. The note gives the mariner the limit of the area.

Examples:

Numerous obstructions
(see note _)

Numerous sunken wrecks
(see note _)

Numerous obstructions and sunken wrecks
(see note _)

A note shall be shown in black 7 pt. Swiss Light.

Examples:

NOTE _

Numerous obstructions, located from Lat. 41° 01' 15"N to 41° 05' 19"N , and bound on the East and West by the Mean High Water line, are not considered hazards to surface navigation and are not charted.

Feb 2003

NOTE _

Numerous sunken wrecks, non-dangerous to surface navigation, exist in the area within a radius of 2.5 nautical miles from a point at Lat. 41° 11' 55"N, Long. 75° 53' 18"W and are not charted.

Feb 2003

When choosing the second or third practice that results in two or fewer obstructions not being charted, a label and note shall not be added. Those obstructions not shown shall be denoted in the Chart History.

All obstructions shall carry the label abbreviation '*Obstn*' with black 6 pt. Swiss Light Italic. The label 'Obstruction' shall not be charted. All sunken wrecks shall carry the label abbreviation '*Wk*' with black 6 pt. Swiss Light Italic.

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UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

JULY 17, 2002

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Nautical Chart Manual: Correction Pages - Pages 4-239 through
4-258.2

Effective immediately, the following attachment replaces pages 4-239 through 4-258 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment serves to correct all illegible notes and graphics located on these pages and which were introduced to the Nautical Chart Manual during its conversion to digital format.

Pages 4-239 through 4-258.2 are to be inserted into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition immediately after page 4-238.

Attachment

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 03/04

February 19, 2004

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.12

TO: All Cartographers
Marine Chart Division

SUBJECT: Fish Havens

APPLICATION: All Affected Nautical Charts

[Section 4.12, Fish Havens](#), has been updated to comply with the format for documenting specifications of nautical chart features per [Cartographic Order 014/03](#), subject: Cartographic Order Format, dated June 16, 2003. Especially, note the following new procedure and specifications for charting the feature.

- The Update Service Branch shall provide the Nautical Data Branch information of Fish Havens published in Notice to Mariners.
- Fish Havens reported through sources other than USACE permits shall be labeled as obstructions without the text “*Fish Haven*” and without the abbreviation “*cov.*” The depth, if known, shall be charted as “reported.”
- A USACE permitted Fish Haven with an authorized minimum depth greater than 11 fathoms and not considered a danger to surface navigation shall be labeled “*Fish Haven*” with the authorized minimum depth and without the label “*Obstn.*”

All Fish Havens shown on new editions of nautical charts shall comply with the Nautical Chart Manual, [Section 4.12](#). Effective immediately, in order to facilitate compliance:

- The Update Service Branch shall revise all Fish Havens (without a USACE permit) that are published in the current CRIT in accordance with Nautical Chart Manual, Section 4.12.
- The Quality Assurance, Plans and Standards Branch shall research and make charting recommendations for all charted obstructions identified as Fish Havens with covered depths in the Gulf of Mexico.

- The Production Branches shall confirm that all Fish Havens shown on nautical charts “going forward” are charted in accordance with Nautical Chart Manual, [Section 4.12](#).

Effective immediately, the following attachment revises pages 4-237 through 4-242 of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

Attachment

James C. Gardner
Chief, Marine Chart Division

4.11.2 Doubtful Dangers

The "doubtful danger" category is reserved for reported [obstructions](#) that have been poorly investigated or not investigated at all, but which still must be charted because of the potential hazard to navigation that they represent. The source may be so deficient that it may be probable that the item has been reported with significant error in depth or position or may not even exist.

Sounding Doubtful ([I 2](#))

The label "*SD*," indicating uncertain depth, should be attached to a depth shown on a chart over a [shoal](#), [rock](#), or any submerged [obstruction](#) that is strongly suspected of being in error. The position is not in doubt.

Position Doubtful ([B 8](#))

The label "*PD*," indicating uncertain position, is used principally to indicate that a submerged feature such as a [wreck](#), [shoal](#), [rock](#), [obstruction](#), etc., has been reported in various positions but no one position has been definitely verified. The existence of the feature is not in question, only its correct position.

Existence Doubtful ([I 1](#))

The label "*ED*," indicating uncertain existence, is used principally to indicate the possible existence of a [wreck](#), [shoal](#), [rock](#), [obstruction](#), etc., the actual existence of which has not been established.

4.11.3 Questionable Danger

The "questionable danger" category includes those items that are questionable only because the positional accuracy or source is not of acceptable survey standards.

Position Approximate ([B 7](#))

The label "*PA*" is used principally to indicate that the position of a danger has not been accurately determined by an authoritative survey. While the position is not of the desired accuracy, it is sufficiently accurate to be used for interim charting until the position can be established by authoritative survey methods.

Reported ([I 3.1](#), [I 3.2](#), [I 4](#))

The label "*Rep*" is attached to any charted feature that is considered dangerous to navigation but has not been confirmed by an authoritative field observation or survey party. The year that the object

Section 4.11.3

NAUTICAL CHART MANUAL

is reported shall be included:

Example: *Obstn (Rep 2000)* *Rk (Rep 2000)*

4.11.4 Natural Dangers

Deadheads ([K 43.2](#))

A deadhead is a grounded log or tree trunk often floating free at one end at or below the surface of the water. A deadhead is usually charted with a 1-mm circle and labeled Snag.

Logs ([K 43.2](#))

Logs that are grounded, with some parts visible above the surface of the water, may require charting. These logs would be charted with a 1-mm circle and labeled Snag.

Snags ([K 43.2](#))

A tree or branch embedded in a river or lake bottom and not visible on the surface is charted as a snag. An unidentified submerged object or debris that is not considered to be the remains of a [submerged wreck](#) is also charted as a snag. These are not always considered to be a danger to surface navigation.

Stumps ([K 43.2](#))

Stumps are the stationary remains of trees, often submerged.

4.12 Fish Havens

Definition: **FISH HAVENS.** Areas established by private interests, usually sport fishermen, to simulate natural reefs and wrecks that attract fish. The reefs are constructed by placing assorted materials on the sea floor in areas which may be of very small extent or may stretch a considerable distance along a [depth contour](#). Fish Havens are outlined and labeled on charts. Also, called Fishery Reefs. [\[1\]](#)

General Requirements

Fish Havens are artificial shelters constructed of rocks, rubble, boxcars, boats, concrete, special designed precast structures to enhance fish habitats, remnants of oil well structures, etc. that are placed on the sea floor to attract fish. Fish Havens are often located near fishing ports or major coastal inlets and are usually considered hazards to shipping. Constructed of rigid material and projecting above the bottom, they can impede surface navigation and therefore represent an important feature for charting. The Fish Haven may be periodically altered by the addition of new material, thereby possibly increasing the hazard. Permits issued by the [U.S. Corps of Engineers \(USACE\)](#) shall be the sole source for charting obstructions classified as Fish Havens in U.S. territorial waters, or to the 3-league (9 mile) line off Texas, West Coast of Florida, and Puerto Rico. The location, configuration, and authorized minimum depth can usually be extracted for charting from the permit. Fish Havens shall be charted in ALL cases where hydrography and other navigational detail are shown in the area.

REVISED FEBRUARY 19, 2004



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

APRIL 9, 2003

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Clarification on Snags and Obstructions

Please file with the Nautical Chart Manual, Volume 1, Seventh Edition (1992), [Section 4.11.4](#), Natural Dangers.

With the recent influx and application of geographic cells, it has come to the attention of QAPSB that the feature “Snag”, in vertical type, with a 1-mm circle, has been added to some of our charts. This is not in agreement with current cartographic policies.

From the Nautical Chart Manual, [Section 4.11.1](#), there is a definition of a snag as “an unidentified submerged object that is not considered to be the remains of a submerged wreck and is not considered to be a danger to surface navigation.” Snags of this type shall be charted with either a sounding (if the depth is known) or with a 1-mm circle (if the depth is not known) and labeled “*Snag*” in 6 pt. Swiss Light Italic.

Also, from the Nautical Chart Manual, [Section 4.11.4](#), there is a list of natural obstructions that can be labeled as snags. These are [deadheads](#) (at or below the surface of the water), logs (which may have some portions visible), and [snags](#) (which are not visible).

Thus, with the exceptions of [logs](#) (which may be visible at some stage of the tide) a snag is a feature found below the [sounding datum plane of reference](#). In each of these cases the same holds true, the label shall be “*Snag*” in 6 pt. Swiss Light Italic.

In situations where new source (e.g., geographic cells) indicates a snag is above the [shoreline plane of reference](#), the feature shall be charted with a 1-mm circle, and labeled “Obstn” in 6 pt. Swiss Light Vertical. If the feature is visible, and identified (e.g., “Tree”, “Stump”, “Log”), it shall be labeled with the appropriate term in 6 pt. Swiss Light Vertical.

To prevent future discrepancies, cartocodes 231 (Snag, bare at SPOR) and 232 (Deadhead, bare at SPOR) shall no longer be used.



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

JULY 26, 2004

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Allen L. Taylor
Acting Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Grammar Correction

Effective immediately, the following attachment replaces page 4-239 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition and serves to correct instances of “be not be” to “not be” where used on page 4-239.

Attachment

EXCEPTION: A Fish Haven reported through other sources, such as the USCGAUX and USPS including Notice to Mariners shall be labeled "Obstn" and the depth, if known, shall be charted as reported. In all cases, soundings within the limits of the obstruction equal to or less than the reported depth shall be charted. Soundings within the limits greater than the reported depth shall not be shown. Depth curves shall not be shown. [Sunken wrecks](#) and [obstructions](#) with unknown depths or known depths less than the reported depth shall be shown within the limits. Sunken wrecks and obstructions with known depths greater than the reported depth shall not be shown within the limits. Other charted detail considered deeper than the reported depth within the obstruction limits (except submarine pipelines, submarine cables and wells) shall not be shown.

The Update Service Branch shall forward Fish Haven information published in Notice to Mariners to Nautical Data Branch. Upon receiving the information from these other sources, the Nautical Data Branch will request a copy of the permit from the appropriate Corps of Engineers district office so that the Fish Haven can be properly charted and labeled.

Fish Havens shall be charted upon notification that construction has begun, but the term "under construction" shall not be used in the chart label.

All new or revised submarine cables and submarine pipelines located within or traversing a charted Fish Haven shall be charted. Currently charted [submarine cables](#) and [submarine pipelines](#) that terminate at the limiting edge of a charted Fish Haven shall be researched and reapplied.

All [wells](#) located within a charted Fish Haven shall be charted.

In all cases, soundings within the Fish Haven equal to or less than the authorized minimum depth shall be charted. [Soundings](#) within the Fish Haven greater than the authorized minimum depth shall not be shown. [Depth curves](#) shall not be shown. [Sunken wrecks](#) and [obstructions](#) with unknown depths or known depths less than the reported depth shall be shown within the limits. Sunken wrecks and obstructions with known depths greater than the authorized minimum depth shall not be shown within the limits. Other charted detail considered deeper than the authorized minimum depth within the Fish Haven limits (except submarine pipelines, submarine cables and wells) shall not be shown.

Fish Havens are usually marked by privately maintained buoys. Only those aids to navigation approved by the [U.S. Coast Guard \(USCG\)](#) and published in the [Local Notice to Mariners](#) shall be charted. Reports of uncharted aids in the vicinity of Fish Havens shall be referred to the USCG for verification and charting recommendations. Problems encountered in the application of aids to navigation shall be referred to the Chief, Update Service Branch.

Feature Recommendation for Notice to Mariners

A newly applied Fish Haven regardless of its minimum depth shall require a Notice to Mariners. A relocation of a charted Fish Haven generally requires a Notice to Mariners. Any decrease in the Fish Havens minimum clearance requires a Notice to Mariners.

Line Type and Weight

Authorized Minimum Depths of 11 Fathoms or Less.

Fish Havens with authorized minimum depths (from USACE permits) of 11 fathoms (20 meters) or less shall be charted with a dotted limiting danger line: 0.25/0.6 mm (0.10/0.25") and blue tint No. 1.

Authorized Minimum Depths Greater than 11 Fathoms.

Fish Havens with authorized minimum depths (from USACE permits) greater than 11 fathoms shall be charted with a dashed limiting danger line: 0.15/1.25/0.5 mm (0.006/0.050/0.020") and no tint.

Authorized Unknown Minimum Depths.

Fish Havens located in general depths less than 11 fathoms (20 meters) shall be charted with a dotted limiting danger line: 0.25/0.6 mm (0.10/0.025") and blue tint No. 1.

Fish Havens not considered a danger to navigation when located in general depths greater than 11 fathoms (20 meters) shall be charted with a dashed limiting danger line: 0.15/1.25/0.5 mm (0.006/0.050/0.020") and no tint.

Fish Havens considered a danger to navigation when located in general depths greater than 11 fathoms shall be charted with a dotted limiting danger curve: 0.25/0.6 mm (0.010/0.025") and blue tint No 1.

Location and Orientation

Fish Havens shall be charted in their exact geographic positions as depicted or stated in the source material.

The center of the 2.0 mm square Fish Haven symbol shall be carefully charted to make certain that it encloses the entire Fish Haven. The square symbol shall have the same orientation as the Fish Haven.

Size and Shape

Fish Havens shall be charted with the standard cartographic symbols in Chart No. 1 ([K 46.1](#) or [46.2](#)).

Fish Havens shall be charted to their true size and shape provided the minimum dimension is at least 2.0 mm or greater at chart scale. The use of the 2.0 mm minimum will ensure that the symbol will appear on the chart as a recognizable feature, and will permit the display of a sufficient blue tint to improve the recognition of those that have a dotted limiting danger line symbol.

Minimum-Size Fish Havens

A 2.0 mm square, either dotted or dashed (depending on whether its authorized minimum depth is greater or less than 11 fathoms)(20 meters), shall be charted when the maximum dimension of the Fish Haven would be less than 2.0 mm at chart scale. The plotting center of the square must be carefully determined to make certain that it encloses the entire Fish Haven area. The symbol square should be oriented the same as the true feature.

Fish Havens are normally rectangular in shape but may be circular, oval or irregular. The circular line symbol shall only be charted to scale if it represents the true size and shape of the Fish Haven. A 2.55 mm diameter circle, either dotted or dashed (depending on whether its authorized minimum depth is greater or less than 11 fathoms)(20 meters), shall be charted when the maximum dimension of a circular Fish Haven would be less than 2.55 mm at chart scale.

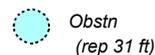
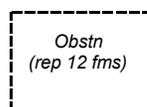
Fish Havens and Obstructions (Fish Havens reported through sources other than a USACE permit) without a description of shape or size shall be charted as circle 2.55 mm in diameter, dotted or dashed.

Labels and Notes

The label “*Obstruction*” shall not be charted. Instead, the abbreviation “*Obstn*” shall be used. All labels associated with Fish Havens shall be charted with black 7 point Swiss Light Italic.

The label shall be located inside the limits of the feature. When the label cannot be located within the limits of a Fish Haven, it shall be placed adjacent to the feature so that the mariner will associate the label with the charted feature. The use of an arrow or leader to associate the label with a charted Fish Haven is discouraged. Every effort shall be made to retain as much of the surrounding charted hydrography as possible when charting Fish Havens and accompanying labels in coastal areas on small-scale nautical charts.

Fish Havens reported through sources other than the [U.S. Army Corps of Engineers \(USACE\)](#), such as the Cooperative Charting Program, shall be charted as obstructions and the depth, if known, shall be charted as “*rep.*” They shall not be charted as a “*Fish Haven.*” For example:



A Fish Haven with an authorized minimum depth greater than 11 fathoms and not considered a danger to surface navigation shall be labeled “*Fish Haven*” with the authorized minimum depth and without the label “*Obstn.*”

Section 4.12

NAUTICAL CHART MANUAL

All Fish Havens shall be charted in areas where hydrography is depicted and labeled as obstructions if they are considered a danger to surface navigation, and carry a depth reference if known. Complete labeling shall be shown on the largest-scale charts and on smaller-scale charts where this can be accomplished without undue congestion. The preferred labeling for Fish Havens on large-scale and small scale charts is shown as [Figure 4-12](#).

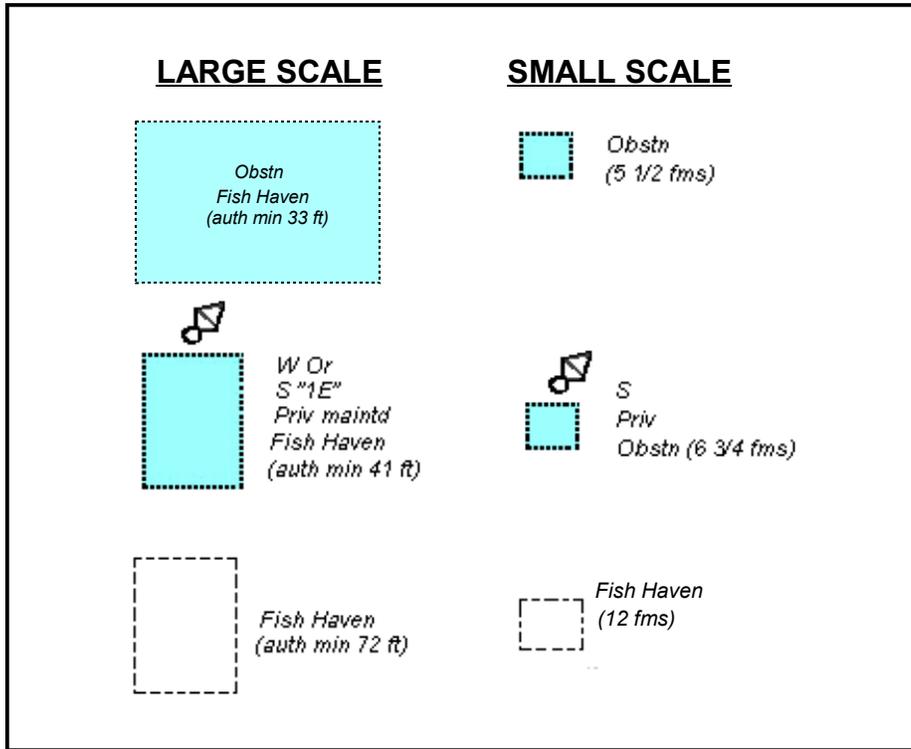


Figure 4-12

The addition of Fish Havens and their accompanying labels in some areas has resulted in the elimination of many critical soundings on smaller scale charts. Therefore, the next-largest-scale charts should be outlined or diagramed on the small-scale charts that show Fish Havens to identify charts where more detailed hydrographic information is available.

The above labeling guidelines supersede the labels associated with cartographic symbols in Chart No. 1 ([K 46.1](#) and [46.2](#)).

Color and Screening

Fish Haven limiting lines shall be charted with black.

Fish Havens with authorized minimum depths of 11 fathoms or less shall be charted with blue tint No.1.

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Fish Havens with authorized minimum depths greater than 11 fathoms shall be charted with no tint.

Fish Havens with unknown authorized minimum depths in general depths less than 11 fathoms shall be charted with blue tint No. 1 throughout the Fish Haven limits.

Fish Havens with unknown authorized minimum depths located in depths greater than 11 fathoms and considered a danger to navigation shall be charted with blue tint No. 1.

Fish Havens not considered a danger to navigation when located in general depths greater than 11 fathoms shall be charted with no tint.

Feature Removal from Chart

A charted Fish Haven shall not be removed until the U.S. Corps of Engineers provides conclusive evidence that Fish Haven enhancement (the placing of materials) has ceased at the site and on receipt and application of new hydrographic survey data of the area subsequent to the placement of materials at the site. Non authoritative sources (e.g., U.S. Power Squadron and U.S. Coast Guard Auxiliary Reports), do not have sufficient authority to declare a feature nonexistent.

4.13 Marine Structures

A chartable marine structure is a man-made structure anchored or otherwise fixed in position in a navigable waterway or foreshore area and stationary in that position at least through the normal boating season. These include [platforms and cribs](#), [fishing and hunting structures](#), [drilling platforms](#) and other [oil and gas well paraphernalia](#), etc.

Sources for charting marine structures on NOS nautical charts consist of the LNM, USCG, USACE, USGS, other U.S. Government agencies, States, private organizations, USCGAUX, USPS, NOS field reports, Coast Pilot inspections, topographic and hydrographic surveys, etc. However, NOS shall remain the final authority for charting any marine structure that it considers to be potentially hazardous to marine navigation regardless of other recommendations.

A charted marine structure shall not be removed from a chart until there is conclusive evidence that it does not exist in the charted position. Non-authoritative sources, e.g., USCGAUX and USPS reports, photo revisions without field edit, etc., are not sufficient evidence of nonexistence for the removal of a charted structure.

Marine structures such as survey platforms, piles, etc., that exist along maintained channels shall not be charted where to do so would interfere with a light symbol. The following note shall be added to charts where this condition exists.

CAUTION

Survey platforms, signs, pipes, piles and stakes, some submerged, may exist along the maintained channels. Piles and platforms are not charted where they interfere with a light symbol.

All marine structures shall be charted in black, with tints as specified. All labels shall be 6 pt. Swiss Light or Swiss Light Italic using initial caps and lowercase. Proper names or other proper identifiers shall be in all capitals. Labels stating clearances over submerged structures shall be enclosed in parentheses.

4.13.1 Platforms and Cribs

Platforms and cribs shall be shown outlined to scale when their charting size is greater than 1.3 mm in any dimension (see [Figures 4-13a and 4-13b](#)). The smallest dimension of this "to scale" symbol shall be at least 0.3 mm to ensure its recognition as a chart feature (see [Figures 4-13c and 4-13d](#)). Significant and potentially hazardous obstructions must be charted by a symbol and label that are easily recognized by the mariner; consistent application of the symbols in [Figures 4-13](#) and [4-14](#) will help ensure this recognition. These structures shall carry the primary label, e.g., "Platform" or "Crib." Labels for catwalks, various attached pipes, hardware, and similar appurtenances and should not be used.

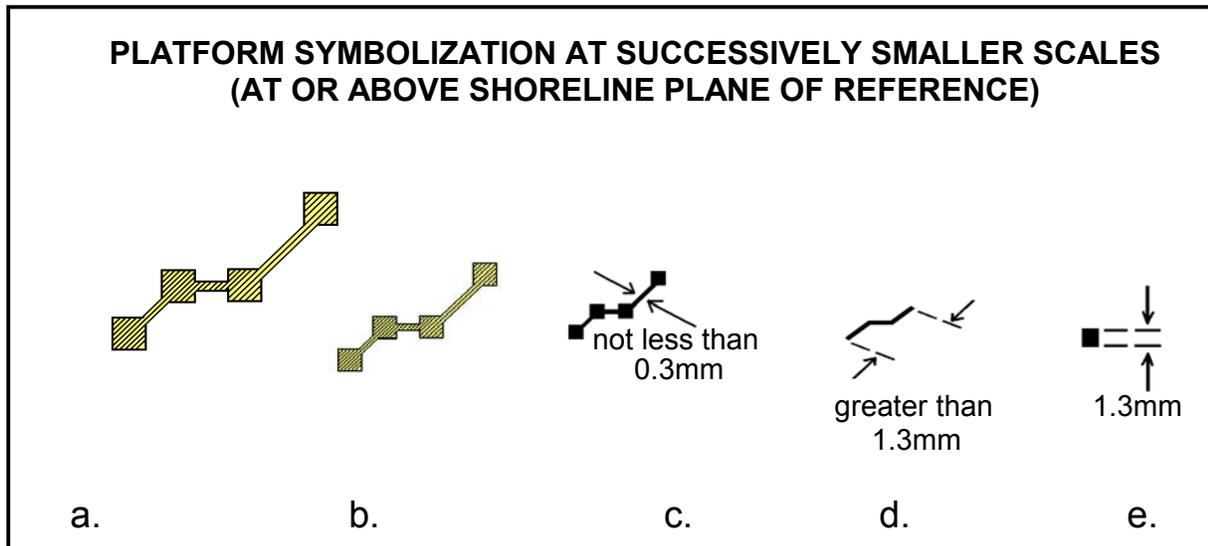


Figure 4-13

MINIMUM SIZE SYMBOLS (1.3mm square)					
ACTIVE			RUINS		
AT OR ABOVE SPOR ¹	COVERS AND UNCOVERS	BELOW SDPOR ²	AT OR ABOVE SPOR ¹	COVERS AND UNCOVERS	BELOW SDPOR ²
a.	b.	c.	d.³	e.	f.
 Platform  Crib	 Crib	 Subm crib	 Platform (ruins)  Crib (ruins)	 Platform (ruins)  Crib (ruins)	 Subm platform (ruins)  Subm crib (ruins)

SYMBOLS FOR FEATURES CHARTED TO SCALE					
ACTIVE			RUINS		
AT OR ABOVE SPOR ¹	COVERS AND UNCOVERS	BELOW SDPOR ²	AT OR ABOVE SPOR ¹	COVERS AND UNCOVERS	BELOW SDPOR ²
g.	h.	i.	j.³	k.	l.
 Platform  Crib	 Crib	 Subm crib	 Platform (ruins)  Crib (ruins)	 Platform (ruins)  Crib (ruins)	 Subm platform (ruins)  Subm crib (ruins)

¹ SPOR - SHORELINE PLANE OF REFERENCE

² SDPOR - SOUNDING DATUM PLANE OF REFERENCE

³ If the major portion of the structure is considered to be visible at the shoreline plane of reference (SPOR), the ruins symbol shall be shown with a black dashed outline, **gold tint**, and vertical type.

Figure 4-14

Section 4.13.1

NAUTICAL CHART MANUAL

Platforms and cribs charted as hydrographic features (i.e., below the Shoreline Plane of Reference) shall be shown by a black dashed outline, slant label, and blue tint No. 1. A distinction should be made in labeling a structure that is below the sounding datum and is therefore submerged at all stages of tide (e.g., "*Subm crib*") and a structure that covers and uncovers (e.g., "*Crib*"). Where it is justified, the danger curve and blue tint may be added to a submerged feature if it is considered hazardous to navigation. This includes features near deep-draft vessel routes with depths greater than 11 fathoms (20 meters).

Outlines of platforms and cribs that are considered topographic features (i.e., they are at or above the Shoreline Plane of Reference) shall be shown by a solid black outline, filled with crosshatching and gold tint, and labeled with vertical type.

Where the datum of reference cannot be determined with reasonable certainty, the category that describes the most dangerous condition, the covers and uncovers criteria shall be used.

In areas where numerous platforms are located, a selection of platforms shall be charted to avoid covering the area with overlapping symbols. The selection shall include the outermost platforms and a selection of the inner platforms, where necessary. Platforms may be adjusted half the symbol width to provide clarity and identification of important overlapping symbols.

Minimum-Size Platforms and Cribs

When the greatest dimension of a platform or crib at chart scale is 1.3 mm or less, a minimum size black filled square 1.3 mm on each side shall be charted (see [Figure 4-13e](#) and [Figure 4-14](#)). This square shall be oriented with the baseline of the chart where rotation is not considered significant, as in open water. For other applications, it may be important to rotate the square according to the source, as alongside channels and shoreline; this is a matter of cartographic judgment.

Minimum-size symbols representing platforms or cribs that cover and uncover or that are below the Shoreline Plane of Reference shall be outlined with black dashes, tinted blue, and labeled with slant type (e.g. "*Crib*" or "*Subm crib*", as appropriate).

Minimum-size symbols representing platforms or cribs that are at or above the SPOR shall be outlined with black, filled with gold tint, and labeled with vertical type.

Platforms and Cribs in Ruins

A ruined platform or crib that is sufficiently large to be outlined to scale shall be charted with a dashed outline. The word "*(ruins)*" in parentheses shall be added to the label and blue tint No. 1 shall be added to the symbol for ruins that cover and uncover or are totally submerged (see [Figure 4-14](#)). Ruined platforms and cribs that must be depicted using a minimum-size symbol shall be shown with a black dashed line.

4.13.2 Fishing Structures

Fish/Crab Pens

These are floating crib-like structures, usually in open water areas, anchored to the bottom in a fixed position to store live fish or crabs. They are charted with a black line and label in italic type.

Fish Stakes ([K 44.1](#))

These are poles or stakes placed in shallow water to outline fishing grounds or as part of a structure built to catch fish.

Fish Traps; Fish Weirs; Tunny Nets ([K 44.2](#), [K 45](#))

These are fence-like structures, usually with netting set between supports, to catch fish.

Fish traps reported to be substantial and permanent, located in an area charted with hydrography, and which could be considered an obstruction to navigation shall be individually charted on the largest-scale coverage where space permits along with the following "FISHING AND HUNTING STRUCTURE" note. This note shall also be shown on all other charts where these structures are known or suspected by means of field observations, provided hydrography is charted in these areas. Area limits where fishing and hunting structures are authorized shall be charted only as specified in [Section 4.14.1](#).

FISHING AND HUNTING STRUCTURES

Uncharted fish and wildlife harvesting devices and structures such as fish traps, pound nets, crab traps, and duck blinds, some submerged, may exist in the area of this chart, particularly in the near shore area. Mariners should proceed with caution.

No objective criteria can be stated for definitively determining the permanent or nonpermanent status of a fish trap. The factors affecting this decision for the visible portion involve the cross-section dimensions of the fish trap's upright members, the durability of the material (pressure-treated wood, metal, etc.), cross-bracing or banding, location, and various other determinants. Additionally, the underwater portions of traps may remain a hazard for many years after the visible parts are gone. The final decision as to chartability should be based on the impression of permanence to a knowledgeable observer, recognizing that this involves subjective judgment. In case of doubt, fish traps should be charted in the interest of marine safety.

4.13.3 Floating Structures

Floats

A float is any buoyant structure anchored to the bottom so that its position is fixed.

Floats are generally considered temporary structures and are not usually charted. Where floats in an area of charted hydrography are determined by field observation to be permanent, but they are not listed in the Light List as an aid to navigation, they shall be shown to scale or with a minimum-size 1.3-mm black open square. They shall be labeled "*Float*" (which may be abbreviated "*Flt*" in congested areas) in 5 or 6 pt. Swiss Light Italic. The label "*lighted*" may be added if appropriate.

Floats which display lights, have Light List numbers, and are established as an aid to navigation, should be charted with a lighted open buoy symbol and labeled "*Float*" ([P 7](#)).

Floating Breakwaters ([F 4.1](#))

These are floating structures anchored to the bottom in such a manner as to form a basin within which vessels may be protected from the violence of the waves. They are charted the same as fixed breakwaters, except for the label and the addition of any anchoring symbolization (see [Section 3.5.2](#)).

Floating Piers

These are floating pier-like structures fixed in position and extending into the water to afford a berthing place for vessels or to serve as a landing place or promenade. See [Section 3.5.1](#) for charting specifications.

4.13.4 Logging Structures

Log booms ([N 61](#))

These are floating barriers of timber used to protect a river or harbor or to create an enclosed storage area for retaining logs during logging operations.

A log boom shall be represented by the dashed line and piles symbol ([N 61](#)). The label "*Log boom*" shall be shown in 6 pt. Swiss Light Italic.

Log booms shall not be removed from the chart until a follow-up permit has been received from the [USACE](#) stating that all logging operations have been terminated and all structures associated with these areas have been removed.

4.13.5 Mineral Development Structures

Mineral development structures shall include all fixed structures, whether temporary or permanent, for which a USACE permit is issued. It shall include, but is not limited to, drilling platforms, production platforms, quarters platforms, pipeline riser platforms, manifold platforms, loading platforms, boat landings, caissons, well protective structures, tank battery barges submerged on station, drilling barges submerged on location, breakwater barges submerged on location, artificial islands, and all other piles, pile clusters, pipes, or structures erected in the waters (33 CFR 67.01-5).

Mineral development structures shall be drawn to chart scale depicting the actual shape. When the chart scale is too small to show the actual shape of a structure, the following procedures shall apply:

For visible structures, the appropriate symbol shall be added to the chart with a label identifying the structure.

For submerged structures, in addition to the appropriate symbol and identifying label, a dotted danger curve shall enclose the symbol. Blue tint No. 1 shall be used for fill when the structure is considered a hazard to navigation, e.g., if it is covered by 11 fathoms or less of water. Depths over submerged structures shall be included in the label when available and when chart scale permits.

When the structure is covered by depths greater than 11 fathoms, the danger curve and blue tint are used only when the structure is considered hazardous to vessels transiting the area.

[Figure 4-15](#) shows the various ways a well may be charted and should clarify nautical charting policies and procedures regarding the charting at small scales of underwater and above-water wells and those that are under construction. All wells located within a charted Fish Haven or Spoil Area shall be charted.

Wells ([L 20](#))

These may be oil or gas wells that are seabed installations only. The installation may include underwater production facilities.

CHARTING OF WELLS

Chart Description

Description

■ Platform

An active visible well or above-water pipework. Often called a “Christmas Tree”, these structures usually have catwalks or small platforms attached and appear more substantial than a simple “casing” or well pipe. Although these structures are smaller than most other structures charted as platforms, they may be seen for some distance.

○ Pipe

A visible well that appears to be inactive or abandoned.

 Well (covered 35 ft)

An active well covered by 11 fathoms or less. The danger curve and tint shall be charted if the structure is considered a hazard to navigation.

○ Well (covered 85 ft)

An active well covered by more than 11 fathoms. The danger curve and tint may be added only if the structure is considered a hazard at these depths.

 Obstn

An abandoned well that is covered by 11 fathoms or less and is considered a hazard to navigation.

○ Obstn

An abandoned well covered by more than 11 fathoms that is not considered a hazard to navigation. The danger curve and tint would be added if it were considered a hazard at these depths.

■ Platform
(under construction PA)

A platform structure that is under construction.



Submerged well. This symbol shall be used only when all submerged wells on a chart can be shown with this symbol. When this is the case, the label “Well” may be omitted, keeping the “(covered ___ ft)” notation.

Figure 4-15

Wellheads ([L 21.1](#), [L 21.2](#), [L 21.3](#), [L 23](#))

These are submarine structures projecting above the seabed and capping a temporarily abandoned or suspended oil or gas well.

Platforms ([L 10](#), [L 13](#))

These are permanently established structures used for surveying; oil, gas, and other mineral development and production purposes; research; and other purposes.

1. Sign Designations

Federal regulation 30 CFR 250.115 requires that a sign be displayed at fixed mineral development structures in the waters under the jurisdiction of the United States. These signs usually consist of four blocks of information, which include the following: the name of a company (usually abbreviated); the geographic area; the lease block number; and the structure number, letter, or name.

Sign designations shall not be charted adjacent to platforms within the jurisdictional area of the Eighth Coast Guard District. Sign designations shall be charted for platforms that fall within the areas of all other Coast Guard districts. Sign designations shall be added as they are announced in the [LNM](#) and Special Notice publications. Sign designations from other sources shall be forwarded through the [NM Update Service](#) to the Coast Guard for approval.

When sign designations are not charted adjacent to the platform symbols, the label "Platform" shall be added with black 6 point Swiss Light type.

The sign designation, when charted, shall be placed alongside the platform symbol using black 6 point Swiss Regular upper case letters and enclosed in quotation marks. No other label shall be used.

Examples: "MOBIL-SS-118-1"; "HILLHOUSE"; "HOM-VE-75-1"

A label is not required for all structures; only those that are isolated or selected outer structures of a group.

2. "Marine Development Structures" Note

Obstruction lights and fog signals (audible sound signals) are required to be operated as privately maintained aids to navigation on all marine development structures in the waters under the jurisdiction of the United States, subject to approval by the USCG District Commander. To

Section 4.13.5

NAUTICAL CHART MANUAL

improve the legibility of the charted detail around these structures, "(lighted)" and "HORN" labels should be deleted from such structures on all charts going forward and shall be replaced by the following note placed in a prominent location on the chart:

MINERAL DEVELOPMENT STRUCTURES
Obstruction lights and sound (fog) signals are required for fixed mineral development structures shown on this chart, subject to approval by the District Commander, U.S. Coast Guard (33 CFR 67).

The note shall be in 7 pt. Swiss Light type, 2" or 3 1/2" wide, and in black.

Artificial Islands ([L 15](#))

Artificial islands are being constructed off the north coast of Alaska for the purpose of mineral development. These artificial islands shall be depicted on large-scale charts with an 0.15-mm black line depicting the actual island configuration and with gold tint. The minimum-size island symbol (see [Section 4.9](#)) with no tint shall be used on small-scale charts. These islands shall be labeled "Artificial island". The second line of the label shall include the signboard name, in parenthesis, as published in the [LNM](#). The label shall be in black 6 pt. Swiss Light type. The "[Mineral Development Structures](#)" note shall be added to all charts depicting artificial islands.

After mineral development activity ceases and an island is abandoned, the signboard label and the aid characteristics shall be deleted, leaving only the label "Artificial island". This label shall continue to be charted even if the island is reduced below the sounding datum to avoid future Federal-State boundary determination disputes. Artificial islands that are between the shoreline datum and the sounding datum shall be charted with a dotted curve, green tint, and labeled "*Obstn (artificial island)*" in 6 pt. Swiss Light Italic. Artificial islands that fall below the sounding datum shall be charted identically except using a blue tint in place of the green tint. Minimum-size islet symbols shall be used on small-scale charts (see [Figure 4-16](#)).

(The remainder of this page is intentionally blank.)

ARTIFICIAL ISLAND SYMBOLOGY					
ACTIVE					
CHARTED TO SCALE			MINIMUM SIZE		
 Artificial island (MUKLUK) Fl Lt (Priv)			 Artificial island (MUKLUK) Fl Lt (Priv)		
ABANDONED					
CHARTED TO SCALE			MINIMUM SIZE		
VISIBLE AT ALL TIMES	COVERS AND UNCOVERS	SUBMERGED AT ALL TIMES	VISIBLE AT ALL TIMES	COVERS AND UNCOVERS	SUBMERGED AT ALL TIMES
 Artificial island	 <i>Obstn (artificial island)</i>	 <i>Obstn (artificial island)</i>	 Artificial island	 <i>Obstn (artificial island)</i>	 <i>Obstn (artificial island)</i>

Figure 4-16

4.13.6 Miscellaneous Marine Structures

Where symbol [F 22](#) is given for the following marine structures, only the open symbol should be used in waters other than the Great Lakes. For structures visible at [Low Water Datum](#) on Great Lakes charts, the symbol F 22 (solid) should be used.

Markers ([B 32](#), [B 33](#), [E 1](#), [E 2](#), [Q 90](#), [Q 91](#))

These are signs or symbols erected on a post, pole, or stake specifically to mark or give direction to a channel entrance, waterway, or turning point or otherwise provide guidance to a similar navigation feature. Such signs are charted as landmarks (see 5.9).

Pipes ([K 43.1](#), [L 21.1](#), [L 23](#))

Metal pipes of any diameter and length shall be charted if they are considered hazardous to vessels.

Poles ([K 43.1](#), [K 43.2](#), [Q 90](#))

Poles are long lengths of wood or metal, usually smaller than a post, embedded in the bottom to support a sign or overhead wires. No diameter or length criteria has been established.

Posts ([F 22](#), [K 43.1](#), [K 43.2](#))

Posts may be of solid wood, metal, or cement, embedded in the bottom, often serving as a small marker for marking a channel. No diameter or length criteria has been established.

Riprap ([Pa](#))

Riprap consists of stones, rock, and rubble intended to act as a barrier to protect certain light structures against ice damage and scouring action. Blue tint shall be shown within the fluted riprap symbol. The following note shall be included on all charts that carry the riprap symbol around lights:

CAUTION
Mariners are warned to stay clear
of the protective riprap surrounding
navigational light structures shown
thus:

Signs ([B 32](#), [B 33](#), [F 22](#), [K 43.2](#), [Q 90](#))

Signs may be charted because they give information concerning something of interest to a mariner, e.g., a cable crossing, marina name, speed limit, etc., or a sign may be charted because it is a useful and conspicuous landmark.

Stakes ([K 43.1](#), [Q 90](#))

Stakes are lengths of wood or metal, usually smaller than posts or poles, which are embedded in the bottom. They are often used to mark fishing areas or may be used in the construction of a fish trap or weir.

4.13.7 Mooring Structures

Dolphins ([F 20](#))

Dolphins are a group of piles, usually wrapped together with cable, used for mooring or warping a vessel or as an aid to navigation. Dolphins may be in the water, on a wharf, or on the beach. Dolphins are charted with a 1-mm circle and labeled "Dol". The pictorial symbol shall not be used.

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 009/04

April 9, 2004

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.13.8

TO: All Cartographers
Marine Chart Division

SUBJECT: Submarine Pipelines

APPLICATION: All Affected Nautical Charts

Effective immediately, ALL submarine pipelines shall be revised to meet the specifications for symbolization, color and labeling (when required) contained in [Section 4.13.8](#) of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

Submarine Pipelines consist of (1) Nonvolatile Material Transport and (2) Volatile Material Transport. Nonvolatile Material Transport includes Intake and Discharge Pipes, Potable Water Intakes and Sewers. Volatile Material Transport includes any submarine conduit used for the conveyance of liquids, gases or other material of a hazardous nature which, when under high pressure, presents the potential for pollution, explosion, or fire.

Background

Cartographic Order 003/79, dated June 28, 1979, SUBJECT: Symbolized Submerged Pipelines, defined new charting procedures for submerged pipelines, potable water intake structures, sewers, intakes and similar conduits. Specifications included directional symbolization, color and labeling. At that time, application was restricted to New, Reconstructed and Automated Charts.

Cartographic Order 005/85, dated November 27, 1985, SUBJECT: Submarine Pipelines, extended these prior charting procedures to “the charting of new submarine pipelines on all charts”. Existing pipelines were to be revised “as the work load permits or when the chart is reconstructed”.

Specifications for charting these features were incorporated into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

Examination of random charts indicates that many “existing” submarine pipelines that were to be revised “as workload permits or when the chart is reconstructed” have not been revised to meet current specifications.

Procedures

ALL individual submarine pipelines (not submarine pipeline areas) shall be re-evaluated for symbolization, charted color and labeling in accordance with [Section 4.13.8](#) of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

(1) Submarine Pipelines (except those labeled as Outfalls)

Individual submarine pipelines (not areas) are charted using a directional symbol. See [Chart No. 1](#), [L 40.1](#), [L 41.1](#), [L 43](#) and [L 44](#). Differentiation of the types of conduits and labeling are contained for each type of pipeline in [Section 4.13.8, Submarine Pipelines](#). The color of the symbol and label, black or magenta, is dictated by whether the contents are nonvolatile or volatile, respectively.

(2) Submarine Pipelines Labeled as Outfalls

Definition: **OUTFALL**. An outfall is the offshore end of an artificial conduit, the mouth of a drain or sewer or the outlet of a natural body of water. This term shall not be used to describe a pipeline or other conduit on NOS nautical charts.

For a period of time, selected submarine pipelines were described and labeled as Outfalls. Clarification of terminology and prescribed charting labels were contained in Cartographic Order 003/79, dated June 28, 1979, SUBJECT: Symbolized Submerged Pipelines and incorporated in the current version of the Nautical Chart Manual. The use of the term “Outfall”, based on the above definition, was determined to be inappropriate for labeling these features.

ALL charted submarine pipelines labeled as an “Outfall” shall be researched and re-evaluated to determine the correct symbol, color and proper identifying label.

The next edition of [Chart No. 1](#), symbol L 41.1, shall be amended to delete the label “Outfall”. No change pages to the Nautical Chart Manual are required.

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

Piles ([F 22](#), [K 43.1](#), [K 43.2](#))

Piles are long, heavy timbers or section of steel, wood, concrete, etc., which are forced into the seabed to serve as a support for a pier, to resist lateral pressure (as for a pile fender), or to support an aid to navigation. A solid symbol F 22 should be used for piles visible at [Low Water Datum](#) on Great Lakes chart only with an open symbol used for a submerged pile. Piles visible at the [Shoreline Plane of Reference](#) shall be charted with a 1-mm circle and labeled "Pile" in 6 pt. Swiss Light. Submerged piles shall be labeled in 6 pt. Swiss Light italic.

4.13.8 Submarine Pipelines ([L 40.1](#), [L 41.1](#), [L 43](#), [L 44](#))

Submarine pipelines may be charted as an individual pipeline or included in a pipeline area. See [Section 4.14.3](#) for a discussion of pipeline areas.

Sources for charting submarine pipelines on NOS nautical charts include the [USACE](#), the Minerals Management Service (MMS), other Federal agencies, States, private companies, etc. NOS shall remain the final authority for charting any submarine pipeline that it considers to be potentially hazardous to marine navigation regardless of other recommendations.

The Minerals Management Service is the positioning authority for charting submarine pipelines servicing offshore oil and gas fields in the Gulf of Mexico. In this instance, offshore is considered to be seaward of the [Three Nautical Mile Line](#). The U.S. Army Corps of Engineers remains the cognizant authority inside the Three Nautical Mile Line. The Minerals Management Service's on-line digital database (text files) shall be the positioning authority for these structures. "As-built drawings" of submarine pipelines contained in this database are not required.

Submarine pipelines may represent formidable obstructions to mariners much the same as a submerged [wreck](#), [piling](#), [crib](#), or similar man-made features.

The pipeline symbol shall be directional, the ball part of the symbol being placed at the end furthest from the assumed source of flow. A half-length symbol shall be the minimum size for charting a submarine pipeline.

Abandoned pipelines shall be charted in black using symbol [L 44](#).

Submarine pipelines are classified for charting according to whether their contents are volatile or nonvolatile.

All new or revised submarine pipelines located within or traversing a charted [Fish Haven](#) or [Spoil Area](#) shall be charted. This policy encompasses both volatile or nonvolatile classifications of submarine pipelines. Currently charted submarine pipelines that terminate at the limiting edge of a charted Fish Haven or Spoil Area shall be researched and reapplied.

1. Nonvolatile Material Transport

All pipelines transporting nonvolatile materials shall be shown on the chart in black using symbol [L 41.1](#). Labels shall be shown in 6 pt. Swiss Light Italic.

Intake and Discharge Pipes ([L 41.1](#))

These are conduits for the intake of nonpotable water such as for cooling, irrigation, etc., and for the discharge of "clean" waste such as cooling water.

Intake and discharge pipelines shall be shown by symbol, but shall not be labeled. The term "outfall" as it applies to the offshore end of an artificial conduit or the mouth of a drain or sewer shall not be used to describe a pipeline or other conduit on NOS nautical charts.

Potable Water Intakes (PWI) ([L 41.1](#), [L 43](#))

These structures designed for the intake of drinking water are usually elevated above the bottom and are supported and protected by a debris-screening structure (a crib), which is separately charted. NOS charts PWI's in the Great Lakes and other freshwater inland lakes.

All potable water intakes shall be labeled "*PWT*".

The following note shall be added to all nautical charts which show potable water intakes:

CAUTION
POTABLE WATER INTAKE (PWI)
Vessels operating in fresh water lakes or rivers shall not discharge sewage, or ballast, or bilge water within such areas adjacent to domestic water intakes as are designated by the Commissioner of Food and Drugs (21 CFR 1250.93). consult U.S. Coast Pilot 6 for important supplemental information.

This note shall be printed in black, either 2" or 3½" wide, in 7 pt. Swiss Light type, with the appropriate [Coast Pilot](#) reference.

Sewers ([L 41.1](#))

Conduits for discharging waste effluents, e.g., industrial, chemical, sanitary, and storm water discharge, shall be labeled "*Sewer*" on the largest-scale chart and on smaller scales as space permits.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

MARCH 16, 2004

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Caution Note-Submarine Pipelines and Cables

Effective immediately, the attached pages shall supercede pages 4-255 and 4-256 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment adds the missing text: "are shown as" to the end of the first paragraph of the Submarine Pipelines and Cables caution note on page 4-256.

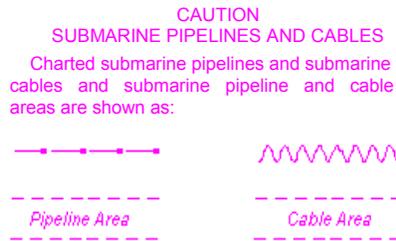
2. Volatile Material Transport

All pipelines transporting volatile materials (such as those transporting gas or oil from offshore platforms to shore) shall be shown on the chart in magenta using symbol [L 40.1](#). These pipelines shall not be labeled.

Submarine Pipelines ([L 40.1](#))

Conduits for conveying liquids and gases, usually petroleum or other mineral products of a hazardous nature, under high pressure, present the potential for pollution, explosion, or fire. These structures are often flexible, i.e., not anchored, buried in the bottom, or otherwise firmly fixed in position. Natural forces may move them away from the charted position, thereby increasing the potential danger to navigation.

The following caution note shall be shown on all new editions containing submarine oil and gas pipelines and submarine cable areas:



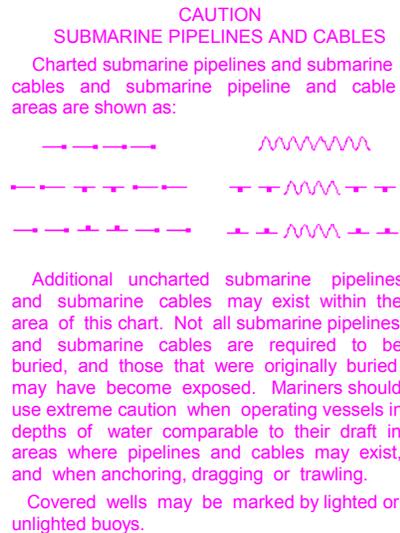
Additional uncharted submarine pipelines and submarine cables may exist within the area of this chart. Not all submarine pipelines and submarine cables are required to be buried, and those that were originally buried may have become exposed. Mariners should use extreme caution when operating vessels in depths of water comparable to their draft in areas where pipelines and cables may exist, and when anchoring, dragging or trawling.

Covered wells may be marked by lighted or unlighted buoys.

Section 4.13.8

NAUTICAL CHART MANUAL

New and reconstructed charts shall use the symbol [L 30.2](#) for submarine cable areas and [L 40.2](#) for submarine pipeline areas. Accordingly, the following note shall be shown on all new and reconstructed charts:



Both notes shall be in magenta, 7 pt. Swiss Light, set 2" or 2 1/2" wide.

4.13.9 Submarine Cables

Submarine cables may be charted as individual cables or included in a cable area. See [Section 4.14.3](#) for a discussion of cable areas.

Sources for charting submarine cables on NOS nautical charts include the USACE, the Minerals Management Service (MMS), other Federal agencies, States, private companies (e.g., AT&T, ITT), etc. However, NOS shall remain the final authority for charting any submarine cable that it considers to be potentially hazardous to marine navigation, regardless of other recommendations.

Submarine cables shown on NOS nautical charts can be classified either as power cables or communication cables. Power cables are used to transmit electricity across a large expanse of water where overhead transmission is not feasible or in areas of heavy commercial shipping where greater danger would exist by use of overhead transmission. Communication cables are used to transmit messages. Submarine cables shall be charted within protected waters such as harbors, rivers, bays, estuaries, or other inland navigable waterways to warn the mariner of possible interference with navigation and to help prevent damage to cables from anchors.

REVISED MARCH 16, 2004

Submarine cables established in ocean waters to provide electric power to offshore structures shall also be charted.

All new or revised submarine cables located within or traversing a charted [Fish Haven](#) or [Spoil Area](#) shall be charted. Currently charted submarine cables that terminate at the limiting edge of a charted Fish Haven or Spoil Area shall be researched and reapplied.

International Submarine Cables ([L 30.1](#), [L 32](#))

In addition, the International Cable Protection Committee has requested that NOS chart all known international (offshore) submarine cables to assist in preventing the disruption of world cable communications. All international submarine communications cables shall be shown in magenta using symbol [L 30.1](#) when active and symbol [L 32](#) when abandoned or inactive, to the neatline limit of the chart. Labels shall not be shown in conjunction with the symbols. NDB shall be requested to obtain any additional information required.

Submarine Cables ([L 30.1](#))

Submarine cables known to be active shall be charted using a magenta wavy line ([L 30.1](#)). The continuity of active cable symbols shall not be broken for soundings or other charting detail except where legibility of the overprinted feature is impaired. Abandoned and inactive cables shall be shown with a noncontinuous wavy line ([L 32](#)). These submarine cable symbols shall not be labeled, but cable area limits shall be labeled.

4.13.10 Recreational Structures

Duck Blinds

Duck blinds used in hunting waterfowl are often considered to be permanent structures. They are fixed in position with poles or stakes and are typically of substantial and durable construction. Duck blinds that are reported to be substantial and permanent, that are located in an area charted with hydrography, and that are considered an obstruction to navigation shall be charted. The minimum-size solid black 1.3-mm square shall be used on the largest-scale coverage of the area where space permits along with the "[Fishing and Hunting Structure](#)" note of [Section 4.13.2](#). This note shall also be shown on all other charts where duck blinds are known or suspected to exist by means of field observations, provided hydrography is charted in these areas.

The determination of whether a duck blind is permanent or nonpermanent shall be a matter of judgment based on field observations subject to office and cartographic evaluation.

Ski Jumps

Because ski jumps are seasonal, they are considered to be a temporary feature and are not charted.

4.14 Marine Limits

4.14.1 Federally Regulated Areas

1. Code of Federal Regulations

The Code of Federal Regulations (CFR) is a codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government. The most pertinent sections are Title 33, "Navigation and Navigable Waters", which includes regulations of the USCG, USACE and St. Lawrence Seaway Development Corp.; and Title 40, "Protection of the Environment", containing dump site regulations of the Environmental Protection Agency (EPA). The CFR is constantly updated by the Federal Register. These two publications must be used together to determine the latest version of any given rule.

The following policies must be considered when using the CFR or the Federal Register as a source of cartographic data:

Textual statements and condensation of navigation regulations shall not be charted for regulated areas including military and privately authorized areas, where the complete regulations are published in the CFR and the Coast Pilot. An exception to this is when a specific regulation note is formally requested by the cognizant authority and approved by NOS for charting.

The charted areas shall be identified only by the primary title of the area, the assigned alphanumeric designator, the CFR section number, and a reference to the standard Note A.

Note A shall be printed in 7 pt. Swiss Light type and in magenta.

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot _____ Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, _____ Coast Guard District in _____, _____, or at the Office of the District Engineer, Corps of Engineers in _____, _____.

Refer to charted regulation section numbers.



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

JANUARY 30, 2004

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Chart Symbolization of Federally Regulated Areas

File with Nautical Chart Manual, Volume 1, Part 1, Section 4.14.1.

The Code of Federal Regulations (CFR) is a codification of the general and permanent rules published in the Federal Register (FR) by the various departments and agencies of the Federal Government. Many Federally Regulated Areas (such as Danger Zones, Regulated Navigation Areas, Restricted Areas, Safety Zones and Security Zones) are detailed in the CFR and FR and are shown on Nautical Charts. Specifications for charting Federally Regulated Areas are contained in the Nautical Chart Manual, Volume 1, Part 1, [Section 4.14.1](#).

As a result of heightened security after the events of September 11, 2001, some new Federally Regulated Areas have been established and some existing Federally Regulated Areas have been revised. These Federally Regulated Areas shall be charted according to the specifications found in the Nautical Chart Manual. Any deviation from those specifications, such as an optional magenta screen fill within the entire area, shall only be made upon request of the cognizant agency, such as the U.S. Navy or U.S. Coast Guard, on a case-by-case basis. Each departure from standard symbolization must be approved by the Chief, Marine Chart Division.

Attention is also directed to the correct magenta dashed line symbols for Danger Zones, Safety Zones and Security Zones ([Chart No. 1, Symbol N 1.2](#)). The magenta T-dashed symbol for Restricted Areas ([Chart No. 1, Symbol 2.1](#)) shall not be used for charting Danger Zones, Safety Zones or Security Zones.

Regulations for the St. Lawrence Seaway (33 CFR 401) are not published in the Coast Pilot but are contained in the Seaway Handbook, issued jointly by and available from the St. Lawrence Seaway Development Corporation and the St. Lawrence Seaway Authority. Charts of the St. Lawrence Seaway shall include the following note in 7 pt. Swiss Light type and in black:

Refer to THE SEAWAY HANDBOOK for the St. Lawrence Seaway Regulations and Circulares, special equipment, radio frequencies used in Traffic Control, and related information.

A regulated navigation area is a designated water zone defined by a specific boundary for which special regulations have been established to govern the navigation of vessels within the area.

Regulated areas are established to prevent damage or marine casualties, to protect waterfront facilities, and to safeguard ports, harbors, and the environment by restricting access to authorized persons and vessels. The establishment of these areas is under the jurisdiction of the [USCG](#) and [USACE](#).

Regulations and limits governing and defining specific areas are published in Title 33, CFR after an initial announcement in the Federal Register and the [NM](#).

Regulated area limits (as in prohibited areas symbolized by [N 2.1](#), [N 2.2](#), [N 31](#)) shall be shown on the chart according to the following criteria:

Safety Zones
Defense Areas/Zones
Security Zones

These area limits are shown by a dashed magenta line (0.20/2.0/0.75 mm) include:

Danger Areas
Firing Areas; Missile, Exercise
Prohibited Areas

These area limits are shown by a dashed magenta line (0.25/4.0/1.0 mm). To highlight the possibility of danger in these types of regulated areas, a 2.5 mm (20 percent, 120 LPI) magenta screened band can be added to highlight the dashed limiting line.

Seaplane Landing Area
Seaplane Restricted Area

These area limits are shown by a solid 0.20 mm magenta line.

Section 4.14.1

NAUTICAL CHART MANUAL

Restricted Areas

These area limits are shown by a T-dashed magenta line (0.20/2.5/1.2 mm).

Regulated areas shall be identified only by the primary title of the area (e.g., "*DANGER AREA*", "*PROHIBITED AREA*", etc.), the assigned alphanumeric designator, the CFR section number, and a

(The remainder of this page is intentionally blank.)

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 020/01

DECEMBER 1, 2001

FILE WITH NAUTICAL CHART MANUAL, VOLUME I, PART I, SECTION 4.14.1

TO: All Cartographers
Marine Chart Division

SUBJECT: [No-Discharge Zones \(NDZ\)](#)

APPLICATION: All Affected Nautical Charts

Effective immediately, the attachment (pages 4-259 through 4-259.4) shall replace page 4-259 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The Federal Water Pollution Control Act or “Clean Water Act” (CWA) was passed to restore and maintain the chemical, physical, and biological integrity of our Nation’s waters. Section 312, entitled “Marine Sanitation Devices” gives the Environmental Protection Agency and States authority to designate No-Discharge Zones.

NOS Nautical Charts shall portray No-Discharge Zones (NDZ). The attachment provides specifications for charting them.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

reference to the standard Note A. On nautical charts, Note A is reserved for the note listing the publications that contain navigation regulations relevant to that chart; other charted notes should begin with Note B or some other reference label even if there is no [Note A](#) on that chart. Cartographers must make certain that Note A contains the proper [Coast Pilot](#) and chapter numbers as well as identifying the [USCG](#) and [USACE](#) offices having jurisdiction in the referenced area.

Examples:

DANGER AREA
334.970 (see note A)

PROHIBITED AREA
334.80 (see note A)

4.14.1.1 No-Discharge Zones

No-Discharge Zones (NDZ) ([N 1.2](#))

Definition: A **No-Discharge Zone** is an area of a water body or entire water body into which discharge of sewage (whether treated or untreated) from all vessels is completely prohibited.

Background:

The Federal Water Pollution Control Act or “Clean Water Act” (CWA) was passed to restore and maintain the chemical, physical and biological integrity of our nation’s waters. Section 312, entitled “Marine Sanitation Devices” gives the Environmental Protection Agency and States the authority to designate certain areas as No-Discharge Zones (NDZ) for vessel sewage. Freshwater lakes, freshwater reservoirs, or other freshwater impoundments whose entrances and exits prohibit traffic by the regulated vessels (those vessels with installed toilets) are by regulation NDZs. Rivers that do not support interstate vessel traffic are also NDZs by regulation. Water bodies that can be designated as NDZs by States and EPA include: coastal waters and estuaries, the Great Lakes and their inter-connected waterways, freshwater lakes and impoundments accessible through locks, and other flowing waters that support interstate navigation by vessels subject to regulation. In order for EPA to become involved, a State has to formally request that a specific portion of a water body or all of its water bodies, which are not NDZ by default, be designated a NDZ.

The Clean Water Act requires that if a state determines that waters of the state require greater protection by establishment of a NDZ, such a determination does not apply until EPA makes a determination that adequate pump-out facilities exist for such an area designated by the state. Alternatively, upon application by a state, EPA may by a regulation, establish NDZs which prohibit the discharge of sewage from vessels into waters.

General Requirements:

NDZs are established by an administrative determination, and that adequate pump-out facilities exist. NDZs designated by EPA through rulemaking are published in the Federal Register and then recorded in the U.S. Code of Federal Regulations (CFR), Title 40 which is updated annually. The Nautical Data Branch examines the Federal Register for NDZ information and evaluates it for charting. NDZs should not be charted unless they are final actions.

A NDZ shall be identified at all chart scales. Those portions plotting within areas having no charted hydrography shall be omitted.

Feature Recommendation for a Notice to Mariners:

A newly designated, amended or revoked NDZ should be recommended for a [Notice to Mariners](#).

Line Type and Weight:

NDZ limit symbol shall be charted with a dashed line: 0.20/2.00/0.75 mm (0.008"/0.08"/0.03").

The line symbol shall not routinely be broken for soundings, bottom characteristics or type. The line symbol may be broken only where it would cause confusion in the presentation of more important information.

Location and Orientation on the Chart:

NDZ limit lines shall be charted in their exact geographic positions. The NDZ limit symbol shall not be shown where it coincides with other charted maritime limits, such as international boundaries, [COLREGS demarcation lines](#), the limiting lines for [restricted areas](#), [anchoring areas](#) and [civil reservations](#). The NDZ limit symbol shall not be charted where it coincides with shoreline or manmade features.

When the NDZ coincides with a state boundary, and the state boundary is generally not shown in water, the placement of the NDZ limit line shall be charted from a USGS quadrangle or other authoritative source denoting the state boundary. The state boundary symbol should not be added. The geographic location of the state boundary shall be the geographic location of the NDZ boundary.

When the NDZ coincides with the [Three Nautical Mile Line](#), the NDZ limit line shall be offset one line width (0.20 mm/0.008") seaward of the charted Three Nautical Mile Line. On charts where the Three Nautical Mile Line is not shown, the position of the NDZ limit line shall be applied by using the alignment of the Three Nautical Mile Line from another scale chart.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey
Silver Spring, Maryland 20910-3282

JUNE 14, 2004

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Allen L. Taylor
Acting Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Note Z, No-Discharge Zone - Web Site Change

Effective immediately, the attached pages shall supersede pages 4-259.2 through 4-259.5 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The Environmental Protection Agency web site referenced in Note Z, concerning regulations and requirements pertaining to the Vessel Sewage Discharge Program, has been changed to http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/. The Note Cell Library has been revised to reflect the new web site. Note Z, currently shown on nautical charts, shall be revised on the new edition.

Labels and Notes:

No-Discharge Zone labels shall be charted in capital letters, magenta 8 point Swiss Light Italic, within the limits of the NDZ and oriented with the baseline of the chart.

*NO-DISCHARGE ZONE
(see note Z)*

Note Z shall be charted in the vicinity of note A. The note shall be in 7 point Swiss Light type, either 2" or 2 1/2" wide and in magenta.

The following Note Z shall be charted on all charts, except the Great Lakes charts when part of that chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140

Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

The following Note Z shall be charted on all charts, except the Great Lakes charts when the entire chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140

This chart falls entirely within the limits of a No-Discharge Zone (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

The following Note Z shall be added only to Great Lakes charts when part of that chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140
Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. Commercial vessel sewage shall include graywater. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

The following Note Z shall be added only to Great Lakes charts when the entire chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140
This chart falls entirely within the limits of a No-Discharge Zone (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. Commercial vessel sewage shall include graywater. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

The NDZ shall be identified and added textually at the beginning of a specialized Note Z, where the location of the seaward boundary is difficult to portray on a chart. The geographic area shall be changed to match the descriptive location of each specialized NDZ.

An example of a specialized Note Z that is portrayed on charts outside of the Great Lakes when part of the chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140

All Florida State waters within the Florida Keys National Marine Sanctuary are designated as a No-Discharge Zone (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

An example of a specialized Note Z that is portrayed on charts outside of the Great Lakes when the entire chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140

All Florida State waters within the Florida Keys National Marine Sanctuary are designated as a No-Discharge Zone (NDZ). This chart falls entirely within the limits of a No-Discharge Zone (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

An example of a specialized Note Z that is portrayed only on Great Lakes charts when part of the chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140
Michigan waters of Lakes Michigan, Huron, Superior, Erie and St. Clair, all waterways connected thereto, and all inland lakes are designated as a No-Discharge Zone (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. Commercial vessel sewage shall include graywater. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

An example of a specialized Note Z that is portrayed only on Great Lakes charts when the entire chart falls within a No-Discharge Zone:

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140
Michigan waters of Lakes Michigan, Huron, Superior, Erie and St. Clair, all waterways connected thereto, and all inland lakes are designated as a No-Discharge Zone (NDZ). This chart falls entirely within the limits of a No-Discharge Zone (NDZ). Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. Commercial vessel sewage shall include graywater. All vessels with an installed marine sanitation device (MSD) that are navigating, moored, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage (treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow/oceans/regulatory/vessel_sewage/.

Color and Screening:

NDZ dashed limit line, associated notes and labels shall print in solid magenta.

Feature Removal from Chart:

A charted NDZ shall not be revised or removed until the Environmental Protection Agency (EPA) provides conclusive evidence that the NDZ designation has been changed or rescinded.

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 015/02

NOVEMBER 12, 2002

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.1.1

TO: All Cartographers
Marine Chart Division

SUBJECT: No-Discharge Zone (NDZ) Note

APPLICATION: All Affected Nautical Charts

Effective immediately, the following attachment shall replace pages 4-259.2 through 4-260 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

On charts where the location of the NDZ seaward boundary is difficult to portray, the geographic area of the NDZ shall be identified and added textually at the beginning of Note Z. Examples of these specialized NDZ notes have been inserted into Section 4.14.1.1, Labels and Notes.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

4.14.2 Miscellaneous Marine Limits

Limits of well-defined areas that are not CFR-regulated are shown on NOS nautical charts to identify certain hazardous and nonhazardous areas that have been established for a particular purpose. Fixed or floating structures and equipment can be expected in these areas at times. These areas may be established by USACE permit, State or local governments, private groups, associations, etc. (See also the discussion of civil reservations in [Section 4.14.7, Maritime Boundaries](#).)

The NOS shall retain the final responsibility for charting any special-purpose navigation area that it considers to be of value to marine navigation, regardless of recommendations from other sources.

Labels for these areas shall be in capital and lowercase letters, Swiss Light Italic type, of a size appropriate to the size of the feature.

The following areas shall be tinted only as normally required by other chart detail, properly labeled as to purpose, and symbolized by a black dashed line (0.2/2.0/0.75 mm).

Breakers ([C d](#), [K 17](#))

A breaker is a wave which breaks either because it becomes unstable when it reaches shallow water, the crest toppling over or "breaking," or because it dashes against an obstacle. An isolated area of waves breaking consistently in the same location should be outlined provided there is no other charted indication of an existing shoal or reef.

Breaker limits are shown by the maritime limit symbol [C d](#). The label "*Breakers*" shall be used in all instances where this feature is charted. See also [Section 3.3.2, Foreshore](#).

(The remainder of this page is intentionally blank.)

Section 4.14.2

NAUTICAL CHART MANUAL

Authorized Fishing/Hunting Areas ([N b](#))

The USACE no longer publishes the geographic limits of areas where fishing and hunting structures (fish traps, duck blinds, gill nets, etc.) are authorized to be established and used. No comprehensive method exists to revise these limits which prior to 1983 were published in 33 CFR 206. Therefore, these limits shall be charted only where a specific agreement with a State or other authorizing agency exists for charting them, or where it is advisable to chart them because they are marked with buoys or other markers. See also [Section 4.13.2](#), charting of actual fishing and hunting structures.

Degaussing Range ([N 1.1](#))

A degaussing (or demagnetizing) range is not an [aid to navigation](#). Rather, it is an area within which ships' magnetic fields may be measured. Sensing instruments and cables are installed on the sea bed in the range, with cables leading from the range to a control position ashore. The range is usually marked by distinctive buoys identifying the purpose of the range.

The significance of a charted degaussing range is that anchoring and trawling are prohibited in that area and that the range may have to be avoided when vessels are seen to be using it.

The limits of degaussing ranges and any associated [submarine cables](#) shall be shown on the chart in black with a dashed line delineating the limits of the area. Submarine cables extending from the shore to the degaussing range shall be charted in magenta.

The label "*DEGAUSSING RANGE*" shall be shown in capital letters, Swiss Light Italic, in a type size appropriate to the size of the feature.

Ruins ([N 1.1](#))

Areas of unconsolidated ruins shall be outlined with a black dashed limit line when it is not considered practical to individually chart each object or where individual objects have not been identified.

Unsurveyed ([I25](#), [N 1.1](#))

Unsurveyed areas are shown on the chart to alert the mariner to areas where the water depth is unknown and where passage may be conducted only with extreme caution. When hydrographic survey information is applied to these areas, the dashed limiting line and "*Unsurveyed*" label shall be removed.

Various other areas are designated on NOS charts either because they represent a hazard to navigation or because the information may be valuable to mariners. Such maritime limits are designated either by a black dashed line (when the feature is not considered dangerous to surface navigation) or by a black dotted danger line (when the feature is considered hazardous and must be emphasized). A blue tint No.

REVISED AUGUST 25, 2000

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 008/02

May 18, 2002

File With Nautical Chart Manual, Volume 1, Part 1, Section 4.14.2

TO: All Cartographers
Marine Chart Division

SUBJECT: [Eelgrass](#)

APPLICATION: All Nautical Charts

Effective immediately, the following attachment replaces pages 4-261 and 4-262 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The National Marine Fisheries Service requested NOS chart eelgrass. Eelgrass shall be charted on all affected nautical charts. The attachment provides specifications for charting eelgrass on all nautical charts.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

1 shall be added to identify areas on the chart that are determined to be dangerous to navigation. Limiting lines (dashed or dotted) may be exaggerated for small-scale chart representation when deemed necessary.

Borrow Areas ([N 1.1](#))

Borrow areas are established for the purpose of removing mineral materials, for use in landfill operations, for the creation of artificial islands, for obtaining sand and gravel, and for other commercial uses. Such areas can constitute significant dangers to swimming and anchoring by greatly increasing depths in otherwise shallow areas.

Borrow areas shall be charted using the dashed maritime limit symbol and labeled "*Borrow area*." Inactive borrow areas shall not be removed from the chart until survey information is available for chart updating.

Discolored Water ([K e](#))

Unnatural colored areas in the sea which may or may not indicate the existence of shoals shall be charted with a black dashed line and labeled "*Discol water*."

Grass

An 0.15-mm black dashed line shall be used as the charting limit line for areas outlined and clearly identified on the source as grass growing seaward of the high-water line. The areas shall be labeled "*Grass*" if space permits, and blue tint shall be used except where preempted by green low water tint. Grass generally grows on a soft, yielding bottom with seasonal variations in its outer extremities and densities, and therefore does not represent the critical feature that is best emphasized with the danger curve.

Eelgrass

Definition: **Eelgrass** is a common name for a group or genus of plants called *Zostera* that grows under water in estuaries and in shallow coastal areas.

Eelgrass plants are vital components of coastal ecosystems, providing food and shelter to numerous aquatic species, cycling nutrients from the water and stabilizing marine sediments. Charted eelgrass assists fishermen in locating areas where fish and other aquatic species may be found. The charting of eelgrass is important to environmental management in developing strategies and policies to protect aquatic habitats.

General Requirements: The primary source for the application of eelgrass will be National Ocean Service [\(NOS\) Hydrographic Surveys](#). Documents from other reliable sources, such as, Federal, State, or Local authorities shall also be used to chart eelgrass.

Eelgrass areas shown with limit lines shall be labeled *Eelgrass*. All hydrography and tints shall be retained in eelgrass areas. The eelgrass limit lines shall not be shown where it affects the clarity of more important chart features. The label shall be used only, if space permits. Under no circumstance shall limit lines be shown without the label *Eelgrass*.

Feature Removal from Chart: A charted eelgrass area or label shall not be removed until an established authority provides conclusive evidence that the feature does not exist in the charted area. Non-authoritative sources (e.g., U.S. Power Squadron and U.S. Coast Guard Auxiliary Reports) do not have sufficient authority to declare this feature nonexistent.

Location and Orientation on the Chart: Eelgrass limit lines shall be charted in their exact geographical positions.

Size and Shape: The limit lines of eelgrass shall assume the shape of the area they are demarking. Eelgrass areas shall be charted with a black dashed line: 0.15/1.25/0.5 mm (0.006/0.050/0.020").

Labels: The label *Eelgrass* shall be charted with black 7 point Swiss Light Italic. Smaller type size may be used in congested areas.

Feature Recommendation for a Notice to Mariners: All newly applied, revised, or deleted eelgrass shall be evaluated for a Notice to Mariners.

Submerged Volcano ([K.d](#))

A seabed volcano submerged at the chart sounding datum and which may or may not be active is encircled with a dashed line and labeled "*Sub vol*".

Swimming, Scuba Diving Areas ([N 1.1](#))

Areas established for recreational purposes of longer than seasonal duration may be charted with a dashed line and labeled.

Foul Areas ([K 31](#))

Foul areas exist where the bottom is known to be strewn with rocks, boulders, coral, obstructions, heavy concentrations of kelp, or other navigation-impeding clutter and are not considered areas suitable for navigation. The limits of foul areas are charted with a dotted danger curve and labeled "*Foul*".

Natural Resource Areas ([N 1.1](#))

Areas of natural resources, either living or mineral, may be charted using the dashed maritime limit line. Such areas are not bounded by a danger line or otherwise charted specifically as being hazardous to navigation. Although the symbol N 1.1 is generally used for artificial areas, it can also be used to define the limits of natural resources.

a. Living Resource Areas

Areas selected for the production of living marine resources may be charted using the dashed maritime limit. Examples of living marine resources that fall in this category follow.

Fish -- anadromous (salmon, striped bass), marine (mullet, tuna), freshwater.

Crustaceans -- shrimp, lobster, king crab.

Mollusks -- oysters, clams, scallops.

Marine Plants -- kelp when cultivated.

Area limits for holding, growing, or breeding pens, floating and submerged.

4.14.3 Cable and Pipeline Areas

NOS shall remain the final authority for charting submarine cable and pipeline areas in waters where they are considered to be potentially hazardous to marine navigation, regardless of recommendations from other sources for not charting.

The [USACE](#) is the regulatory authority for the placement of submarine pipelines or cables in the navigable waters of the United States (see [Section 1.5.1](#)).

Sources for charting submarine cables or pipelines in ocean waters are the USACE, Minerals Management Service (MMS), other Federal agencies, States, local governments, private companies (e.g., AT&T, and ITT), etc.

All new or revised submarine cables and submarine pipelines located within or traversing a charted [Fish Haven](#) or [Spoil Area](#) shall be charted. Currently charted submarine cables or submarine pipelines that terminate at the limiting edge of a charted Fish Haven or Spoil Area shall be researched and reapplied.

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 017/01

October 1, 2001

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, [SECTION 4.14.4](#)

TO: All Cartographers
Marine Chart Division

SUBJECT: [Anchorage Areas](#)

APPLICATION: All Affected Nautical Charts

Specifications for charting Anchorage Areas are contained in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, Section 4.14.4. The classification “Anchorage Area” also encompasses areas where anchoring is prohibited or restricted. The type or use of the anchorage area is generally found within the text of the regulations rather than categorized by the authorizing agency. These areas include No Anchoring Areas, Nonanchorages, Forbidden Anchorages, Prohibited Anchorages and Restricted Anchorages.

Effectively immediately, all federally authorized No Anchoring/Restricted Anchoring or equivalent areas shall be symbolized using a T-dashed magenta line (0.20/2.5/1.2 mm).

Replacement pages for the Nautical Chart Manual will be distributed with Cartographic Order 018/01, “International Maritime Organization Adopted No Anchoring Areas”, dated October 2, 2001.

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 018/01

October 2, 2001

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.4

TO: All Cartographers
Marine Chart Division

SUBJECT: [International Maritime Organization Adopted No Anchoring Areas](#)

APPLICATION: All Affected Nautical Charts

Effective immediately, the following attachment adds to the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, Section 4.14.4.1.2, pages 4-265.4 to 4-265.7 and Section 4.14.4.3, pages 4-265.10 to 4-265.16. Pages 4-264, 4-265, 4-265.1, 4-265.2, 4-265.3, 4-265.8, 4-265.9 and 4-266 have been reformatted with minor changes in cross-references.

The attachment provides specifications for charting “No Anchoring Areas Authorized by other Federal Agencies” and “International Maritime Organization (IMO) Adopted No Anchoring Areas” on NOS nautical charts.

Note that these specifications are different than the specifications for charting USCG approved Anchorages contained in the Code of Federal Regulations, Title 33, “Navigation and Navigable Waters”, Part 110, “Anchorage Regulations”. No Anchoring or equivalent areas NOT adopted by IMO shall adhere to the specifications for Anchorage Areas contained in Section 4.14.4, Anchorage Areas, Sections 4.14.4.1, “Federally Regulated Anchorages” and 4.14.4.2, “Nonfederally Regulated Anchorages”.

The attached pages incorporate the information contained in Cartographic Order 017/01, Subject: Anchorage Areas, dated October 1, 2001.

Attachment

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Chief, Marine Chart Division

Section 4.14.3

NAUTICAL CHART MANUAL

Submarine Cable and Pipeline Areas ([L 40.2](#), [L 41.2](#))

Submarine cables and pipelines have been positioned with varying degrees of accuracy. Within protected waters such as harbors, rivers, bays, estuaries, or inland waterways, the location of submarine pipelines or cables, not positioned by the Differential Global Positioning System (DGPS), shall be shown in magenta by dashed area limits and labeled "*Cable Area*" or "*Pipeline Area*". The extent of the limits of the area will be governed by local conditions (e.g., the number of pipelines or cables) but shall in all cases include the immediate area which overlies the pipelines or cables. In an effort to reduce the impact of cable and pipeline areas on maritime operations, the symbolization of previously uncharted areas will vary with the methods used to obtain positions of the cables or pipelines. No effort should be made to determine the positioning method utilized to chart existing submarine cable and pipeline limits.

The limiting lines of cable and pipeline areas shall be spaced 100 meters (330 feet) apart or 50 meters on each side of the pipeline or cable position or the outer ones of a group, for all previously uncharted pipeline and cable areas where positioning was accomplished utilizing the Global Positioning System (GPS). The limits shall not be shown if they fall entirely within the limits of an existing cable or pipeline area.

The limiting lines shall be spaced 1,000 feet apart or 500 feet on each side of the pipeline or cable position or from the outer ones of a group, for all previously uncharted submarine cable or pipeline areas where positioning was not accomplished utilizing GPS nor DGPS, or when the positioning method cannot be determined. Cable or pipeline areas shall be spaced a minimum of 5.0 mm at charting scale for small-scale charts. The limits shall not be shown if they fall entirely within the limits of an existing cable or pipeline area.

All submarine pipelines positioned by DGPS and not falling within an existing pipeline area shall be symbolized by an individual pipeline symbol. See [Section 4.13.8](#) for a discussion of submarine pipelines. All submarine cables positioned by DGPS and not falling within an existing cable area shall be symbolized by a continuous magenta wavy line ([L 30.1](#)). See [Section 4.13.9](#) for a discussion of submarine cables.

Cable and pipeline areas shall be labeled in Swiss Light Italic type, capital and lowercase letters, with type size appropriate to the size of the feature or scale of the chart.

Cable and pipeline areas should not be charted in large areas void of hydrography, except to show the terminus of a line. Note: This does not refer to a [fish haven](#) or [spoil area](#) that may be extremely large when charted to scale.

Cable and pipeline area limits shall not be charted for certain submarine cables and pipelines described in [Sections 4.13.8](#) and [4.13.9](#) where these features are charted by symbols, i.e., [L 40.1](#), [L 41.1](#), [L 44](#)).

REVISED AUGUST 25, 2000

Abandoned Cable and Pipeline Areas

Abandoned cable and pipeline areas shall be identified by the addition of the label “Abandoned”.

The limiting lines and labels shall continue to be charted until the removal of all existing features has been verified by a reliable source.

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4.14.4 Anchorage Areas

Definition: **ANCHORAGE.** (1) An area where a ship anchors or may anchor, either because of suitability or designation. (2) Explosives anchorage-an area set apart for anchored ships discharging or receiving explosives. (3) Exposed anchorage-an anchorage that is unprotected from such dangers as weather, sea, or ice. (4) Prohibited anchorage-a section of a harbor kept free of anchored ships. (5) Temporary anchorage-a place where ships can anchor only under favorable conditions and where ships must have power ready to get under way. [12]

A place where a ship anchors or may anchor. An area set apart for anchored vessels in a harbor. A suitable place for anchoring is sheltered from wind and sea, does not interfere with harbor traffic, and has a sea bottom that gives good holding to anchors. The anchorage space allotted to a vessel should include a circle with a radius equal to the combined length of anchor cable and ship. A depth of 7 to 8 fathoms at low water is usually considered sufficient for ordinary requirements. [36]

An area in which vessels, seaplanes, etc., may anchor. An anchorage is usually a sheltered position in which the depth, and nature of the bottom is suitable for ships or planes to anchor. [35]

Definition: **ANCHORAGE AREA.** A designated area where vessels may anchor.

Definition: **ANCHORAGE CHART.** A nautical chart showing prescribed or recommended anchorages. Such a chart may be a harbor chart overprinted with a series of circles, each indicating an individual anchorage. [1]

No Anchoring Areas, Nonanchorages, Forbidden Anchorages, Prohibited Anchorages, Restricted Anchorages and other equivalent areas are by convention classified as types of Anchorage Areas.

No Anchoring Areas adopted by the International Maritime Organization (IMO) shall adhere to the specifications for No Anchoring Areas contained in Section 4.14.4.3, "International Maritime Organization (IMO) Adopted No Anchoring Areas".

4.14.4.1 Federally Regulated Anchorages

Generally, Federally Regulated Anchorages are established by the U.S. Coast Guard but may also be established within other regulated areas by cognizant federal agencies.

4.14.4.1.1 U.S. Coast Guard Authorized Anchorages

The USCG is authorized to define and establish anchorage grounds for vessels in all harbors, rivers, bays, and other navigable waters of the United States whenever they are required for safe navigation by maritime or commercial interests. The establishment of such anchorage grounds is coordinated with the USACE. Anchorage regulations must be published in the Federal Register, Local Notice to Mariners or the Code of Federal Regulations before anchorage limits and labels can be charted. Information concerning anchorages under USCG jurisdiction received prior to such publication shall not be considered an adequate source for charting purposes. The limits and labels of USCG-authorized anchorage grounds are charted in magenta.

For these federally regulated areas, condensed versions of USCG anchorage regulations may be charted ONLY if the condensation originates with or is approved by signature of the authorizing agency. Complete regulations are published in the CFR and in the Coast Pilot. The charted area shall be identified with a magenta label that includes the primary title of the area as given in the CFR, the assigned alphanumeric designator, the CFR section number and a reference to the standard Note A. Labels for special anchorage areas shall also include reference to CFR section number 110.1, which provides additional rules and regulations for anchoring in these areas. The type or use of the anchorage area is generally found within the text of the regulations rather than categorized by the authorizing agency. Reference to 110.1 shall precede the CFR number assigned to the specific area.

Examples:

SPECIAL ANCHORAGE
110.1, 110.126a (see note A)

EXPLOSIVE ANCHORAGE NO. 12
110.224 (see note A)

Examples of types of Anchorage Areas:

Commercial Anchorages
Dead Ship
Deep Draft
General Anchorages
Military Anchorages
Seaplane Anchorages
Small Craft
Special Anchorages
Temporary Anchorages

Limits for these types of anchorages are charted with a 0.2 mm solid magenta line. Military anchorages include Naval, and Naval and General.

Explosive Anchorages
Quarantine Anchorages

These anchorage limits are shown by a dashed magenta line (0.2/2.0/0.75 mm). Explosive anchorages include Commercial Explosive, Emergency Explosives, Naval Explosive, and Temporary Explosives.

Nonanchorages
Forbidden Anchorages
Prohibited Anchorages
Restricted Anchorages

Area limits shall be symbolized with a T-dashed magenta line (0.20/2.5/1.2 mm). The top of the T represents the actual limit of the area. The base of the T is always inside the area.

Fairway Anchorages

Fairway anchorage limits are shown by an 0.5 mm solid magenta line.

4.14.4.1.2 No Anchoring Areas Authorized by Federal Agencies Other Than the U.S. Coast Guard

See also [Section 4.14.4.3](#), “International Maritime Organization (IMO) Adopted No Anchoring Areas”.

No anchorage or equivalent areas may be established by federal agencies other than the U.S. Coast Guard. These areas exist within other established areas and are authorized by the cognizant federal government agency. These agencies include the National Oceanic and Atmospheric Administration, the Department of Interior and others. For example, Prohibited and Restricted anchorages may exist in a NOAA National Marine Sanctuary or within other Federal Marine Protected Areas.

A No Anchoring Area is charted as either: (1) a Prohibited Anchorage (or equivalent area), when anchorage is PROHIBITED for ALL vessels, or (2) as a Restricted Anchorage, when anchorage is RESTRICTED for SOME vessels. The type or use of the anchorage is generally contained within the text of the regulation.

EXAMPLE: Florida Keys National Marine Sanctuary, 15 CFR 922.164g, “Anchoring on Tortugas Bank.”.

Excerpt of Applicable Regulations:

“Vessels 50 meters or greater in registered length, are prohibited from anchoring on the portion of Tortugas Bank within the Florida Keys National Marine Sanctuary west of the Dry Tortugas National Park that is outside of the Tortugas Ecological Reserve.”

Even though the operative word “prohibited” is contained within the text, the use is qualified by “Vessels 50 meters or greater in registered length, ...”. Therefore, the regulations are applicable to some vessels and the area charted as a Restricted Anchorage.

If there was no qualifier, the area would be charted as a Prohibited Anchorage because the regulations would be applicable to ALL vessels.

Federal anchorage regulations must be published in the Federal Register, Local Notice to Mariners or the Code of Federal Regulations before anchorage limits and labels can be charted. Information concerning anchorages received prior to such publication shall not be considered an adequate source for charting purposes. Condensed versions of anchorage regulations may be charted ONLY if the condensation originates with or is approved by signature of the authorizing agency.

No Anchoring areas are classified as either mandatory or voluntary. Both mandatory and voluntary anchorage areas shall be charted. Mandatory regulations are published in the Federal Register, Local Notice to Mariners, the Code of Federal Regulations and in the Coast Pilot. Voluntary measures (not regulations) are published in the Federal Register, the Coast Pilot and in Local Notice to Mariners.

Symbolization: A No Anchoring Areas limits shall be symbolized in magenta.

Boundary Lines: Area limits shall be symbolized with a T-dashed magenta line (0.20/2.5/1.2 mm). The top of the T represents the actual limit of the area. The base of the T is always inside the area.

Coincidental Lines: When a No Anchoring Area is established within another regulated area, such as a National Marine Sanctuary (See [Section 4.14.7, Civil Reservations](#)), these separate features commonly share selected turning points and complete or partial coincidental lines. When this occurs, both features shall be charted in their exact published geographic positions. Neither feature symbolization will be offset.

Two features: The following rules shall apply when the limits of a No Anchoring Area and the limits of a civil reservation coincide:

(1) The T-dashed magenta limit line of the No Anchoring Area shall be charted.

(2) The coincidental blue long-short dashed limit line of the civil reservation symbol shall not be charted.

(3) The (optional) blue screened band of the civil reservation symbol shall be charted along the inside edge of the T-dashed magenta limit line.

The differences in charted colors and symbolization distinguishes each feature as a separate entity with specific regulatory significance.

Three or more features: When three or more features share coincidental lines, the feature/s of lesser importance to navigation shall be offset (outward) one line weight at the scale of the chart.

See also, **Size and Shape**, for symbolization of minimum size symbols and alternative symbolization for small No Anchoring Areas larger than the minimum size symbol.

Location: A No Anchoring Area shall be located in its officially published geographic position.

Size and Shape: A No Anchoring Area shall conform to the shape of the feature it is demarking.

On small-scale charts, it may be necessary to use a minimum size symbol; a 2.0 mm dashed magenta square. Note that the minimum size symbol is symbolized by a dashed magenta square and not a T-dashed magenta square. The 2.0 mm dashed magenta square shall always be used when the greatest dimension of the No Anchoring Area is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape.

Small No Anchoring Areas that do not meet the minimum size symbol specification may be symbolized using the 0.2 mm solid magenta line, the “Anchorage area in general” symbol. This symbol should be used when the solid line pattern provides increased graphic clarity and recognition of the feature by the mariner.

Orientation: A No Anchoring Area that conforms to the size and shape of a feature is by definition correctly oriented.

A No Anchoring Area that is exaggerated to the minimum size symbol shall be oriented to the baseline of the specific chart piece.

Labels:

General: No Anchoring Areas shall be labeled in magenta.

Location: Labels shall be located within the designated area, or when the scale of the chart does not permit charting labels within the limits of a No Anchoring Area, the label may be located adjacent to the charted feature.

Textual label/s: There are three required labels. They are: (1) the Feature Name, (2) the Code of Federal Regulations reference and section number, and (3) a reference to the standard Note A.

Textual labels shall be 7 pt. Swiss Light Italic. Smaller type may be used in congested areas. Authorized abbreviations may be used when formulating the label.

(1) The Feature Name Label is always in capital letters (e.g., *PROHIBITED ANCHORAGE*, *PROHIB ANCHORAGE*, *PROHIB ANCH*, *RESTRICTED ANCHORAGE*, *RESTRICT ANCHORAGE*, *RESTRICT ANCH*).

(2) The Code of Federal Regulations reference and section number is always capital letters, **except** for an alphabetical letter when it follows a numeric section number (e.g., *15 CFR 922.164g*).

(3) The reference to the standard Note A [e.g., *(see note A)*], is always lowercase letters, except for the letter A, which is always a capital letter.

Line Type and Weight:

Area limits shall be symbolized with a T-dashed magenta line (0.20/2.5/1.2 mm).

The minimum size symbol, a 2.0 mm dashed magenta square, shall be used on small scale charts. Note that the minimum size symbol is shown by a dashed magenta square and not a T-dashed magenta square.

The alternate “Anchorage area in general” symbol, a 0.2 mm solid magenta line, may be used to chart small areas that are larger than the minimum size symbol specification.

Color and Screening:

Color: A No Anchoring Area shall be symbolized in magenta. All labels and references shall be in magenta.

Screening: Not applicable.

Feature Removal from Chart: A charted No Anchoring Area shall not be removed until the cognizant federal government agency provides conclusive evidence that the No Anchoring Area

designation has been rescinded.

Feature Recommendation for a Notice to Mariners: A newly applied, revised or deleted No Anchoring Area shall be recommended for a Notice to Mariners.

4.14.4.2 Nonfederally Regulated Anchorages

Nonfederally Regulated Anchorages ([N 12.1](#))

Definition: **CIVIL ANCHORAGE.** An anchorage under the jurisdiction of State or Local Governments. Sources of charting include Local Notice to Mariners, chart letters, blueprints, etc. These are classified as general anchorages.

State and local governments may establish anchorage areas in waters under their jurisdiction. These areas shall not be charted until the USCG has evaluated the request and recommended a charting action, although USCG approval is not required. The charting source could be a Chart Letter, Blueprint or Digital Data approved by the legislative unit having jurisdiction over the area. Recommended labels and notes shall be in black and shall be modified by the production branches as required to conform to standard charting practices. The limiting lines shall be charted with a black dashed (0.2/2.0/0.75 mm) line.

Anchoring Berths

Definition: **ANCHORING BERTHS.** Circular areas designated within anchorage grounds which are intended as a convenience in assigning anchorage locations for both military **and** commercial vessels.

Anchoring berths are usually circular areas charted within established anchorage areas and are intended as a convenience in assigning anchoring locations for both military and commercial vessels. Information concerning anchoring berths may be published in the CFR (see 33CFR 110.168) but is generally developed by local users. The charting source could be a Chart Letter, Blueprint or Digital Data approved by the commander of the local military base or by the legislative unit having jurisdiction over the area.

Anchoring berths are charted as solid line (0.2 mm) or dashed line (0.2/2.0/0.75 mm) circles of specified diameter with a small center-position circle (solid or dashed to correspond to the berth limit symbol), and a designator. The position circle is 2.6 mm in diameter and the designator is in 7 pt. Swiss Regular. The circles and designators normally shall be printed in unscreened green. If another color is required for clarity they may be printed in black with a 49 percent, 200-

ADDED AUGUST 2, 2001

LPI biangle screen.

Harbors of Refuge ([N 10](#))

Definition: **HARBORS OF REFUGE.** A harbor which provides good holding ground and temporary refuge from storms for the convenience of passing vessels. Harbors of refuge may or may not be considered a part of a shipping port. Sources for charting harbors of refuge include National Ocean Service (NOS) field investigations and Coast Pilot inspections, U.S. Coast Guard (USCG), State or local authorities, private, etc.

Harbors of refuge are recognized anchorage areas without defined limits. These harbors provide good holding ground and temporary refuge from storms to passing vessels. Harbors of refuge may or may not be considered a part of a shipping port and are identified with a black anchor symbol. Sources for charting harbors of refuge include NOS field investigations and Coast Pilot inspections, the USCG, State and local authorities and various other authoritative sources. All harbors of refuge shall be verified with the Nautical Data Branch prior to charting.

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4.14.4.3 International Maritime Organization (IMO) Adopted No Anchoring Areas

No Anchoring or equivalent areas NOT adopted by IMO shall adhere to the specifications for Anchorage Areas contained in [Sections 4.14.4.1, “Federally Regulated Anchorages”](#) and [4.14.4.2, “Nonfederally Regulated Anchorages”](#).

These specifications apply ONLY when a No Anchoring Area has been **adopted** by IMO. The key words are “has been adopted by IMO”. A designated area may be a No Anchoring Area but not IMO adopted and will therefore adhere to the specifications referenced above.

Regulations for No Anchoring Areas must be published in the Federal Register, Local Notice to Mariners or the Code of Federal Regulations before the No Anchoring Area limits and labels can be charted.

IMO adopted No Anchoring Areas are established in areas where anchoring is unsafe, unstable, particularly hazardous or could result in unacceptable damage to the marine environment. Unless specified in other regulations, transit through these areas is not prohibited.

IMO adopted No Anchoring Areas shall ONLY be charted when REQUESTED by the cognizant federal government agency **AND ADOPTED** by the IMO. They shall be shown at all chart scales, except for those located within areas that are charted without hydrography. These areas may be established within other regulated areas, such as a National Marine Sanctuary, or as an independent area.

No Anchoring Areas can be directly recommended to and adopted by the IMO without first being established under domestic law.

Within other Regulated Areas: Generally, No Anchoring or equivalent areas are initially established under domestic law and are charted in accordance with the specifications for Anchorage Areas contained in [Section 4.14.4.1, “Federally Regulated Anchorages”](#). These areas may then be recommended to and adopted by the IMO. For example, when established within another area, such as a National Marine Sanctuary, the applicable regulations are published in the Code of Federal Regulations, Title 15, “Commerce and Foreign Trade”, Part 922, “National Marine Sanctuary Program Regulations”, other CFR Titles and/or the Coast Pilot, as necessary. See also, Labels.

Independent Area: IMO adopted No Anchoring Areas may be established as independent areas. These areas must also be recommended to and adopted by the IMO. Applicable regulations are published in the Code of Federal Regulations, Title 33, “Navigation and Navigable Waters”, Part 110, “Anchorage Regulations”, other CFR Titles and/or the Coast Pilot, as necessary. See also, Labels.

Symbolization: IMO adopted No Anchoring Areas limits shall be symbolized in magenta.

Boundary Lines: Area limits shall be symbolized with a T-dashed magenta line (0.20/2.5/1.2 mm). The top of the T represents the actual limit of the area. The base of the T is always inside the area. This symbolization is consistent with International Hydrographic Organization symbolization (N 20) and some categories of NOS charted Anchorage Areas.

Coincidental Lines: When IMO adopted No Anchoring Areas are established within other regulated areas, such as a National Marine Sanctuary (See [Section 4.14.7, Civil Reservations](#)), these separate features commonly share selected turning points and complete or partial coincidental lines. When this occurs, both features shall be charted in their exact published geographic positions. Neither feature symbolization will be offset.

Two features: The following rules shall apply when the limits of a No Anchoring Area and the limits of a civil reservation coincide:

- (1) The T-dashed magenta limit line of the No Anchoring Area shall be charted.
- (2) The coincidental blue long-short dashed limit line of the civil reservation symbol shall not be charted.
- (3) The (optional) blue screened band of the civil reservation symbol shall be charted along the inside edge of the T-dashed magenta limit line.

The differences in charted colors and symbols distinguishes each feature as a separate entity with specific regulatory significance.

Three or more features: When three or more features share coincidental lines, the feature/s of lesser importance to navigation shall be offset (outward) one line weight at the scale of the chart.

See also, **Size and Shape**, for symbolization of minimum size symbols and alternative symbolization for small No Anchoring Areas larger than the minimum size symbol.

Location: An IMO adopted No Anchoring Area shall be located in its officially published geographic position.

Size and Shape: A No Anchoring Area shall conform to the shape of the feature it is demarking.

On small-scale charts, it may be necessary to use a minimum size symbol; a 2.0 mm dashed magenta square. Note that the minimum size symbol is symbolized by a dashed magenta square and not a T-dashed magenta square. The 2.0 mm dashed magenta square shall always be used when the greatest dimension of the IMO adopted No Anchoring Area is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape.

Small No Anchoring Areas that do not meet the minimum size symbol specification may be symbolized using the 0.2 mm solid magenta line, the “Anchorage area in general” symbol. This symbol should be used when the solid line pattern provides increased graphic clarity and recognition of the feature by the mariner.

Orientation: A No Anchoring Area that conforms to the size and shape of a feature is by definition correctly oriented.

A No Anchoring Area that is exaggerated to the minimum size symbol shall be oriented to the baseline of the specific chart piece.

Labels:

General: IMO adopted No Anchoring Areas shall be labeled in magenta.

Location: Labels shall be located within the designated area, or when the scale of the chart does not permit charting labels within the limits of the No Anchoring Area, the label may be

ADDED AUGUST 2, 2001

located adjacent to the charted feature. The charted label shall be a combination of: (1) an [IHO](#) icon, and (2) associated textual labels.

Icon: ALL IMO adopted No Anchoring Areas shall be labeled with the existing internationally recognizable icon for “Anchoring prohibited” (see Chart No. 1, International symbol [N 20](#)). The standard No Anchoring Area Icon shall be one-quarter (1/4) inch in height.



Textual label/s: The pictorial representation shall be supplemented with two or three additional labels. This first two labels supplement the icon and are required. They are: (1) the Code of Federal Regulations reference and section number, and (2) a reference to the standard [Note A](#).

A third label may be required based on the existence of a condition, contained within the text of the regulation, that qualifies the meaning of the unconditional icon. The condition is: (3) whether the charted No Anchorage Area is prohibited for ALL vessels or RESTRICTED for some vessels. When anchorage is prohibited for ALL vessels, there will be no third label. When anchorage is RESTRICTED for vessels greater than a prescribed length, also commonly referred to as LOA (length overall), an additional (third) label shall be added. This label is in fact a textual qualifier of the No Anchoring Area icon. When required, it shall be placed immediately below the icon and before all other required label components.

Textual labels shall be 7 pt. Swiss Light Italic. Smaller type may be used in congested areas. Authorized abbreviations may be used when formulating the label.

(1) The Code of Federal Regulations reference and section number is always capital letters, **except** for an alphabetical letter when it follows a numeric section number (e.g., *15 CFR 922.164g*).

(2) The reference to the standard [Note A](#) [e.g., (*see note A*)], is always lowercase letters, **except** for the letter A, which is always a capital letter.

(3) The Conditional Label is always in capital letters (e.g., *RESTRICTED ANCHORAGE, RESTRICT ANCH, RESTRICTED, RESTRICT*).

The following examples illustrate the use of each textual label in conjunction with the icon. In each example, a complete charted label is illustrated. **The specific element of the label being illustrated is in BOLD type.**

(1) Code of Federal Regulations reference and section number.

Example: An IMO adopted No Anchoring Area established within another Regulated Area (National Marine Sanctuary). The Code of Federal Regulations, Title 15, “Commerce and Foreign Trade”, Part 922, “National Marine Sanctuary Program Regulations”:



*15 CFR 922.xxx
(see note A)*

Example: An IMO adopted No Anchoring Area established as an independent area. The Code of Federal Regulations, Title 33, “Navigation and Navigable Waters”, Part 110, “Anchorage Regulations”:



*110.xxx
(see note A)*

(2) Reference to the standard [Note A](#) (the note listing the publications that contain navigation regulations relevant to the chart).

Example: *(see note A)*



*15 CFR 922.xxx
(see note A)*

(3) Conditional: whether the charted IMO No Anchorage Area is prohibited for ALL vessels or RESTRICTED for some vessels.

Example: IMO adopted No Anchoring Areas that prohibit anchorage of ALL vessels. Note that the resultant charted label (icon plus associated text) in this example is identical to the previous examples. When ALL vessels are prohibited from anchoring, the icon is self explanatory. The two textual labels are required.



15 CFR 922.xxx
(see note A)

Example: IMO adopted No Anchoring Areas that are RESTRICTED for vessels greater than a prescribed length. The conditional qualifier is required in addition to the two textual labels. The conditional qualifier is placed immediately below the icon.



RESTRICTED ANCHORAGE
15 CFR 922.xxx
(see note A)

OR

where space is limited, the qualifying conditional label (**RESTRICTED ANCHORAGE**) may be reduced to **RESTRICT ANCH**, **RESTRICTED** or **RESTRICT**.



RESTRICT ANCH
110.xxx
(see note A)



RESTRICTED
110.xxx
(see note A)



RESTRICT
110.xxx
(see note A)

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 002/01

January 30, 2001

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.5

TO: All Cartographers
Marine Chart Division

SUBJECT: EPA Dumping Areas - Standardization of Primary Label

APPLICATION: All Affected Nautical Charts

EPA Dump Sites currently charted on NOS nautical charts contain a mixture of two styles of the primary label for the charted feature (Examples: *DUMP SITE* and *Dump Site*).

Cartographic Order 010/77; Subject: Dump Sites, dated November 15, 1977 established the original specifications for charting Dump Sites under EPA jurisdiction. The primary label designating these areas as Dump Sites was all capital letters (Example: DUMP SITE).

These specifications remained the operative documentation until the publication of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition. At that time, the specification for the primary label, Dump Site, was revised to capital and lowercase letters. The first letter of each word is capitalized (Example: Dump Site). This specification is consistent with the labeling of other charted Federal dumping areas, i.e. Navy Dumping Areas, Spoil Areas, Disposal Areas and Dumping Grounds.

Effective immediately, the specification for the primary label for all EPA Dump Sites shall be standardized and brought into conformance with the current specification contained in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition, Section 4.14.5.

All references to the primary label for Dump Sites contained in the Desk Reference Guide, specifically Volume III, Section 328, are superseded.

No change pages to the Nautical Chart Manual are required.

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 003/01

February 7, 2001

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, SECTION 4.14.5

TO: All Cartographers
Marine Chart Division

SUBJECT: Dump Sites

APPLICATION: All Affected Nautical Charts

Effective immediately, this directive amends pages 4-267 and IV-20q in the Nautical Chart Manual, Seventh (1992) Edition.

Dumping Areas established by the Environmental Protection Agency (EPA) are typically charted with the label, "*Dump Site*", a descriptive term such as "*dredged material*" to reflect the primary use of the area and the year(s) of hydrography. Hydrography is retained in the dumping areas since these areas are not intended to interfere with navigation. It is possible, however, that continued dumping since the date of the most recent surveys has reduced the charted depths.

Effective immediately, the text for standard Note S shall be changed on all nautical products depicting dumping areas designated in 40 CFR 228 and subsequent updating materials. The note shall read:

NOTE S

Regulations for Ocean Dumping Sites are contained in 40 CFR, Parts 220-229. Additional information concerning the regulations and requirements for use of the sites may be obtained from the Environmental Protection Agency (EPA). See U.S. Coast Pilots appendix for addresses of EPA offices. Dumping subsequent to the survey dates may have reduced the depths shown.

Replacement pages for the Nautical Chart Manual will be distributed at a later date.

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 019/01

October 3, 2001

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.5

TO: All Cartographers
Marine Chart Division

SUBJECT: [EPA - Established Dump Sites](#)

APPLICATION: All Affected Nautical Charts

Effective immediately, the following attachment replaces Pages 4-265.16, 4-266, 4-267 and 4-268 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition. The attachment provides enhanced specifications for charting Environmental Protection Agency (EPA) established Dump Sites on NOS nautical charts.

The attached pages incorporate the information contained in [Cartographic Order 002/01](#), dated January 30, 2001, Subject: EPA Dumping Areas - Standardization of Primary Label and Cartographic Order 003/01, dated February 7, 2001, Subject: Dump Sites.

[Cartographic Orders 002/01](#) and [003/01](#) are superseded. All documentation contained in the Desk Reference Guide, Volume III, Section 328, concerning Dump Sites is superseded.

Attachment

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

Line Type and Weight:

Area limits shall be symbolized with a T-dashed magenta line (0.20/2.5/1.2 mm). This symbolization is consistent with IHO symbolization (N 20) and some categories of NOS charted Anchorage Areas.

The minimum size symbol, a 2.0 mm dashed magenta square, shall be used on small scale charts. Note that the minimum size symbol is shown by a dashed magenta square and not a T-dashed magenta square.

The alternate “Anchorage area in general” symbol, a 0.2 mm solid magenta line, may be used to chart small areas that are larger than the minimum size symbol specification.

Color and Screening:

Color: IMO adopted No Anchoring Areas shall be symbolized in magenta. All icons, labels and references shall be in magenta.

Screening: Not applicable.

Feature Removal from Chart: A charted IMO adopted No Anchoring Area shall not be removed until the cognizant federal government agency provides conclusive evidence that the IMO No Anchoring Area designation has been rescinded.

Note that there are two possibilities: (1) that the No Anchoring Area should be deleted in its entirety, or (2) that the designation as an IMO adopted No Anchoring Area has been rescinded and the area may revert to a Federally Regulated Anchorage ([Section 4.14.4.1](#)), especially for IMO No Anchoring Areas originally established within other regulated areas.

Feature Recommendation for a Notice to Mariners: A newly applied, revised or deleted IMO adopted No Anchoring Area shall be recommended for a Notice to Mariners.

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NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division

CARTOGRAPHIC ORDER 004/04

April 1, 2004

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.5 and SECTION 4.14.5.1

TO: All Cartographers
Marine Chart Division

SUBJECT: Section 4.14.5 Dumping Areas - Overview and
Section 4.14.5.1 EPA Established Dump Sites

APPLICATION: All Affected Nautical Charts

Effective immediately, the following attachment replaces Pages 4-267 through 4-267.19 of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition with revised Pages 4-267 through 4-267.31.

Pages 4-267 and 4-267.1 have been revised to incorporate revisions to the Overview Section of Dumping Areas.

Pages 4-267.2 through 4-267.31 have been revised to incorporate changes to Section 4.14.5.1 Environmental Protection Agency (EPA) - Established Dump Sites. Changes include:

- (1) the incorporation of selected excerpts from the Code of Federal Regulations,
- (2) the addition of a new section "Special/Unique Requirement for U. S. Army Corps of Engineers Surveys",
- (3) the addition of a new section "Relationship of Dump Sites to Other Nautical Chart Features, and
- (4) the addition of a new section "Collective Label (Alternative Labeling)".

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

4.14.5 Dumping Areas - Overview

Three general classes of dumping areas are shown on National Ocean Service (NOS) nautical charts. These classes are determined by the Federal regulatory authority [Environmental Protection Agency (EPA), Department of the Navy (Department of Defense) or U.S. Army Corps of Engineers (USACE)] that has jurisdiction over their establishment. Permits for dumping, other than dredged or fill materials, in Dump Sites are issued by the Environmental Protection Agency. Dumping dredged or fill material in Dump Sites, Spoil Areas, Disposal Areas and Dumping Grounds is illegal without authorization from the USACE. Dumping Areas are reserved for Department of the Navy (Department of Defense) use.

All three classes of dumping areas shall be charted in **ALL** cases where hydrography and other navigational detail are charted in the area.

(1) The Environmental Protection Agency (EPA) has authority for establishing Ocean Dumping Sites for the purpose of disposing of toxic and nontoxic wastes and dredged materials. See [Section 4.14.5.1](#), “**Environmental Protection Agency (EPA) - Established Dump Sites**”.

(2) The Department of the Navy (Department of Defense) has authority to establish Ammunition, Explosives and Chemical Dumping Areas. See [Section 4.14.5.2](#), “**Department of the Navy (Department of Defense) - Established Dumping Areas**” and

[Section 4.14.5.2.1](#) Ammunition and Explosives Dumping Areas

[Section 4.14.5.2.2](#) Discontinued (*DISUSED*) Chemical Munitions Dumping Areas

(3) The U.S. Army Corps of Engineers (USACE) has authority to establish dumping areas in the navigable waters of the United States with the approval of the Environmental Protection Agency (EPA). These include Spoil Areas, Disposal Areas and Dumping Grounds. See [Section 4.14.5.3](#), “**U.S. Army Corps of Engineers (USACE) - Established Dumping Areas**” and

[Section 4.14.5.3.1](#) Spoil Areas

[Section 4.14.5.3.2](#) Disposal Areas

[Section 4.14.5.3.3](#) Dumping Grounds

CAUTION

Due primarily to the purpose of these areas and the similarity of the feature labels, these areas are commonly referred to interchangeably. It is imperative that the specific type of dumping area be known to properly chart the feature. While similar, they are charted differently.

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4.14.5.1 Environmental Protection Agency (EPA) - Established Dump Sites

Definition: **DUMP SITE.** Area established by Federal regulation in which dumping of dredged and fill material and other nonbuoyant objects is allowed with the issuance of a permit. Dump Sites are shown on nautical charts. See also [DISPOSAL AREA](#), [DUMPING GROUND](#), [SPOIL AREA](#). [1]

The ocean dumping permit program of the Environmental Protection Agency provides that except when authorized by permit, the dumping of any material into the ocean is prohibited by the “Marine Protection, Research, and Sanctuaries Act of 1972, Public Law 92-532,” as amended (33 U.S.C. 1401 et seq.).

The Environmental Protection Agency (EPA) has established Ocean Dumping Sites, commonly referred to as Dump Sites, for the purpose of disposing of toxic and nontoxic materials including dredged material, industrial waste, acid waste, municipal waste, sludge, etc. Ocean Dump Sites are established in locations considered by the EPA to be nonpolluting to the environment and are not intended to interfere with navigation.

“(a) Wastes which may present a serious obstacle to fishing or navigation may be dumped only at disposal sites and under conditions which will insure no unacceptable interference with fishing or navigation”...

“(3) Containers are dumped at depths and locations where they will cause no threat to navigation, fishing, shorelines, or beaches.”

Source: Code of Federal Regulations (CFR), Title 40, “Protection of the Environment”, Part 227.10, “Hazards to fishing, navigation, shorelines or beaches.”.

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Dump Sites are generally located in the vicinity of major entrance channels and are most commonly used for depositing dredged material associated with maintenance dredging of channels and harbors.

“(a) Dredged materials are bottom sediments or materials that have been dredged or excavated from the navigable waters of the United States, and their disposal into ocean waters is regulated by the U. S. Army Corps of Engineers using the criteria of applicable sections of parts 227 and 228. Dredged material consists primarily of natural sediments or materials which may be contaminated by municipal or industrial wastes or by runoff from terrestrial sources such as agricultural lands.”...

Source: Code of Federal Regulations (CFR), Title 40, “Protection of the Environment”, Part 227.13, “Dredged materials.”.

The criteria for all ocean dumping areas are established by the Administrator, EPA, and are published in the Code of Federal Regulations (CFR), Title 40, “Protection of the Environment”, Part 227, “Criteria for the Evaluation of Permit Applications for Ocean Dumping of Materials”.

Dump Sites shall be charted in **ALL** cases where hydrography and other navigational detail are shown in the area.

Dump Sites are also commonly referred to by the applicable section number of the Marine Protection, Research, and Sanctuaries Act of 1972 (i.e., a 102 Site or 103 Site). Individual Dump Sites are approved for dumping of indicated materials only (See 40 CFR 228.15).

Permits for the dumping of **dredged material** into waters of the United States, including the territorial sea, and into ocean waters are issued by the U. S. Army Corps of Engineers.

Permits for the dumping of **fill material** into waters of the United States, including the territorial sea, are also issued by the U. S. Army Corps of Engineers. U. S. Army Corps of Engineers regulations are contained in 33 CFR 323-324.

“Applications and authorizations for Dredged Material Permits under section 103 of the Act [the Marine Protection, Research, and Sanctuaries Act of 1972] for the transportation of dredged material for the purpose of dumping it in ocean waters will be evaluated by the U. S. Army Corps of Engineers ...”

Source: Code of Federal Regulations (CFR), Title 40, “Protection of the Environment”, Part 225.1, “General.”.

Permits for the dumping of **other material** in the territorial sea and ocean waters are issued by the Environmental Protection Agency. Environmental Protection Agency regulations are contained in 40 CFR 220-229. Procedures and criteria for the issuance of permits by the EPA are issued pursuant to section 102 of the Marine Protection, Research, and Sanctuaries Act of 1972.

There are two primary components of a charted Dump Site: (1) the charting authority (EPA) which establishes, revises or discontinues the site, including the geographic limits of the site, and (2) whether or not hydrography is charted within the limits of the designated area. These two components determine the feature symbolization, location and the composition of the charted label(s).

In accordance with EPA regulations, the following procedures shall apply when charting ocean dumping areas:

Initial Establishment of Dump Sites

Prior to 1977, ocean dumping areas (dumping grounds, disposal areas) were described in the Code of Federal Regulations (CFR), Title 33, "Navigation and Navigable Waters", Part 205. These regulations were revoked in their entirety by the Code of Federal Regulations (CFR), Title 40, "Protection of the Environment", Parts 220-229, "Ocean Dumping", designating the Environmental Protection Agency as the cognizant agency for these matters. The change in regulatory authority resulted in the charting of two distinct categories of EPA Dump Sites: (1) the **conversion** of selected existing dumping grounds and disposal areas to Dump Sites, and (2) **newly established** Dump Sites. See also, "[Dumping and Disposal Areas NOT Converted to EPA Dump Sites](#)".

Conversion of Pre-1977 Dumping Grounds and Disposal Areas

The following information has been condensed and reformatted from prior documentation and provided as a historical reference for interpreting currently charted information. See also prior documentation, Cartographic Order 010/77, dated November 15, 1977, SUBJECT: Dump Sites and Memorandum, dated August 1, 1989, SUBJECT: Cartographic Policy Concerning Charted Dump Site Area Limit Revisions.

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Conversion of Dumping Grounds and Disposal Areas to EPA Dump Sites

Procedures:

- (1) Limiting lines bounding existing Dumping Grounds and Disposal Areas charted from a source prior to EPA control (1977) were removed from the chart **ONLY** when they were **enclosed by** or **coincidental with** an EPA-regulated area.
- (2) Non-overlapping portions or detached areas were removed from charts **ONLY** on recommendation by a NOS survey evaluation unit **AND/OR** when such removal was supported by new hydrographic survey data. See also, [“Dumping and Disposal Areas NOT Converted to EPA Dump Sites”](#).

All existing hydrography and tints were retained in these areas since there was/is no intent to produce unacceptable interference to navigation. The date(s) of the charted hydrography within these areas was researched and charted as part of the label. The formulation of the initial label(s) for a Dump Site is identical to the current specification. See [“Labels and Note”](#), for labeling requirements.

Converted areas not containing charted hydrography (generally blue tint) shall remain as charted until new hydrographic survey data is received. When supported by new hydrographic survey data, hydrography shall be charted in these Dump Sites and the existing label reformulated in accordance with the labeling specifications contained in “Labels and Note”.

Dumping and Disposal Areas NOT Converted to EPA Dump Sites

Definition: **DUMPING GROUND**. An area used for the disposal of dredge spoil. Although shown on nautical charts as dumping grounds in United States waters, the Federal regulations for these areas have been revoked and their use for dumping discontinued. These areas will continue to be shown on nautical charts until they are no longer considered to be a danger to navigation. See also [DUMP SITE](#), [SPOIL AREA](#), [DISPOSAL AREA](#). [1]

Procedures:

- (1) Previously charted dumping and disposal areas or portions thereof not superseded by the EPA-designated areas were additionally labeled (*discontinued*). All references to Note A, (a specification at that time), were deleted.

(2) Previously established military disposal areas (ammunition, explosives, and chemicals) were additionally labeled *DISUSED* (note that the label is not enclosed by parentheses). Labels were in all capital letters and in magenta, parallel with the specification for the Feature Name Label for these areas. (See NM 6/71 and NM 9/71 for examples of Chemical Munitions Dumping Areas revised to *DISUSED*) These areas shall be retained except where specifically superseded by EPA limits or regulations, as the explosives and materials may be expected to remain a danger to trawlers and others until removed. All references to Note A, (a specification at that time), were deleted. A Dumping Area classified as *DISUSED*, also requires the addition of a Reference label to a generic note and the associated generic note. See [Section 4.14.5.2](#), “Department of the Navy (DOD) - Established Dumping Areas” and [“Labels and Note”](#).

Example: *CHEMICAL MUNITIONS DUMPING AREA*

was revised to

CHEMICAL MUNITIONS DUMPING AREA DISUSED (see note _)

Newly Established Dump Sites

Newly established Dump Sites are transmitted to NOS through the Federal Register (FR) as a “Final Rule” and are designated as Chart Letters. Prior to January 1, 1997, newly established Dump Sites were designated by EPA as either (1) on an interim basis, or (2) on a final basis. For charting purposes, both designations were considered to be active Dump Sites and were charted.

In 1992, the Marine Protection, Research and Sanctuaries Act (MPRSA) was amended to disallow the utilization of those EPA Dump Sites designated as “interim” sites (40 CFR, Part 228.14) for ocean dumping after January 1, 1997. See also the Code of Federal Regulations (CFR), Title 40, “Protection of Environment”, Part 228.15, “Dumping sites designated on a final basis.”. There were twenty-nine (29) Dump Sites designated as “interim” sites. There were/are two exceptions:

(1) The EPA “interim” Dump Site off the coast of Newport Beach, California, which is known as “LA-3”, was retained as charted. Dumping was allowed to continue in this site until January 1, 2003. EPA advises that this site is currently (September, 2003) in the process of being designated as a “final” Dump Site, or

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(2) those existing Dump Sites selected for dumping by the U. S. Army Corps of Engineers under MPRSA section 103(b). An EPA “interim” Dump Site selected by the U. S. Army Corps of Engineers under MPRSA, Section 103(b) is cartographically designated as a Disposal Area and requires a change to the charted label. See Nautical Chart Manual, [Section 4.14.5, b](#), Disposal Areas.

For reference, background and implementation information, see prior documentation, Cartographic Order 019/03, dated October 10, 2003, SUBJECT: EPA Established “Interim” Dump Sites.

Reports from non-authoritative sources (any source other than the EPA) shall be forwarded to the Nautical Data Branch for confirmation by the EPA.

The following extracted information represents a typical description of a Dump Site. The original source contains other additional narrative information, not printed here, that effects the charting of the feature; the horizontal datum, etc. (Source: 40 CFR 228.15)

(9) Cold Spring Inlet, NJ Dredged Material Disposal Site.

(i) *Location*: 38° 55' 52" N., 74° 53' 04" W.; 38° 55' 37" N., 74° 52' 55" W.; 38° 55' 23" N., 74° 53' 27" W.; 38° 55' 36" N., 74° 53' 36" W.

(ii) *Size*: Approximately 0.13 square nautical miles.

(iii) *Depth*: **Approximately 9 meters.**

(iv) *Primary Use*: Dredged material disposal.

(v) *Period of Use*: Continuing use.

(vi) *Restrictions*: Disposal shall be limited to dredged material from Cold Spring Inlet, New Jersey

Figure 4.14.5.1-1
Typical Description of a Dump Site
(Source: 40 CFR 228.15)

Note that **depth information provided** in the Federal Register (FR) or the Code of Federal Regulations (CFR) is for general narrative descriptive purposes only and **is NOT to be used for charting**. See description, [“Charted Hydrography”](#), for detailed specifications and [“Labels and Note”](#).

Geographic Limits - A newly established Dump Site shall be located in its officially published geographic position.

Symbolization - See [“Symbolization”](#).

Hydrography - All hydrography and tints currently charted within the limits of a newly established Dump Site shall be retained. All new hydrographic survey data shall be applied within an area designated as a Dump Site, unless the charted Dump Site is located in an area where hydrography and other navigational detail is not shown.

A newly established Dump Site not containing charted hydrography (generally blue tint) shall remain as charted until new hydrographic survey data is received.

When supported by new hydrographic survey data, hydrography shall be charted in the Dump Site and the existing label reformulated in accordance with the labeling specifications contained in [“Labels and Note”](#).

Labeling - See “Labels and Note”. See the specific requirement for adding Note S to the chart when the Dump Site being added is the first Dump Site added to that nautical chart. Specifications for Note S are contained in “Labels and Note”.

Revisions to Charted Dump Sites

Revisions to a charted Dump Site are precipitated either: (1) from the charting authority, the Environmental Protection Agency (EPA), or (2) based on the revision of charted hydrography.

Charting Authority, Environmental Protection Agency (EPA) - Federal Register

Revisions to an established Dump Site are transmitted to the National Ocean Service through the Federal Register (FR) as a “Final Rule” and are designated as Chart Letters. The Code of Federal Regulations contains a codification of the general and permanent rules published in the Federal Register. These two publications must be used together to determine the latest version of any given rule. Revisions from the Federal Register include changes in: (1) the geographic limits, (2) the status (from active to discontinued), and (3) the primary use of a Dump Site. Reports originating from non-authoritative sources (any source other than the EPA) shall be forwarded to the Nautical Data Branch for confirmation by the EPA.

(1) Geographic Limits:

Existing charted Dump Site limits which are superseded by new limits shall be removed when they are completely **enclosed** by the new limits. This is consistent with the procedure(s) originally established for the [“Conversion of Dumping Grounds and Disposal Areas to EPA Dump Sites”](#). Any revision to the areal limits of a charted Dump Site requires a re-evaluation of the composition of the charted label and the content of any charted hydrography label, (i.e., the “*Depths from survey of*” label).

When the “old” area limits are not specifically superseded in the Federal Register or more commonly, portions of the “old” area limits are located outside the limits of the “new” Dump Site limits, the Nautical Data Branch shall be notified for confirmation and clarification by the EPA. Any revision to the areal limits of a charted Dump Site requires a re-evaluation of the composition of the charted label and the content of any charted hydrography label, (i.e., the “*Depths from survey of*” label).

Nonoverlapping portions or detached areas created by the charting of new limits (and not specifically superseded by the Federal Register) shall be retained. Any, or all, of the retained area(s) must be individually re-evaluated for required labeling and specifically the content of the label.

(2) Status: [from active to (*discontinued*)], See [“Discontinuance and Removal of Dump Sites”](#). A charted label **WITHOUT** the status label (*discontinued*) is presumed to be an active Dump Site. See [“Labels and Note”](#).

(3) Primary Use: Contained within the textual description of the Dump Site in the Federal Register or Code of Federal Regulations. See previous [Figure 4.14.5.1-1](#) for an example of a typical description of a Dump Site, specifically [line 9 \(iv\), Primary Use](#). See [“Labels and Note”](#) for charting requirements.

Charted Hydrography

All new hydrographic survey data shall be applied within an area designated as a Dump Site, unless the charted Dump Site is located in an area where hydrography and other navigational detail is not shown. It should be noted that the existence of a Dump Site has no impact/effect on the charting, or not charting, of hydrography within the areal dimensions of a Dump Site. Hydrography within the limits of a charted Dump Site is independent of the symbolized feature. Soundings, depth curves and associated tints are applied as if the Dump Site were non-existent. There are, however, two linkages **WHEN** hydrography is charted within a Dump Site. They are:

- (1) the composition and content of the charted label of the Dump Site, and
- (2) the deletion of a charted Dump Site that has been discontinued

A symbolized Dump Site, once charted, is generally stable and rarely subject to change. Changes occur most frequently when USACE revisions of charted hydrography within the limits of a Dump Site precipitate changes to the charted label. The specifications contained in [“Labels and Note”](#) delineate the differences and provide detailed charting specifications for the composition and content of the charted label.

Special/Unique Requirements for U. S. Army Corps of Engineers Surveys

(That Depict Dump Sites on the Survey Background Base)

U. S. Army Corps of Engineers condition surveys are the primary source for charting and revising hydrography within Dump Sites. These graphic surveys are registered by the Nautical Data Branch as Blueprints. The purpose of these surveys is to provide hydrographic data for charting. The following section delineates additional special/unique requirements and recommended procedures for resolving any differences **WHEN** a Dump Site is contained on the source document.

Background

U. S. Army Corps of Engineers graphic hydrographic survey data is typically displayed on a standard analog background base. The purpose of a background base is to act as the medium for conveying the superimposed hydrographic data. Background bases usually contain other features that are commonly shown on nautical charts and may include high water line, channels, Spoil Areas, etc. Dump Sites may also be displayed on these bases. The date(s) that the survey(s) was/were conducted, applicable state plane grid information and other pertinent information is generally contained in the title block of the survey. This/these date(s) refer **ONLY** to the survey date of the hydrography and not to the other features that comprise the background base. Features (except hydrography) depicted on background bases are usually added to the base when the base was originally constructed. These other features are in fact part of the background base. Once constructed, a background base is not normally subject to revision and consequently neither are these other features depicted on the original base. The background base (unrevised) is used repetitively to display current hydrographic data. The title block is also amended to reflect the date(s) the current survey was conducted. Again, the only purpose of the background base is to serve as a medium for conveying the hydrographic data.

Standard background bases may be repetitively used for an extended period of time. In certain instances multiple, but geographically different, background bases may be alternately used. New background bases are generated on an infrequent basis that may extend over a multi-year time frame. Unfortunately, due to the extended use of these background bases, other features comprising the background base may not always match or reflect the current updated nautical chart. Generally, there is/are no date(s) associated with the “time origin” of the background base. Occasionally, when an imagery background is used, there may be a date referencing the date of the imagery. However, this has no impact on the existence or non-existence of a Dump Site which is below all water levels.

Sites used for depositing dredge and fill material, the most common usage, are permitted by the U. S. Army Corps of Engineers. The Environmental Protection Agency is the authoritative source for charting/revising a Dump Site.

When applying U. S. Army Corps of Engineers surveys there are four (4) possible conditions or scenarios that may exist, in respect to a Dump Site, when comparing the survey and the corresponding nautical chart. Any differences routinely require further investigation and resolution. Each scenario is listed below with the required action necessary to resolve any differences between the survey and the nautical chart.

- (1) A Dump Site is on the current nautical chart and not on the survey.

No Charting Action. The purpose of the U. S. Army Corps of Engineers survey is to provide hydrographic data for charting. Existing Dump Sites may or may not be on a U. S. Army Corps of Engineers survey as part of the background base. Differences between a survey and a nautical chart are required **WHEN** a Dump Site is depicted on the survey and not on the current nautical chart.

- (2) A Dump Site on the survey matches the depiction on the current nautical chart.

No Charting Action.

- (3) The configuration of a Dump Site on the survey is different than the depiction on the current nautical chart.

No correction to the chart. The chart shall not be revised to match the portrayal of the Dump Site on the survey. While the survey is not the source for charting/revising of a Dump Site, the differences in the configuration of the Dump Site **MUST** be resolved to ensure that the current nautical chart is correct.

There are three (3) similar but slightly different methods.

Method (A): Examine the current Standard to determine if any yet unapplied source document(s) exist that affect the configuration of the currently charted Dump Site. **WHEN** an applicable source document(s) exists, it/they should be immediately applied to the chart and the resulting portrayal re-evaluated in comparison to the U. S. Army Corps of Engineers survey. If differences still remain unresolved, proceed to Method (B).

Method (B): This method is used **WHEN** it is suspected that this same issue has previously occurred on prior documents/surveys and is due to the repetitive use of the background base, as previously discussed. Examine the Standard(s) and/or Histories of Cartographic Work to determine prior U. S. Army Corps of Engineers surveys covering the area of the Dump Site.

Historically, when this same type of condition existed on prior U. S. Army Corps of Engineers source document(s) and was previously resolved, the prior source document(s) was/were annotated with a handwritten annotation concerning a resolution. That annotation should have been signed and dated by personnel of the Nautical Data Branch. When this is the case, the current source containing the different configuration of the Dump Site should be returned to the Nautical Data Branch. The Nautical Data Branch shall annotate the current source (carry forward the annotation) with the prior annotation.

WHEN the prior annotation indicates that there was a charting action, there usually is another source document that must be independently examined. **WHEN** no prior annotation is indicated use Method (C)

Method (C): Examine the Standard(s) and/or Histories of Cartographic Work to determine the specific source document for charting the Dump Site. This source will be a citation from the Federal Register (FR). Ensure that the document was properly applied to the nautical chart. **WHEN** a difference still remains, the issue with all supporting materials should be returned to the Nautical Data Branch for resolution. The Environmental Protection Agency is the authoritative source for charting/revising a Dump Site.

(4) A Dump Site on the survey is not on the current nautical chart.

No correction to the chart. The chart shall not be revised to match the portrayal of the Dump Site on the survey. However, the identical methods delineated in item (3) above **MUST** be employed to resolve any differences.

The following three sections deal with the discontinuance and removal of a Dump Site.

Discontinuance and Removal of Dump Sites

The removal of a charted Dump Site is normally a two step process.

- (1) the Dump Site is discontinued by the Environmental Protection Agency, See [“Discontinued Dump Sites”](#) **AND**
- (2) new hydrographic survey data more recent than the discontinued date of the Dump Site has been applied to the chart. See [“Feature Removal from Chart”](#).

A charted active Dump Site shall not be removed until the responsible establishing authority (EPA) designates or provides documentation that the Dump Site is no longer active (see [Discontinued Dump Sites](#)) **AND** when such removal is supported by new hydrographic survey data (see [Feature Removal from Chart](#)). **Note that discontinued does not necessarily mean that the feature should be removed from the chart at that time.** Removal is **ALWAYS** contingent on new hydrographic survey data that:

- (1) has a survey date more recent than the discontinued date of the Dump Site. The date the Dump Site was discontinued is determined by researching the original source document that changed the status of the Dump Site from active to discontinued and extracting **the “effective” date**, and
- (2) the coverage of the new hydrographic survey data completely encompasses the areal dimensions of the charted Dump Site.

Generally, when a Dump Site is discontinued, it is not accompanied by a “post-discontinuance” condition survey. Receipt of such a survey may take months or years. Because of this condition, the process of removing a Dump Site has been separated into two distinct sequential steps. They are: (1) “Discontinued Dump Sites”, and (2) “Feature Removal from Chart”.

Reports originating from non-authoritative sources (any source other than the Environmental Protection Agency) indicating that a Dump Site has been discontinued, removed, etc. shall be forwarded to the Nautical Data Branch for confirmation by the Environmental Protection Agency. A charted Dump Site shall not be revised from a non-authoritative source.

Discontinued Dump Sites

A change in the status (from active to discontinued) of an existing Dump Site is generally transmitted to NOS through the Federal Register (FR) as a “Final Rule” and is designated as a Chart Letter.

A discontinued Dump Site and associated labeling shall not be removed until new hydrographic survey data, generally USACE, NOS or equivalent, of the area is available for chart updating. The date(s) of the hydrographic survey(s) **MUST** be more recent than the date that the Dump Site was discontinued and provide complete hydrographic coverage. See [“Feature Removal from Chart”](#).

A Dump Site designated as discontinued, **WITHOUT** new hydrographic survey data, requires **ONLY** the addition of an additional label. The limits of the Dump Site and the charted hydrography shall be retained as charted.

When the status of a charted Dump Site is revised from active to discontinued, the label (*discontinued*) shall be added to the existing charted label immediately after (below) the charted Feature Name label. [Figure 4.14.5.1-2](#) and [Figure 4.14.5.1-3](#) illustrate this basic revision. See [“Labels and Note”](#) for labeling requirements.

*Dump Site
(dredged material)
(see note S)
Depths from survey of 2001*

Figure 4.14.5.1-2
Typical Label for an Active Dump Site

*Dump Site
(discontinued)
(dredged material)
(see note S)
Depths from survey of 2001*

Figure 4.14.5.1-3
Corresponding Label for a Discontinued Dump Site
(**WITHOUT** new hydrographic survey data)

When the survey date of the hydrography is **prior to the date that the Dump Site was discontinued**, the hydrography shall be revised and the “*Depths from survey of*” label revised. See [“Revisions to Charted Dump Sites, Charted Hydrography”](#). The Dump Site shall not be removed from the chart.

The date the Dump Site was discontinued is determined by researching the original source document that changed the status of the Dump Site from active to discontinued and extracting the “effective” date.

Feature Removal from Chart

When a Dump Site is/has been discontinued by the EPA, the Dump Site and associated labeling shall be removed from the chart **contingent on** receipt and application of new hydrographic survey data. This presumes that the coverage of the survey(s) encompasses the areal limits of the charted Dump Site.

The date the Dump Site was discontinued is determined by researching the original source document that changed the status of the Dump Site from active to discontinued and extracting the “effective” date.

When the date of a hydrographic survey(s) is **NOT** more recent than the discontinued date of the Dump Site, the Dump Site can not be removed from the chart. However, the hydrography contained on the survey shall be applied to the chart and the depth label “*Depths from survey of*” revised according to the specification. See previous section, [“Discontinued Dump Sites”](#).

When the date of a hydrographic survey(s) **IS** more recent than the discontinued date of the Dump Site, the area limit and all associated labeling shall be removed from the chart. This presumes that the coverage of the survey(s) encompasses the areal limits of the charted Dump Site.

Standard Note S: When the Dump Site being removed from the chart is the only charted Dump Site, Note S shall also be removed from the chart. See also the [specifications for Note S](#) contained in “Labels and Note”.

(The remainder of this page is intentionally blank.)

Relationship of Dump Sites to Other Nautical Chart Features

The existence of a Dump Site has no impact/effect on the charting, or not charting, of any other nautical chart feature.

The most common relationship between a Dump Site and other nautical chart features is with charted hydrography. As noted earlier, “the existence of a Dump Site has no impact/effect on the charting, or not charting, of hydrography within the areal dimensions of a Dump Site. Hydrography within the limits of a charted Dump Site is independent of the symbolized feature. Soundings, depth curves and associated tints are applied as if the Dump Site were non-existent. There are, however, two linkages **WHEN** hydrography is charted within a Dump Site. See **Charted Hydrography**.

Note that the above relationship is in only one direction. The Dump Site has no effect on hydrography. However, the existence of hydrography within the areal limits of a charted Dump Site effects the composition and content of the charted label associated with the Dump Site and the deletion of a charted Dump Site that has been discontinued.

Symbolization: A Dump Site designated in the Code of Federal Regulations (CFR), Title 40, “Protection of the Environment”, Part 228.15 and subsequent updating material from the Federal Register shall be shown by a black dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information. See also, [Chart No. 1](#), Section Designation: [N 24](#) and [N g](#).

Location: A Dump Site shall be located in its officially published geographic position.

When a minimum size symbol is used to represent a Dump Site, the minimum size symbol shall be centered on the exact geographic position of the feature it represents. See [“Size and Shape”](#).

Size and Shape: A Dump Site shall conform to the shape of the feature it is demarking.

Minimum Size Symbol: On small-scale charts, it may be necessary to use a minimum size symbol; a 2.0 mm dashed square. The 2.0 mm dashed square shall **ALWAYS** be used when the greatest dimension of the Dump Site is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape. **A controlling depth shall be charted** within the limits of the Dump Site when hydrography and other navigational detail are shown in the area.

Special Charting Requirements: When the minimum size symbol **MUST** be used for **ALL Dump Sites shown on a particular chart (WITHOUT controlling depths)**, the symbols shall be identified only by a minimum label. The minimum label shall consist of the Feature Name label and the Primary Use of the Dump Site label when the Dump Site has a status of active. See [Figure 4.14.5.1-4](#). When the Dump Site described above has a status of discontinued, the label (*discontinued*) shall be added as part of the minimum label. See [Figure 4.14.5.1-5](#). Standard Note S and the reference label (*see note S*) shall not be charted.

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

*Dump Site
(dredged material)*

Figure 4.14.5.1-4
Minimum Size Symbol Label Requirements
Primary Use = dredged material
Status = active

*Dump Site
(discontinued)
(dredged material)*

Figure 4.14.5.1-5
Minimum Size Symbol Label Requirements
Primary Use = dredged material
Status = discontinued

Orientation: A Dump Site that conforms to the size and shape of a feature is by definition correctly oriented.

A Dump Site that is exaggerated to the minimum size symbol shall be oriented to the baseline of the specific chart piece.

Labels and Note:

Specifications for the formulation of the charting label of a Dump Site and a Disposal Area are identical **EXCEPT** for the Feature Name, the additional Primary Use label for a Dump Site and the Note S requirement for a Dump Site.

There are four (4) standard components of the label of a charted Dump Site and one (1) additional label (a status qualifier) when the status of the Dump Site (Feature Name) is discontinued. The components of the label are listed and charted in the following vertical sequence:

- (1) Feature Name label, **always** *Dump Site*
The charted label “*Dump Site*” presumes an active status.
 - (1a) Status qualifier, **always** (*discontinued*), when required
- (2) Primary Use of the Dump Site label, **always charted**, variable content
- (3) Reference to standard Note S, **generally always charted**, See [exception](#) contained in **Labels**; (3) [Reference to standard Note S](#). See also **Size and Shape**, [Special Charting Requirements](#).
- (4) “*Depths from survey of...*” label, **charted when** hydrography is charted within a Dump Site, variable content, See **exception** contained in **Labels**; (3) Reference to standard Note S.

The following example illustrates the use of all the various label components of a charted Dump Site.

Dump Site
(discontinued)
(dredged material)
(see note S)
Depths from survey of 2001

Figure 4.14.5.1-6
Standard Label Components of a Dump Site

Labels: A label shall be added in black to identify the area in 7 point Swiss Light Italic type. Component labels are centered vertically. See also the following section, “Collective Label”.

EXCEPTION: When the areal dimension of a Dump Site is extremely large at chart scale, the label shall not be charted multiple times. Charting the label multiple times serves no practical purpose and may obscure other navigational detail. The label shall be charted with a size appropriate to the feature being charted and the scale of the chart. The maximum type size shall not exceed 10 point Swiss Light Italic.

Example of a complete label (without status qualifier) for an active Dump Site:

Dump Site
(dredged material)
(see note S)
Depths from survey of 2001

Figure 4.14.5.1-7
Dump Site Label
Status = Active

Example of a complete label **with status qualifier** (a discontinued Dump Site):

Dump Site
(discontinued)
(dredged material)
(see note S)
Depths from survey of 2001

Figure 4.14.5.1-8
Dump Site Label
Status = Discontinued

[Figure 4.14.5.1-9](#) is an example of a complete label for an active Dump Site with no charted hydrography (generally blue tint) resulting from the 1977 conversion of dumping areas or a newly established Dump Site located in an area with no charted hydrography. Note that the only difference is that the “*Depths from survey of ...*” label has been omitted because there is no charted hydrography. See also the requirements and exception for Note S and the reference to Note S.

Dump Site
(dredged material)
(see note S)

Figure 4.14.5.1-9
Dump Site Label
Status = Active, No Charted Hydrography

The remainder of this section provides the specifications and charting options for the labeling of a Dump Site. In each example, a complete charted label is illustrated. **The specific component of the label being illustrated is in BOLD type.** The numeric paragraph numbers (1), (1a), (2), (3) and (4) are linked to the numbering scheme provided at the beginning of this section, Labels and Note.

(1) Feature Name label designating the area a Dumping Site (Dump Site) - designated by the Federal Register. The Feature Name label is capital and lowercase letters. The first letter of each word is capitalized.

Dump Site
(dredged material)
(see note S)
Depths from survey of 2001

Figure 4.14.5.1-10
Feature Name Label
Status = Active

(1a) Feature Name label with Status qualifier (*discontinued*). Dump Sites are charted as either: (1) active, or (2) discontinued. This designation is specified in the Federal Register (Chart Letter). An active Dump Site contains only the Feature Name label “*Dump Site*” as illustrated in the previous example. An active status is presumed. A discontinued Dump Site contains the Feature Name label “*Dump Site*” and the status qualifier “(*discontinued*)”. The status qualifier label is always lowercase letters, enclosed by parentheses and immediately follows the Feature Name label.

Dump Site
(discontinued)
(dredged material)
(see note S)
Depths from survey of 2001

Figure 4.14.5.1-11
Feature Name Label with
Status Qualifier (*discontinued*)

(2) Primary Use of a Dump Site. This information is contained in the Federal Register and also published in the Code of Federal Regulations (See [Figure 4.14.5.1-12](#)). The label should reflect the primary use of the area as stated in the regulations. The primary use of the Dump Site label is always lowercase letters, enclosed by parentheses and immediately follows the Feature Name label. When the status of a Dump Site is (*discontinued*), the Primary Use label shall immediately follow the status qualifier (*discontinued*).

Dump Site
(dredged material)
(see note S)
Depths from survey of 2001

Dump Site
(chemical waste)
(see note S)
Depths from survey of 2001

Figure 4.14.5.1-12
Primary Use of a Dump Site

(3) Reference to standard Note S. Standard Note S shall be added, see also the following [exception](#), to a chart that contains at least one Dump Site. One Dump Site can include either an active or discontinued Dump Site. The reference (*see note S*) to the standard Note S is always lowercase letters, **except** for the letter S, which is always a capital letter. The reference (*see note S*) is enclosed by parentheses and immediately follows the primary use of the Dump Site label. When the Dump Site being added to a nautical chart is the only charted Dump Site, see the specification for adding Note S to the chart. See also **Size and Shape**, [Special Charting Requirements](#).

*Dump Site
(dredged material)
(see note S)
Depths from survey of 2001*

Figure 4.14.5.1-13
Reference to standard Note S

Conversely, when a Dump Site is being removed from a nautical chart **AND** it is/was the only Dump Site charted, Note S shall be removed from the chart. See [Feature Removal from Chart](#).

The following exception is applicable, generally to smaller scale charts, when the minimum size square symbol is used for all Dump Sites on a particular chart. See also, “Labels and Note, [Standard Note S](#)”. See also the Figures contained in [Size and Shape](#).

EXCEPTION: When the minimum size symbol **MUST** be used for **ALL Dump Sites shown on a particular chart (WITHOUT controlling depths)**, the symbols should be identified only by a minimum label. The minimum label shall consist of the Feature Name label and the Primary Use of the Dump Site label. Standard Note S and the reference label (*see note S*) shall not be charted. The “*Depths from survey of...*” label shall not be charted.

*Dump Site
(dredged material)*

Figure 4.14.5.1-14
Minimum Size Symbol used for
ALL Dump Sites shown on a particular chart
(**WITHOUT** controlling depths)
Primary Use = dredged material

Section 4.14.5.1

NAUTICAL CHART MANUAL

(4) “*Depths from survey of*” label - determined by researching the source(s) of the charted hydrography and extracting the survey date(s). The date of the hydrography within a Dump Site shall be charted, unless the charted Dump Site is located in an area where hydrography and other navigational detail is not shown. Multiple surveys and/or survey dates affect the format of the basic label (*Depths from survey of*) and are discussed below.

The “*Depths from survey of....*” label shall not be charted when hydrography is not charted within the area limits of a Dump Site. See [Figure 4.14.5.1-14](#). The label shall be charted when new hydrographic data is applied to the chart.

The format and content of the label is determined by the number of surveys and the associated survey date(s). The “*Depths from survey of*” label is a combination of two elements:

- (1) the alphabetical element, and
- (2) the numeric date element

Alphabetical Element:

By convention, even when just one sounding is charted within the limits of a Dump Site, the first word *Depths* is always plural. The label is always lowercase letters, **EXCEPT** for the first letter (*D*), which is always a capital letter.

There are six (6) possible combinations based on the number of surveys and the associated survey date(s) for the Alphabetical Element of the label. The combinations below also incorporate the resultant “Numeric Date Element” for each condition. Note that when only one survey is applicable, the alphabetical element is “*Depths from survey of*” or “*Depths from survey of-....*”, depending on whether a single hydrographic survey was conducted in just one or possibly over two calendar years, respectively. For all other instances the Alphabetical Element is identical, **EXCEPT** that the word survey is revised to the plural surveys, “*Depths from surveys of*” or “*Depths from surveys of-....*”.

Possible combinations are, when charted hydrography originates from:

- (1) A single survey, conducted within one calendar year

Example: *Depths from survey of*

- (2) A single survey, conducted during two different calendar years

Example: *Depths from survey of-....*

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- (3) Two or more surveys conducted within the same calendar year

Example: *Depths from surveys of*

- (4) Two surveys conducted during different calendar years

Example: *Depths from surveys of-....*

- (5) More than two surveys conducted during two different calendar years

Example: *Depths from surveys of-....*

- (6) More than two surveys conducted during more than two different calendar years

Example: *Depths from surveys of-....*

Therefore,

When charted hydrography originates from only one survey, the alphabetical element of the label is always “*Depths from survey of....*” or “*Depths from survey of-....*”, contingent on whether the hydrographic survey was conducted during one calendar year or possibly over two calendar years (i.e., July 2000, or December 1999 through January 2000, respectively).

In **ALL** other circumstances, the alphabetical element of the label is always the plural “*Depths from surveys of*” or “*Depths from surveys of-....*”.

(The remainder of this page is intentionally blank.)

Numeric Date Element: See also the previous section, "[Alphabetical Element](#)", for combinations of the number of hydrographic survey(s) and associated survey date element(s).

- (1) Year dates are expressed **ONLY** as the complete four-digit calendar year (i.e., 1999)

Calendar months are not charted

Numeric day(s) of the month are not charted

- (2) When surveys from two different calendar years are applicable, the numeric date element of the label shall consist of the complete four-digit calendar year of each survey - separated by a hyphen (dash).

The oldest survey date is **ALWAYS** listed first

- (3) When surveys from three or more different calendar years are applicable, the date element of the label shall consist of the complete four-digit calendar year of **ONLY** the oldest and most recent surveys - separated by a hyphen (dash).

The oldest survey date is **ALWAYS** listed first

Interim calendar year date(s) is/are **ALWAYS** omitted

The following examples illustrate the various options for formulating the "*Depths from survey of*" label for a Dump Site.

Examples:

A Dump Site where the charted hydrography originates from a single survey conducted within one calendar year.

Survey date of the source document is 28 April 2001

Use the four-digit calendar year only, i.e. 2001

Depths from survey of 2001

Examples (continued):

A Dump Site where the charted hydrography originates from a single survey conducted during two different calendar years (unusual circumstance).

Survey date of the source document is 28 December 2000 and 3 January 2001

Use the four-digit calendar year only, i.e. 2000 and 2001

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from survey of 2000-2001

A Dump Site where the charted hydrography originates from two or more surveys conducted within the same calendar year.

Survey dates of the source documents are 11 January 2001, 28 April 2001 and 21 May 2001 - ALL within the same calendar year.

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar year only, i.e. 2001

Depths from surveys of 2001

Examples (continued):

A Dump Site where the charted hydrography originates from two surveys conducted during different calendar years.

Survey dates of the source documents are 11 January 1999 and 28 April 2001

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar years only, i.e. 1999 and 2001

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from surveys of 1999-2001

A Dump Site where the charted hydrography originates from more than two surveys conducted during two different calendar years. This is a slight variation of the previous example. Note that the charted label is the same as in the prior example.

Survey dates of the source documents are 11 January 1999, 28 April 2001 and 21 May 2001

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar years only, i.e. 1999 and 2001

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from surveys of 1999-2001

Examples (continued):

A Dump Site where the charted hydrography originates from more than two surveys conducted during more than two different calendar years.

Survey dates of the source documents are 15 June 1995, 11 January 1999 and 28 April 2001

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar years for only the oldest survey and most recent survey, i.e. 1995 and 2001 (interim dates, i.e. 1999, are not included)

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from surveys of 1995-2001

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Collective Label (Alternative Labeling)

On smaller scale charts, a collective (single) label may be used to identify multiple proximate symbolized Dump Sites. Using a collective label provides a degree of simplification, reduces the redundant clutter of identical labels and still retains the identity of charted features.

Generally, Dump Sites are charted on the full range of nautical charts. This includes smaller scale charts, in areas of blue tint, with no charted hydrography. The purpose of charting these features is to provide the mariner with a general configuration of the area in the vicinity of major entrance channels. Charting these areas also provides additional emphasis to the mariner of the need to use a larger scale chart when entering or transiting these areas.

Multiple Dump Sites may be symbolized to scale or as a [minimum size symbol](#). Typically, on smaller scale charts, individual Dump Sites are symbolized and labeled with the minimum label “*Dump Site*” (See Symbolization). Whether a Dump Site is charted to scale or as a minimum size symbol has no bearing on the use of a collective label.

WHEN the following conditions exist, individual labels may be combined into one collective label. The only modification is that the singular Feature Name label “*Dump Site*” is revised to the plural “*Dump Sites*”.

- (1) Identical Labels: The charted content of individual Dump Site labels **MUST** be identical. This requirement almost always limits the use of a collective label to smaller scale charts where the identical label criteria is equal to the minimum label.
- (2) Labeling Preference: A collective label is generally used when multiple individual labels are placed adjacent to charted features. An individual label that can be located inside the limits of a symbolized Dump Site is not normally a candidate for a collective label.
- (3) Proximity: Multiple Dump Sites that are charted in close proximity to each other and the use of a single collective label clearly identifies/associates a charted single label being applicable to each corresponding charted feature.
- (4) Clarity: It is imperative that a collective label used for identifying multiple Dump Sites not be subject to confusion with other symbolized features, such as Spoil Area limits, which are also common along most major entrance channels and symbolized in the same manner.

Location of Labels: The label for a Dump Site shall be located inside the limits of the symbolized feature. When the label can not be located within the limits of a Dump Site, it shall be placed adjacent to the feature so that the mariner will associate the label with the charted feature. The use of an arrow or leader to associate a label with a charted Dump Site is discouraged.

Standard Note S: Standard Note S **MUST** be charted on charts that contain at least one Dump Site (see [exception](#) below for use of the minimum size symbol) and includes either an active or discontinued Dump Site.

Note S shall be charted in the vicinity of Note A, preferably directly following it. The note shall be in 7 point Swiss Light type, 2" (Preferred) or 3 1/2" (Optional) wide, and in black.

NOTE S

Regulations for Ocean Dumping Sites are contained in 40 CFR, Parts 220-229. Additional information concerning the regulations and requirements for use of the sites may be obtained from the Environmental Protection Agency (EPA). See U.S. Coast Pilots appendix for addresses of EPA offices. Dumping subsequent to the survey dates may have reduced the depths shown.

Figure 4.14.5.1-15
2 inch (Preferred) Version of Note S

NOTE S

Regulations for Ocean Dumping Sites are contained in 40 CFR, Parts 220-229. Additional information concerning the regulations and requirements for use of the sites may be obtained from the Environmental Protection Agency (EPA). See U.S. Coast Pilots appendix for addresses of EPA offices. Dumping subsequent to the survey dates may have reduced the depths shown.

Figure 4.14.5.1-16
3 1/2 inch (Optional) Version of Note S

EXCEPTION: When the minimum size symbol **MUST** be used for **ALL Dump Sites shown on a particular chart (WITHOUT controlling depths)**, the symbols should be identified only by a minimum label. The minimum label shall consist of the Feature Name label and the Primary Use of the Dump Site label. Standard Note S and the reference label (*see note S*) shall not be charted. The “*Depths from survey of...*” label shall not be charted. See also **Size and Shape**, [Special Charting Requirements](#).

*Dump Site
(dredged material)*

Figure 4.14.5.1-17
Minimum Size Symbol used for
ALL Dump Sites shown on a particular chart
(WITHOUT controlling depths)
Primary Use = dredged material

Line Type and Weight: A Dump Site shall be symbolized with a black dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The minimum size symbol, a 2.0 mm dashed black square, shall be used on small scale charts. The 2.0 mm dashed black square shall always be used when the greatest dimension of the Dump Site is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape. A controlling depth shall be charted within the limits of the Dump Site when hydrography and other navigational detail are shown in the area.

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

Color and Screening:

Color: A Dump Site shall **ALWAYS** be symbolized in black. **ALL** labels and standard Note S shall be in black.

Screening: Not applicable.

Feature Recommendation for a Notice to Mariners: A newly applied, revised or deleted Dump Site shall be evaluated for a Notice to Mariners.

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 006/04

April 1, 2004

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.5.2 and SECTION 4.14.5.2.1

TO: All Cartographers
Marine Chart Division

SUBJECT: Section 4.14.5.2 U. S. Navy (Department of Defense) - Established Dumping Areas and Section 4.14.5.2.1 Ammunition and Explosives Dumping Areas

APPLICATION: All Affected Nautical Charts

Effective immediately, the following attachment replaces Pages 4-267.20 and 4-268 of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition with revised Pages 4-267.32 through 4-267.43.

Section 4.14.5.2, U. S. Navy (Department of Defense) - Established Dumping Areas has been added as an overview for these areas.

The attachment provides enhanced specifications for charting U. S. Navy established Ammunition Explosives Dumping Areas on NOS nautical charts.

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

4.14.5.2 U. S. Navy (Department of Defense) - Established Dumping Areas

U.S. Navy (Department of Defense) Dumping Areas SHALL NOT BE REMOVED from National Ocean Service charts. These areas are expected to remain a danger due to the extremely hazardous nature of the materials contained within these areas and the remote likelihood that these materials would be recovered. No documentation has been found that indicates that one of these features has ever been removed from a National Ocean Service chart.

For all practical purposes, these features shall be considered permanent.

Original source documents (Department of Defense) generally classify these areas as a specific type of Dumping Ground (ammunition, explosives or chemical). By convention, for National Ocean Service charting purposes, **these areas are labeled as Dumping Areas and NOT as Dumping “Grounds”**. The term Dumping Grounds is used in conjunction with a specific type of U. S. Army Corps of Engineers Dumping Area. See [Section 4.14.5.3](#), “U.S. Army Corps of Engineers (USACE) - Established Dumping Areas” and [Section 4.14.5.3.3](#), “Dumping Grounds”. See also, [“Labels and Note”](#).

Additionally, these areas should **NOT**, based on the contents of the described area, be confused with Unexploded Ordnance or Unexploded Ordnance Areas. Unexploded Ordnance or Unexploded Ordnance Areas, as the definition below indicates, refers to many of the same type of materials but these materials are located “outside the charted limits of established regulated explosives dumping areas.” and are charted using different specifications.

Definition: **UNEXPLODED ORDNANCE**. Unexploded ordnance refers to any undetonated explosive material which is reported to be outside the charted limits of established regulated explosives dumping areas. (Unexploded bombs, depth charges, torpedoes, ammunition, pyrotechnics, etc.) [\[29\]](#)

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Background

Prior to 1977, ocean dumping areas (dumping grounds, disposal areas, etc.) were described in the Code of Federal Regulations (CFR), Title 33, "Navigation and Navigable Waters", Part 205. These regulations were revoked in their entirety by the Code of Federal Regulations (CFR), Title 40, "Protection of the Environment", Parts 220-229, "Ocean Dumping", designating the Environmental Protection Agency as the cognizant agency for these matters. U.S. Navy (Department of Defense) Dumping Areas, previously established in Title 33, were classified as **DISUSED**. For additional background information, See [Section 4.14.5.1](#), "Environmental Protection Agency (EPA) - Established Dump Sites" and "Dumping and Disposal Areas NOT Converted to EPA Dump Sites".

General

The U.S. Navy designates certain areas, generally in deep water at considerable distance offshore, for disposal, under Naval policies and by Naval facilities only, of ammunition, explosives and chemicals. These areas are shown on National Ocean Service (NOS) nautical charts both to help Naval personnel identify the areas and to inform chart users, notably trawlers who might tangle with dangerous materials. To emphasize the importance of these charted areas to the mariner, a U. S. Navy Dumping Area is the **ONLY** type of dumping area that is symbolized and labeled in magenta. Also, the entire charted label, **EXCEPT** for the "*see note* _" reference for **DISUSED** Chemical Munitions Dumping Areas, consists of all capital letters. For charting purposes, U.S. Navy Dumping Areas are separated into two categories. They are:

- (1) Ammunition and Explosives Dumping Areas, and
- (2) Discontinued (**DISUSED**) Chemical Munitions Dumping Areas

The U.S. Navy uses the following criteria in selecting areas for dumping these types of materials:

- (1) Ammunition and Explosives Dumping Areas are established in depths of water not less than 500 fathoms and are located at least 10 miles from any shore. See [Section 4.14.5.2.1](#), Ammunition and Explosives Dumping Areas.
- (2) Chemical Munitions Dumping Areas were previously established in depths of water not less than 1,000 fathoms and were located at least 10 miles from any shore. The use of these areas was discontinued in 1971. (Reference NM 6/71) See [Section 4.14.5.2.2](#), Discontinued (**DISUSED**) Chemical Munitions Dumping Areas.

U.S. Navy Dumping Areas shall **ALWAYS** be charted.

There is one component of a charted U. S. Navy Dumping Area: (1) the charting authority (Department of Defense) which establishes, revises or discontinues the site, including the geographic limits of the site. The charting authority determines the feature symbolization, location and the composition of the charted label(s).

Whether or not hydrography is charted within the limits of the designated area is independent of and has no effect on the charting of the feature or the associated label. Unlike Environmental Protection Agency ([EPA Dump Sites](#)) and [U. S. Army Corps of Engineers Disposal Areas](#) (other than Spoil Areas), there is no requirement for a Depths from survey of... label. This due to the extreme depth of the water in which these areas are established (see prior section for criteria in selecting areas for dumping) and the unavailability of necessary contemporary hydrographic surveys.

See [Section 4.14.5.2.1](#) for Ammunition and Explosives Dumping Areas.

See [Section 4.14.5.2.2](#) for Discontinued (*DISUSED*) Chemical Munitions Dumping Areas.

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4.14.5.2.1 Ammunition and Explosives Dumping Areas

Ammunition and Explosives Dumping Areas are established in depths of water not less than 500 fathoms and are located at least 10 miles from any shore.

The designation of the Feature Name Label for these areas is determined by the charting authority, i.e., the U. S. Navy (Department of Defense). Explosives Dumping Areas are the most common of these areas and are generally uniformly designated. However, individual sites may be designated with other similar labels. When other similar labels are used to designate these types of areas, the charted label shall conform to the label provided by the charting authority. This is consistent with the policy of charting these areas as described by the government agency establishing these areas.

WHEN it has been determined or suspected that the published label requires/needs revision to be consistent with other already charted areas, all relevant materials shall be forwarded to the Nautical Data Branch for resolution/confirmation by the Department of Defense.

These areas should not be confused with U. S. Navy (Department of Defense) Chemical Munitions Dumping Areas. The differentiating characteristic is that Chemical Munitions Dumping Areas were established primarily for the deposition of chemical munitions and have been subsequently discontinued (*DISUSED*). See [Section 4.14.5.2.2](#), Discontinued (*DISUSED*) Chemical Munitions Dumping Areas. U. S. Navy Dumping Areas that contain ammunition or explosives shall conform to the following specifications.

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U.S. Navy (Department of Defense) Ammunition and Explosives Dumping Areas **SHALL NOT BE REMOVED** from National Ocean Service charts. These areas are expected to remain a danger due to the extremely hazardous nature of the materials contained within these areas and the remote likelihood, due to the extreme depth of the water, that these materials would be recovered. No documentation has been found that indicates that one of these features has ever been removed from a National Ocean Service chart.

For all practical purposes, these features shall be considered permanent.

Newly Established Ammunition and Explosives Dumping Areas

Newly established U.S. Navy (Department of Defense) Ammunition and Explosives Dumping Areas are generally transmitted to the National Ocean Service (NOS) through Weekly Notice to Mariners (NM), the Federal Register (FR), or the Code of Federal Regulations (CFR). The limits and type of dumping are most commonly specified in the Weekly Notice to Mariners (NM). Note that the U.S. Coast Pilots include only those areas established through the Code of Federal Regulations (CFR).

Geographic Limits - A newly established Ammunition or Explosives Dumping Area shall be located in its officially published geographic position.

Symbolization - See [“Symbolization”](#).

Hydrography - All hydrography and tints currently charted within the limits of a newly established Dumping Area shall be retained.

Labeling - See [“Labels and Note”](#).

Revisions to Charted Ammunition and Explosives Dumping Areas

Great care should be exercised when making revisions to these areas due to the potentially hazardous nature of the contents to navigation.

Revisions to a charted Ammunition or Explosives Dumping Area are precipitated **ONLY** from the charting authority, the U.S. Navy (Department of Defense). Revisions to charted hydrography located within a charted Dumping Area have no impact on and are independent of the charting of the Dumping Area.

Charting Authority (U. S. Navy, Department of Defense)

Revisions to an established Ammunition or Explosives Dumping Area are generally transmitted to the National Ocean Service through Weekly Notice to Mariners (NM), the Federal Register (FR), or the Code of Federal Regulations (CFR).

Revisions include changes in: (1) the geographic limits, and (2) the status [from active to *DISUSED*]. **Note that the term (discontinued) shall not be used AND that the charted label is not enclosed by parentheses. See [\(2\) Status](#), below.**

(1) Geographic Limits

Existing charted Ammunition or Explosives Dumping Area limits which are superseded by U.S. Navy (Department of Defense) established “new” limits shall be removed **ONLY** when they are completely enclosed by the new limits. Any change in the type/s of materials contained within an expanded Dumping Area should result in a re-evaluation of the type of dumping area and the charted label based on the contents of the area. Note that the types of materials included in the label can increase but never decrease.

When portions of the “old” area limits are located outside the limits of the “new” Dumping Area limits, the Nautical Data Branch shall be immediately notified for confirmation and clarification by the charting authority. Retention of areas outside the new limits shall be in accordance with previously established (1977) procedures. See Section 4.14.5.1, [“Conversion of Pre-1977 Dumping Grounds and Disposal Areas”](#).

(2) Status (from active to *DISUSED*), See [“\(DISUSED\) Ammunition and Explosives Dumping Areas”](#) and [“Feature Removal From Chart”](#). By convention, the term *DISUSED* is used to describe a Dumping Area that is no longer active. For clarity, the term “discontinued” **SHALL NOT** be used. A charted label without the status label *DISUSED* is presumed to be active. See [“Labels and Note”](#).

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Charted Hydrography

While not common due to the water depth and the generally unavailability of contemporary hydrographic surveys, all new hydrographic survey data shall be applied within an area designated as a Dumping Area.

(DISUSED) Ammunition and Explosives Dumping Areas

When advised through the Weekly Notice to Mariners or other official U.S. Navy sources that a Ammunition or Explosives Dumping Area is no longer in use, the limits and charted label shall be retained with the status label *DISUSED* added to (following) the existing charted label. See [“Labels”](#).

Example of a properly formatted label for an **active** Explosives Dumping Area:

EXPLOSIVES DUMPING AREA

When the status of a charted Ammunition and Explosives Dumping Area is revised from active to *DISUSED*, the label *DISUSED* shall be added to the existing charted label immediately after the charted Feature Name label.

Example of a properly formatted label for a *DISUSED* Explosives Dumping Area:

EXPLOSIVES DUMPING AREA DISUSED

Reports of U.S. Navy (Department of Defense) Ammunition and Explosives Dumping Areas that are no longer in use, *DISUSED*, from non-authoritative sources [any source other than the U.S. Navy (Department of Defense)] shall be forwarded to the Nautical Data Branch for confirmation by the Department of Defense.

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Feature Removal From Chart

U.S. Navy (Department of Defense) Ammunition and Explosives Dumping Areas **SHALL NOT BE REMOVED** from National Ocean Service charts. These areas are expected to remain a danger due to the extremely hazardous nature of the materials contained within these areas, the unavailability of necessary hydrographic surveys and the remote likelihood that these materials would be recovered. No documentation has been found that indicates that one of these features has ever been removed from a National Ocean Service chart.

For all practical purposes, these features shall be considered permanent.

If authoritative documentation [U.S. Navy (Department of Defense)] indicates that an Ammunition or Explosives Dumping Area has been removed, the Nautical Data Branch and the Quality Assurance, Plans and Standards Branch shall recommend a final charting action.

Symbolization A U.S. Navy (Department of Defense) established Ammunition or Explosives Dumping Area shall be shown by a magenta dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

Location An Ammunition or Explosives Dumping Area shall be located in its officially published geographic position.

When a minimum size symbol is used to represent a Ammunition or Explosives Dumping Area, the minimum size symbol shall be centered on the exact geographic position of the feature it represents. See [“Size and Shape”](#).

Size and Shape An Ammunition or Explosives Dumping Area shall conform to the shape of the of the shape of the feature it is demarking.

Minimum Size Symbol: On small-scale charts, it may be necessary to use a minimum size symbol; a 2.0 mm dashed square. The 2.0 mm dashed square shall **ALWAYS** be used when the greatest dimension of the Dumping Area is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape. **A controlling depth shall be charted** within the limits of the Dumping Area when hydrography and other navigational detail are shown in the area.

Orientation An Ammunition or Explosives Dumping Area that conforms to the size and shape of a feature is by definition correctly oriented.

A Dumping Area that is exaggerated to the minimum size symbol shall be oriented to the baseline of the specific chart piece.

Labels and Note

There is one (1) standard label (with variable content) of a charted Ammunition or Explosives Dumping Area and one (1) additional label (a status qualifier) when the status of the Dumping Area (Feature Name) is no longer active (*DISUSED*). **Note that the term (discontinued) shall not be used AND that the charted label is not enclosed by parentheses.** The black underbar represents a variable/s based on the type/s of material contained within the area. The components of the label are:

(1) Feature Name label, _____ *DUMPING AREA*

(1a) Status qualifier, **ALWAYS** *DISUSED*, when required

Labels A label shall be added in magenta to identify the area in 7 point Swiss Light Italic type. Labels are **ALL** capital letters.

EXCEPTION: When the areal dimension of an Ammunition or Explosives Dumping Area is extremely large at chart scale, the label shall not be charted multiple times. Charting the label multiple times serves no practical purpose and may obscure other navigational detail. The label shall be charted with a size appropriate to the feature being charted and the scale of the chart. The maximum type size shall not exceed 10 point Swiss Light Italic.

Examples of labels for active Dumping Areas:

EXPLOSIVES DUMPING AREA

OR, when space within a Dumping Area is limited, the type may be stacked. Individual elements of the label are centered vertically when the label is stacked.

*EXPLOSIVES
DUMPING AREA*

Examples of labels for (*DISUSED*) Dumping Areas:

EXPLOSIVES DUMPING AREA DISUSED

OR, when space within a Dumping Area is limited, the type may be stacked. Individual elements of the label are centered vertically when the label is stacked.

*EXPLOSIVES DUMPING
AREA DISUSED*

Location of Labels The label for a Dumping Area shall be located inside the limits of the feature. When the label can not be located within the limits of a Dumping Area, it shall be placed adjacent to the feature so that the mariner will associate the label with the charted feature. The use of an arrow or leader to associate a label with a charted Dumping Area is discouraged.

Line Type and Weight An Ammunition or Explosives Dumping Area shall be symbolized with a magenta dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The minimum size symbol, a 2.0 mm dashed magenta square, shall be used on small scale charts. The 2.0 mm dashed magenta square shall always be used when the greatest dimension of the Dumping Area is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape. A controlling depth shall be charted within the limits of the Dumping Area when hydrography and other navigational detail are shown in the area.

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

Color and Screening

Color: A U.S. Navy (Department of Defense) Ammunition or Explosives Dumping Area shall **ALWAYS** be symbolized in magenta. **ALL** labels shall be in magenta.

Screening: Not applicable.

Section 4.14.5.2.1

NAUTICAL CHART MANUAL

Feature Recommendation for a Notice to Mariners A newly applied or revised or Ammunition or Explosives Dumping Area shall be evaluated for a Notice to Mariners.

See section, [“Feature Removal From Chart”](#):

“If authoritative documentation [U.S. Navy (Department of Defense)] indicates that an Ammunition or Explosives Dumping Area has been removed, the Nautical Data Branch and the Quality Assurance, Plans and Standards Branch shall recommend a final charting action.”

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**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 007/04

April 1, 2004

FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.5.2.2

TO: All Cartographers
Marine Chart Division

SUBJECT: Section 4.14.5.2.2, Discontinued (DISUSED)
Chemical Munitions Dumping Areas

APPLICATION: All Affected Nautical Charts

Effective immediately, the following attachment adds Pages 4-267.44 through 4-267.49 to the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment provides enhanced uniform specifications for charting U. S. Navy Discontinued (DISUSED) Chemical Munitions Dumping Areas on NOS nautical charts.

Preferred and Optional size versions of the Chemical Munitions Dumping Area note have been added to the Notes Library.

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

4.14.5.2.2 Discontinued (*DISUSED*) Chemical Munitions Dumping Areas

The use of these areas was discontinued in 1971.

The following information has been retained/reformatted from prior documentation and provided as a historical reference for interpreting currently charted information.

These areas should not be confused with U. S. Navy (Department of Defense) Ammunition and Explosives Dumping Areas. The differentiating characteristic is that these areas were established primarily for the deposition of chemical munitions and have been subsequently discontinued (*DISUSED*). U. S. Navy Dumping Areas that contain ammunition or explosives shall conform to the specifications in [Section 4.14.5.2.1](#), Ammunition and Explosives Dumping Areas.

Note that these discontinued chemical munitions dumping areas are referred to and labeled as *DISUSED*, not discontinued, as is common with other types of dumping areas. The text of the associated note designates the use as discontinued. This usage is consistent with the prescribed labeling provided in the original source documentation (NM 9/71) from the authoritative source.

Example of a properly formatted label for a Chemical Munitions Dumping Area:

CHEMICAL MUNITIONS DUMPING AREA DISUSED (see note _)

U.S. Navy (Department of Defense) Chemical Munitions Dumping Areas **SHALL NOT BE REMOVED** from National Ocean Service charts. These areas are expected to remain a danger due to the extremely hazardous nature of the materials contained within these areas and the remote likelihood, due to the extreme depth of the water, that these materials would be recovered. No documentation has been found that indicates that one of these features has ever been removed from a National Ocean Service chart.

For all practical purposes, these features shall be considered permanent.

Chemical Munitions Dumping Areas were previously established in depths of water not less than 1,000 fathoms and were located at least 10 miles from any shore. The use of these areas was discontinued in 1971.

“1. The use of United States Chemical Munitions Dumping Areas has been discontinued. Designation of such areas on navigational charts in no way constitutes authority for dumping.

2. Future Notice to Mariners will at an early date promulgate information regarding the actual notations to be placed on each navigational chart amending the present charted legends and reference notes, as required, and in accordance with paragraph (1) above.”
(Source Reference: NM 6/71)

The changes noted above were published in NM 9/71. This documentation included charts, applicable geographic areas and the reference/charting note. The format and content of the reference/charting note was revised to its final form by Chart Letter 120/71. There are eleven (11) distinct Chemical Munitions Dumping Areas, mostly charted in the Pacific Ocean.

Revisions to charted hydrography located within a charted *DISUSED* Chemical Munitions Dumping Area have no impact on the charting of the dumping area. While not common due to the water depth and the generally unavailability of contemporary hydrographic surveys, all new hydrographic survey data shall be applied within an area designated as a Dumping Area.

Symbolization A *DISUSED* Chemical Munitions Dumping Area shall be shown by a magenta dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

Location A *DISUSED* Chemical Munitions Dumping Area shall be located in its officially published geographic position.

Size and Shape A *DISUSED* Chemical Munitions Dumping Area shall conform to the shape of the feature it is demarking.

There are no minimum size specifications for *DISUSED* Chemical Munitions Dumping Areas. All currently charted *DISUSED* Chemical Munitions Dumping Areas exceed the standard “greatest dimension” criteria.

Orientation A *DISUSED* Chemical Munitions Dumping Area that conforms to the size and shape of a feature is by definition correctly oriented.

Labels and Note

Labels A label shall be added in magenta to identify the area in 7 point Swiss Light Italic type. **Note that the the charted label is not enclosed by parentheses.**

There is one (1) standard label for a *DISUSED* Chemical Munitions Dumping Area. The label is:

CHEMICAL MUNITIONS DUMPING AREA DISUSED (see note _)

Labels are **ALL** capital letters, **EXCEPT** for the reference to the associated note (i.e., *see note _*). The black underbar represents a variable uppercase alphabetical character identical to the standard note associated with the *DISUSED* Chemical Munitions Dumping Area.

OR, when space within a Dumping Area is limited, the type may be stacked. Individual elements of the label are centered vertically when the label is stacked.

*CHEMICAL MUNITIONS
DUMPING AREA DISUSED (see note _)*

EXCEPTION: When the areal dimension of a Dumping Area is extremely large at chart scale, the label shall not be charted multiple times. Charting the label multiple times serves no practical purpose and may obscure other navigational detail. The label shall be charted with a size appropriate to the feature being charted and the scale of the chart. The maximum type size shall not exceed 10 point Swiss Light Italic.

Location of Labels The label for a *DISUSED* Chemical Munitions Dumping Area shall be located inside the limits of the feature. When the label can not be located within the limits of the area, it shall be placed adjacent to the feature so that the mariner will readily associate the label with the charted feature. The use of an arrow or leader to associate a label with a charted dumping area is discouraged.

Associated Note for *DISUSED* Chemical Munitions Dumping Areas: The following note shall be placed on charts containing a U.S. Navy (Department of Defense) Chemical Munitions Dumping Area that is classified as (*DISUSED*).

The note shall be in 7 point Swiss Light type, 2" (Preferred) or 3 ½" (Optional) wide, and in magenta. The black underbar represents a variable uppercase alphabetical character identical to the charting label reference.

NOTE _
 CHEMICAL MUNITIONS DUMPING
 AREA – RESTRICTION
 Site was formerly used or designated for U.S.
 Chemical munitions dumping. Such use has been
 discontinued. Designation of such area in no way
 constitutes authority for dumping.
 NOTE _
 CHEMICAL MUNITIONS DUMPING AREA – RESTRICTION
 Site was formerly used or designated for U.S. Chemical munitions dumping. Such use has
 been discontinued. Designation of such area in no way constitutes authority for dumping.

Line Type and Weight A *DISUSED* Chemical Munitions Dumping Area shall be symbolized with a magenta dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

Color and Screening

Color: A *DISUSED* Chemical Munitions Dumping Area shall **ALWAYS** be symbolized in magenta. **ALL** labels shall be in magenta.

Screening: Not applicable.

Feature Recommendation for a Notice to Mariners Not applicable. The use of these areas was discontinued in 1971. For all practical purposes, these features shall be considered permanent.

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**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

CARTOGRAPHIC ORDER 008/04

April 1, 2004

**FILE WITH NAUTICAL CHART MANUAL, VOLUME 1, PART 1, SECTION 4.14.5.3,
4.14.5.3.1, 4.14.5.3.2 and 4.14.5.3.3**

TO: All Cartographers
Marine Chart Division

SUBJECT: Section 4.14.5.3 U. S. Army Corps of Engineers (USACE) - Established
Dumping Areas and 4.14.5.3.2 Disposal Areas

APPLICATION: All Affected Nautical Charts

Effective immediately, the following attachment replaces Pages 4-269 and 4-272 of the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition with revised Pages 4-267.50 through 4-272.

Pages 4-267.50 and 4-267.51 have been added to provide an introductory section to U. S. Army Corps of Engineers dumping areas.

Section 4.14.5.3.2 provides enhanced uniform specifications for charting U. S. Army Corps of Engineers Disposal Areas on NOS nautical charts.

Sections 4.14.5.3.1 and 4.14.5.3.3 have reformatted with minor revisions.

Attachment

James C. Gardner
Captain, NOAA
Chief, Marine Chart Division

4.14.5.3 U.S. Army Corps of Engineers (USACE) - Established Dumping Areas

These areas should not be confused with “Department of the Navy (DOD) - Established Dumping Areas”. See [Section 4.14.5.2](#).

“227.13 Dredged materials.

(a) Dredged materials are bottom sediments or materials that have been dredged or excavated from the navigable waters of the United States, and their disposal into ocean waters is regulated by the U. S. Army Corps of Engineers using the criteria or applicable sections of parts 227 and 228. Dredged material consists primarily of natural sediments or materials which may be contaminated by municipal or industrial wastes or by runoff from terrestrial sources such as agricultural lands.

(b) Dredged material which meets the criteria set forth in the following paragraphs (b)(1), (2), or (3) of this section is environmentally acceptable for ocean dumping...”(Source: 40 CFR 227.13)

The U.S. Army Corps of Engineers (USACE) has authority to establish dumping areas in the navigable waters of the United States with the approval of the Environmental Protection Agency (EPA). These dumping areas are classified variously as Spoil Areas, Disposal Areas or Dumping Grounds.

See [Section 4.14.5.3.1](#), “**Spoil Areas**”.

Content = Dredged material only

See [Section 4.14.5.3.2](#), “**Disposal Areas**”.

Content = Dredged material only

See [Section 4.14.5.3.3](#), “**Dumping Grounds**”.

Content = Dredged material **AND** various types of other materials [e.g., wreckage (not wrecks) , building materials]

Section 4.14.5.3

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Many Spoil Areas, Disposal Areas and Dumping Grounds established and charted prior to Environmental Protection Agency (EPA) authority for approval (1977) have since been discontinued by EPA. See Section 4.14.5.1, [“Environmental Protection Agency \(EPA\) - Established Dump Sites”](#), [“Initial Establishment of Dump Sites”](#) and [“Conversion of Pre-1977 Dumping Grounds and Disposal Areas”](#).

In accordance with U. S. Army Corps of Engineers and Environmental Protection Agency regulations, the following procedures shall apply when charting USACE-regulated dumping areas.

(The remainder of this page is intentionally blank.)

4.14.5.3.1 Spoil Areas

Definition: **SPOIL AREA.** Area for the purpose of disposing dredged material, usually near dredged channels. Spoil areas are usually a hazard to navigation and navigators should avoid crossing these areas. Spoil areas are shown on nautical charts. See also [DISPOSAL AREA](#), [DUMPING GROUND](#), [DUMP SITE](#). Also called SPOIL GROUND. [\[1\]](#)

Associated Definitions:

SPOIL. Mud, sand, silt or other deposit obtained by dredging, excavating, mining, etc. [\[17\]](#)

SPOIL BANKS. Submerged accumulations of dumped material dredged from channels or harbors. [\[17\]](#)

SPOIL GROUND. See SPOIL AREA. [\[1\]](#)

Spoil areas are established for the disposal of dredged material removed from a bottom of channels and harbors during dredging operations. They are generally located near and parallel to the dredged channel and are potentially dangerous to navigation.

Most spoil area limits are derived from after-dredging surveys provided by the USACE, though they may originate from other Government agency surveys or private sources.

Spoil Areas ([N 62.1](#))

Spoil areas shall be shown by a black dashed line (0.2/2.0/0.75 mm) delineating the extent of the spoil, a label “*Spoil Area*”, with blue tint Nol 1 added to accentuate their potentially hazardous nature. [Soundings](#) and [depth curves](#) shall be omitted within spoil area limits. All new or revised [submarine cables](#) and [submarine pipelines](#) located within or traversing a charted Spoil Area shall be charted. Currently charted submarine cables and submarine pipelines that terminate at the limiting edge of a charted Spoil Area shall be researched and reapplied. All [wells](#) located within a charted Spoil Area shall be charted. Islets and areas bare at mean lower low water shall be charted.

When a spoil area is determined to be inactive, it shall be retained on the chart and labeled “*Discontinued Spoil Area*” until a new survey is available for charting hydrography in the area.

Labels shall be shown in black 7 point Swiss Light Italic type, capital and lowercase letters, with size appropriate to the feature being charted and the scale of the chart.

4.14.5.3.2 Disposal Areas

Definition: **DISPOSAL AREA.** Area designated by the Corps of Engineers for depositing dredged material where existing depths indicate that the intent is not to cause sufficient shoaling to create a danger to surface navigation. Disposal areas are shown on nautical charts. See also [DUMPING GROUND](#), [DUMP SITE](#), [SPOIL AREA](#). [1]

Disposal Areas, like Spoil Areas, are established by the U. S. Army Corps of Engineers (USACE) for the purpose of disposing of dredged materials. However, Disposal Areas are located further offshore and in deeper water where, as the definition above indicates, “the intent is not to cause sufficient shoaling to create a danger to surface navigation.”. From a charting standpoint, the charting specifications for a U. S. Army Corps of Engineers (USACE) Disposal Area closely resemble those of an Environmental Protection Agency (EPA) Dump Site. See [Section 4.14.5.1](#), “**Environmental Protection Agency (EPA) - Established Dump Sites**”. Differences between the charting of a U. S. Army Corps of Engineers (USACE) Disposal Area and an Environmental Protection Agency (EPA) Dump Site include the following:

- (1) the establishing authority (USACE vis-a-vis the EPA),
- (2) the type of source [historically, U. S. Army Corps of Engineers (USACE) permits, the Federal Register (FR), the Code of Federal Regulations (CFR), Local Notice to Mariners (LNMs), and graphic after-dredge/condition surveys provided by the U. S. Army Corps of Engineers (USACE)] vis-a-vis the Code of Federal Regulations),
- (3) Feature Name label (Disposal Area vis-a-vis Dump Site),
- (4) Primary Use of the Area

Disposal Area = **ALWAYS** dredged material, a Primary Use label is **NEVER** charted

vis-a-vis a

Dump Site = variable material, Primary Use label **ALWAYS** charted

- (5) a Disposal Area does not have an associated note vis-a-vis a Dump Site, i.e., (see note S)

The following specifications for a Disposal Area are provided in their entirety. The format and content are similar to the specifications of an Environmental Protection Agency (EPA) Dump Site with the previous exceptions (differences) incorporated into the text as and where necessary for a Disposal Area.

Disposal Areas shall be charted in **ALL** cases where hydrography and other navigational detail are shown in the area.

There are two primary components of a charted Disposal Area: (1) the charting authority (USACE) which establishes, revises or discontinues the site, including the geographic limits of the site, and (2) whether or not hydrography is charted within the limits of the designated area. These two components determine the feature symbolization, location and the composition of the charted label(s).

Newly Established Disposal Areas

Historically, most currently charted Disposal Area limits have been derived from U. S. Army Corps of Engineers (USACE) permits, the Federal Register (FR), the Code of Federal Regulations (CFR), Local Notice to Mariners (LNMs), and graphic after-dredge/condition surveys provided by the U. S. Army Corps of Engineers (USACE). The controlling principle is that a Disposal Area **MUST** be established and approved by the cognizant government agency - the U. S. Army Corps of Engineers (USACE).

Reports from non-authoritative sources (any source other than the USACE) shall be forwarded to the Nautical Data Branch for confirmation by the U. S. Army Corps of Engineers.

Geographic Limits:

The geographic limits of a Disposal Area are provided to the National Ocean Service in the form of either (1) Geographic Positions, or (2) as a graphic.

(1) From Published Geographic Positions - A newly established Disposal Area shall be located in its officially published geographic position.

A numeric State Plane Coordinate contained (provided) in an analog source document that requires only conversion to a geographic position is considered to be the equivalent of a published geographic position.

(2) From Graphic Source - A newly established Disposal Area located from a graphic source document shall be charted in its exact geographic position.

A State Plane Coordinate scaled (derived) from a graphic source document and then converted to a geographic position is not considered to be the equivalent of a published geographic position.

Symbolization - See [“Symbolization”](#).

Hydrography - All hydrography and tints currently charted within the limits of a newly established Disposal Area shall be retained. All new hydrographic survey data shall be applied within an area designated as a Disposal Area, unless the charted Disposal Area is located in an area where hydrography and other navigational detail is not shown.

A newly established Disposal Area not containing charted hydrography (generally blue tint) shall remain as charted until new hydrographic survey data is received.

When supported by new hydrographic survey data, hydrography shall be charted in the Disposal Area and the existing label reformulated in accordance with the labeling specifications contained in “Labels and Note”.

Labeling - See [“Labels and Note”](#).

Revisions to Charted Disposal Areas

Revisions to a charted Disposal Area are precipitated either: (1) from the charting authority, the U. S. Army Corps of Engineers (USACE), or (2) based on the revision of charted hydrography.

Charting Authority, U. S. Army Corps of Engineers (USACE)

Revisions to an established Disposal Area are generally transmitted to the National Ocean Service from after-dredging/condition surveys provided by the U. S. Army Corps of Engineers, though they may originate from other types of sources from the U. S. Army Corps of Engineers. Reports from non-authoritative sources (any source other than the USACE) shall be forwarded to the Nautical Data Branch for confirmation by the U. S. Army Corps of Engineers. Revisions include changes in: (1) the geographic limits, and (2) the status [from active to (discontinued)].

(1) Geographic Limits:

Existing charted Disposal Area limits which are superseded by new limits shall be removed when they are completely **enclosed by** the new limits. This is consistent with the procedure(s) originally established for the “Conversion of Dumping Grounds and Disposal Areas to EPA Dump Sites”. Any revision to the areal limits of a charted Disposal Area requires a re-evaluation of the date of the charted hydrography label, (i.e., the “*Depths from survey of*” label).

When the “old” area limits are not specifically superseded, or more commonly, portions of the “old” area limits are located outside the limits of the “new” Disposal Area limits, the Nautical Data Branch shall be notified for confirmation and clarification by the U. S. Army Corps of Engineers. Any revision to the areal limits of a charted Disposal Area requires a re-evaluation of the date of the charted hydrography label, (i.e., the “*Depths from survey of*” label).

Nonoverlapping portions or detached areas created by the charting of new limits (and not specifically superseded) shall be retained. Any, or all, of the retained area(s) must be individually re-evaluated for required labeling and specifically the content of the label.

(2) Status: [from active to (discontinued)], See [“Discontinuance and Removal of Disposal Areas”](#).

Charted Hydrography

All new hydrographic survey data shall be applied within an area designated as a Disposal Area, unless the charted Disposal Area is located in an area where hydrography and other navigational detail is not shown. It should be noted that the existence of a Disposal Area has no impact/effect on the charting, or not charting, of hydrography within the areal dimensions of a Disposal Area. Hydrography within the limits of a charted Disposal Area is independent of the symbolized feature. Soundings, depth curves and associated tints are applied as if the Disposal Area were non-existent. There are, however, two linkages **WHEN** hydrography is charted within a Disposal Area. They are:

- (1) the composition and content of the charted label of the Disposal Area, and
- (2) the deletion of a charted Disposal Area that has been discontinued

A symbolized Disposal Area, once charted, is generally stable and rarely subject to change. Changes occur most frequently when USACE revisions of charted hydrography within the limits of a Disposal Area precipitate changes to the charted label. The specifications contained in [“Labels and Note”](#) delineate the differences and provide detailed charting specifications for the composition and content of the charted label.

Special/Unique Requirements for U. S. Army Corps of Engineers Surveys

(That Depict Disposal Areas on the Survey Background Base)

U. S. Army Corps of Engineers condition surveys are the primary source for charting and revising hydrography within Disposal Areas. These graphic surveys are registered by the Nautical Data Branch as Blueprints. The purpose of these surveys is to provide hydrographic data for charting. The following section delineates additional special/unique requirements and recommended procedures for resolving any differences **WHEN** a Disposal Area is contained on the source document.

Background

U. S. Army Corps of Engineers graphic hydrographic survey data is typically displayed on a standard analog background base. The purpose of a background base is to act as the medium for conveying the superimposed hydrographic data. Background bases usually contain other features that are commonly shown on nautical charts and may include high water line, channels, Spoil Areas, etc. Disposal Areas may also be displayed on these bases. The date(s) that the survey(s) was/were conducted, applicable state plane grid information and other pertinent information is generally contained in the title block of the survey. This/these date(s) refer **ONLY** to the survey date of the hydrography and not to the other features that comprise the background base. Features (except hydrography) depicted on background bases are usually added to the base when the base was originally constructed. These other features are in fact part of the background base. Once constructed, a background base is not normally subject to revision and consequently neither are these other features depicted on the original base. The background base (unrevised) is used repetitively to display current hydrographic data. The title block is also amended to reflect the date(s) the current survey was conducted. Again, the only purpose of the background base is to serve as a medium for conveying the hydrographic data.

Standard background bases may be repetitively used for an extended period of time. In certain instances multiple, but geographically different, background bases may be alternately used. New background bases are generated on an infrequent basis that may extend over a multi-year time frame. Unfortunately, due to the extended use of these background bases, other features comprising the background base may not always match or reflect the current updated nautical chart. Generally, there

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is/are no date(s) associated with the “time origin” of the background base. Occasionally, when an imagery background is used, there may be a date referencing the date of the imagery. However, this has no impact on the existence or non-existence of a Disposal Area which is below all water levels.

When applying U. S. Army Corps of Engineers surveys there are four (4) possible conditions or scenarios that may exist, in respect to a Disposal Area, when comparing the survey and the corresponding nautical chart. Any differences routinely require further investigation and resolution. Each scenario is listed below with the required action necessary to resolve any differences between the survey and the nautical chart.

- (1) A Disposal Area is on the current nautical chart and not on the survey.

No Charting Action. The purpose of the U. S. Army Corps of Engineers survey is to provide hydrographic data for charting. Existing Disposal Areas may or may not be on a U. S. Army Corps of Engineers survey as part of the background base. Differences between a survey and a nautical chart are required **WHEN** a Disposal Area is depicted on the survey and not on the current nautical chart.

- (2) A Disposal Area on the survey matches the depiction on the current nautical chart.

No Charting Action.

- (3) The configuration of a Disposal Area on the survey is different than the depiction on the current nautical chart.

No correction to the chart. The chart shall not be revised to match the portrayal of the Disposal Area on the survey. While the survey is not the source for charting/revising of a Disposal Area, the differences in the configuration of the Disposal Area **MUST** be resolved to ensure that the current nautical chart is correct.

There are three (3) similar but slightly different methods.

Method (A): Examine the current Standard to determine if any yet unapplied source document(s) exist that affect the configuration of the currently charted Disposal Area. **WHEN** an applicable source document(s) exists, it/they should be immediately applied to the chart and the resulting portrayal re-evaluated in comparison to the U. S. Army Corps of Engineers survey. If differences still remain unresolved, proceed to Method (B).

Method (B): This method is used **WHEN** it is suspected that this same issue has previously occurred on prior documents/surveys and is due to the repetitive use of the background base, as previously discussed. Examine the Standard(s) and/or Histories of Cartographic Work to determine prior U. S. Army Corps of Engineers surveys covering the area of the Disposal Area.

Historically, when this same type of condition existed on prior U. S. Army Corps of Engineers source document(s) and was previously resolved, the prior source document(s) was/were annotated with a handwritten annotation concerning a resolution. That annotation should have been signed and dated by personnel of the Nautical Data Branch. When this is the case, the current source containing the different configuration of the Disposal Area should be returned to the Nautical Data Branch. The Nautical Data Branch shall annotate the current source (carry forward the annotation) with the prior annotation.

WHEN the prior annotation indicates that there was a charting action, there usually is another source document that must be independently examined. **WHEN** no prior annotation is indicated use Method (C)

Method (C): Examine the Standard(s) and/or Histories of Cartographic Work to determine the specific source document for charting the Disposal Area. This source will be a citation from the U. S. Army Corps of Engineers. Ensure that the document was properly applied to the nautical chart. **WHEN** a difference still remains, the issue with all supporting materials should be returned to the Nautical Data Branch for resolution. The U. S. Army Corps of Engineers is the authoritative source for charting/revising a Disposal Area.

(4) A Disposal Area on the survey is not on the current nautical chart.

No correction to the chart. The chart shall not be revised to match the portrayal of the Disposal Area on the survey. However, the identical methods delineated in item (3) above **MUST** be employed to resolve any differences.

The following three sections deal with the discontinuance and removal of a Disposal Area.

Discontinuance and Removal of Disposal Area

The removal of a charted Disposal Area is normally a two step process.

- (1) the Disposal Area is discontinued by the U. S. Army Corps of Engineers, See “Discontinued Disposal Areas” **AND**
- (2) new hydrographic survey data more recent than the discontinued date of the Disposal Area has been applied to the chart. See [“Feature Removal from Chart”](#).

A charted active Disposal Area shall not be removed until the responsible establishing authority (USACE) designates or provides documentation that the Disposal Area is no longer active (see Discontinued Disposal Areas) **AND** when such removal is supported by new hydrographic survey data (see Feature Removal from Chart). **Note that discontinued does not necessarily mean that the feature should be removed from the chart at that time.** Removal is **ALWAYS** contingent on new hydrographic survey data that:

- (1) has a survey date more recent than the discontinued date of the Disposal Area. The date the Disposal Area was discontinued is determined by researching the original source document that changed the status of the Disposal Area from active to discontinued and extracting the **“effective” date**, and
- (2) the coverage of the new hydrographic survey data completely encompasses the areal dimensions of the Disposal Area.

Generally, when a Disposal Area is discontinued, it is not accompanied by a “post-discontinuance” condition survey. Receipt of such a survey may take months or years. Because of this condition, the process of removing a Disposal Area has been separated into two distinct sequential steps. They are: (1) “Discontinued Disposal Areas”, and (2) “Feature Removal from Chart”.

Reports from non-authoritative sources (any source other than the USACE) indicating that a Disposal Area has been discontinued, removed, etc. shall be forwarded to the Nautical Data Branch for confirmation by the U. S. Army Corps of Engineers. A charted Disposal Area shall not be revised from a non-authoritative source.

The removal of a Disposal Area is normally a two step process.

- (1) the Disposal Area is discontinued by the USACE, See [“Discontinued Disposal Areas”](#)
AND
- (2) new hydrographic survey data more recent than the discontinued date of the Disposal Area has been applied to the chart. See [“Feature Removal from Chart”](#).

Discontinued Disposal Areas

A change in the status (from active to discontinued) of an existing Disposal Area is generally transmitted to NOS through a Chart Letter (USACE source) but may be contained on a USACE Survey Blueprint as a label. A change of status appearing on a USACE Blueprint shall be forwarded to the Nautical Data Branch for confirmation by the USACE. The USACE response is generally annotated (signed and dated) on the specific Blueprint by Nautical Data Branch personnel. See also the previous section, [“Special/Unique Requirements for U. S. Army Corps of Engineers Surveys \(That Depict Disposal Areas on the Survey Background Base\)”](#).

A discontinued Disposal Area and associated labeling shall not be removed until new hydrographic survey(s) data, generally USACE, NOS or equivalent, of the area is available for chart updating. The date(s) of the hydrographic survey(s) **MUST** be more recent than the date that the Disposal Area was discontinued and provide complete hydrographic coverage. See also, [“Feature Removal from Chart”](#).

A Disposal Area designated as discontinued, **WITHOUT** new hydrographic survey data, requires **ONLY** the addition of an additional label. The limits of the Disposal Area and the charted hydrography shall be retained as charted.

When the status of a charted Disposal Area is revised from active to discontinued, the label (discontinued) shall be added to the existing charted label immediately after (below) the charted Feature Name label. [Figure 4.14.5.1-1](#) and [Figure 4.14.5.1-2](#) illustrate this basic revision. See [“Labels and Note”](#) for labeling requirements.

*Disposal Area
Depths from survey of 2001*

Figure 4.14.5.1-1
Typical Label for an Active Disposal Area

*Disposal Area
(discontinued)
Depths from survey of 2001*

Figure 4.14.5.1-2
Corresponding Label for a Discontinued Disposal Area
(**WITHOUT** new hydrographic survey data)

When the survey date of the hydrography is **prior to the date that the Disposal Area was discontinued**, the hydrography shall be revised and the “*Depths from survey of*” label revised. See “Revisions to Charted Disposal Areas, [Charted Hydrography](#)”. The Disposal Area shall not be removed from the chart.

The date the Disposal Area was discontinued is determined by researching the original source document that changed the status of the Disposal Area from active to discontinued and extracting the “effective” date.

Feature Removal from Chart

When a Disposal Area is/has been discontinued by the USACE, the Disposal Area and associated labeling shall be removed from the **chart contingent on** receipt and application of new hydrographic survey data. This presumes that the coverage of the survey(s) encompasses the areal limits of the charted Disposal Area.

The date the Disposal Area was discontinued is determined by researching the original source document that changed the status of the Disposal Area from active to discontinued and extracting the “effective” date.

When the date of a hydrographic survey(s) is **NOT** more recent than the discontinued date of the Disposal Area, the Disposal Area can not be removed from the chart. However, the hydrography contained on the survey shall be applied to the chart and the depth label “*Depths from survey of*” revised according to the specification. See previous section, [“Discontinued Disposal Areas”](#).

When the date of a hydrographic survey(s) **IS** more recent than the discontinued date of the Disposal Area, the area limit and all associated labeling shall be removed from the chart. This presumes that the coverage of the survey(s) encompasses the areal limits of the charted Disposal Area.

Relationship of Disposal Areas to Other Nautical Chart Features

The existence of a Disposal Area has no impact/effect on the charting, or not charting, of any other nautical chart feature.

The most common relationship between a Disposal Area and other nautical chart features is with charted hydrography. As noted earlier, “the existence of a Disposal Area has no impact/effect on the charting, or not charting, of hydrography within the areal dimensions of a Disposal Area. Hydrography within the limits of a charted Disposal Area is independent of the symbolized feature. Soundings, depth curves and associated tints are applied as if the Disposal Area were non-existent. There are, however, two linkages **WHEN** hydrography is charted within a Disposal Area. See **Charted Hydrography**.

Note that the above relationship is in only one direction. The Disposal Area has no effect on hydrography. However, the existence of hydrography within the areal limits of a charted Disposal Area effects the composition and content of the charted label associated with the Disposal Area and the deletion of a charted Disposal Area that has been discontinued.

Symbolization: A Disposal Area shall be shown by a black dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

Location: A Disposal Area shall be located in its officially published geographic position or when located from graphic source in its exact geographic position.

When a minimum size symbol is used to represent a Disposal Area, the minimum size symbol shall be centered on the exact geographic position of the feature it represents. See [“Size and Shape”](#).

Size and Shape: A Disposal Area shall conform to the shape of the feature it is demarking.

Minimum Size Symbol: On small-scale charts, it may be necessary to use a minimum size symbol; a 2.0 mm dashed square. The 2.0 mm dashed square shall **ALWAYS** be used when the greatest dimension of the Disposal Area is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape. **A controlling depth shall be charted** within the limits of the Disposal Area when hydrography and other navigational detail are shown in the area.

Orientation: A Disposal Area that conforms to the size and shape of a feature is by definition correctly oriented.

A Disposal Area that is exaggerated to the minimum size symbol shall be oriented to the baseline of the specific chart piece.

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Labels and Note:

Specifications for the formulation of the charting label of a Dump Site and a Disposal Area are identical **EXCEPT** for the Feature Name, the additional Primary Use label for a Dump Site and the Note S requirement for a Dump Site.

There are two (2) standard components of the label of a charted Disposal Area and one (1) additional label (a status qualifier) when the status of the Disposal Area (Feature Name) is discontinued. The components of the label are listed and charted in the following vertical sequence:

- (1) Feature Name label, **always** *Disposal Area*
The charted label “*Disposal Area*” presumes an active status.
 - (1a) Status qualifier, **always** (*discontinued*), when required
- (2) “*Depths from survey of...*” label, **charted when** hydrography is charted within a Disposal Area, variable content.

The following example illustrates the use of all the various label components of a charted Disposal Area.

Disposal Area
(discontinued)
Depths from survey of 2001

Figure 4.14.5.3.2-3
Standard Label Components of a Disposal Area

Labels: A label shall be added in black to identify the area in 7 point Swiss Light Italic type. Component labels are centered vertically. See also the following section, [“Collective Label”](#).

EXCEPTION: When the areal dimension of a Disposal Area is extremely large at chart scale, the label shall not be charted multiple times. Charting the label multiple times serves no practical purpose and may obscure other navigational detail. The label shall be charted with a size appropriate to the feature being charted and the scale of the chart. The maximum type size shall not exceed 10 point Swiss Light Italic.

Example of a complete label (without status qualifier) for an active Disposal Area:

Disposal Area
Depths from survey of 2001

Figure 4.14.5.3.2-4
Disposal Area Label
Status = Active

Example of a complete label **with status qualifier** (a discontinued Disposal Area):

Disposal Area
(discontinued)
Depths from survey of 2001

Figure 4.14.5.3.2-5
Disposal Area Label
Status = Discontinued

[Figure 4.14.5.3.2-6](#) is an example of a complete label for a Disposal Area with no charted hydrography (generally blue tint) resulting from a newly established Disposal Area located in an area with no charted hydrography. Note that the only difference is that the “*Depths from survey of*” label has been omitted because there is no charted hydrography.

Disposal Area

Figure 4.14.5.3.2-6
Disposal Area Label
Status = Active, No Charted Hydrography

The remainder of this section provides the specifications and charting options for the labeling of a Disposal Area. In each example, a complete charted label is illustrated. **The specific component of the label being illustrated is in BOLD type.** The numeric paragraph numbers (1), (1a) and (2) are linked to the numbering scheme provided at the beginning of this section, Labels and Note.

(1) Feature Name label designating the area a Disposal Area. The Feature Name label is capital and lowercase letters. The first letter of each word is capitalized.

Disposal Area
Depths from survey of 2001

Figure 4.14.5.3.2-7
Feature Name Label
Status = Active

(1a) Feature Name label with Status qualifier (*discontinued*). Disposal Areas are charted as either: (1) active, or (2) discontinued. An active Disposal Area contains only the Feature Name label “*Disposal Area*” as illustrated in the previous example. An active status is presumed. A discontinued Disposal Area contains the feature name label “*Disposal Area*” and the status qualifier “(*discontinued*)”. The status qualifier label is always lowercase letters, enclosed by parentheses and immediately follows the Feature Name label.

Disposal Area
(discontinued)
Depths from survey of 2001

Figure 4.14.5.3.2-8
Feature Name Label with
Status Qualifier (*discontinued*)

(2) “*Depths from survey of*” label - determined by researching the source(s) of the charted hydrography and extracting the survey date(s). The date of the hydrography within a Disposal Area shall be charted, unless the charted Dump Site is located in an area where hydrography and other navigational detail is not shown. Multiple surveys and/or survey dates affect the format of the basic label (*Depths from survey of*) and are discussed below.

The “*Depths from survey of....*” label shall not be charted when hydrography is not charted within the area limits of a Disposal Area. See [Figure 4.14.5.3.2-6](#). The label shall be charted when new hydrographic data is applied to the chart.

The format and content of the label is determined by the number of surveys and the associated survey date(s). The “*Depths from survey of*” label is a combination of two elements:

- (1) the alphabetical element, and
- (2) the numeric date element

Alphabetical Element:

Specifications for the formulation of the Alphabetical Element component of the “*Depths from survey of....*” label are identical to those for a Dump Site.

By convention, even when just one sounding is charted within the limits of a Disposal Area, the first word Depths is always plural. The label is always lowercase letters, **EXCEPT** for the first letter (*D*), which is always a capital letter.

There are six (6) possible combinations based on the number of surveys and the associated survey date(s) for the Alphabetical Element of the label. The combinations below also incorporate the resultant “Numeric Date Element” for each condition. Note that when only one survey is applicable, the alphabetical element is “*Depths from survey of*” or “*Depths from survey of-....*”, depending on whether a single hydrographic survey was conducted in just one or possibly over two calendar years, respectively. For all other instances the Alphabetical Element is identical, **EXCEPT** that the word survey is revised to the plural surveys, “*Depths from surveys of*” or “*Depths from surveys of-....*”.

Possible combinations are, when charted hydrography originates from:

- (1) A single survey, conducted within one calendar year

Example: *Depths from survey of*

- (2) A single survey, conducted during two different calendar years

Example: *Depths from survey of-....*

- (3) Two or more surveys conducted within the same calendar year

Example: *Depths from surveys of*

- (4) Two surveys conducted during different calendar years

Example: *Depths from surveys of-....*

- (5) More than two surveys conducted during two different calendar years

Example: *Depths from surveys of-....*

- (6) More than two surveys conducted during more than two different calendar years

Example: *Depths from surveys of-....*

Therefore,

When charted hydrography originates from only one survey, the alphabetical element of the label is always “*Depths from survey of....*” or “*Depths from survey of-....*”, contingent on whether the hydrographic survey was conducted during one calendar year or possibly over two calendar years (i.e., July 2000, or December 1999 through January 2000, respectively).

In ALL other circumstances, the alphabetical element of the label is always the plural “*Depths from surveys of*” or “*Depths from surveys of-....*”.

Section 4.14.5.3.2

NAUTICAL CHART MANUAL

Numeric Date Element: See also the previous section, “Alphabetical Element”, for combinations of the number of hydrographic survey(s) and associated survey date element(s).

Specifications for the formulation of the Numeric Date Element component of the “*Depths from survey of...*” label are identical to those for a Dump Site.

- (1) Year dates are expressed **ONLY** as the complete four-digit calendar year (i.e., 1999)

Calendar months are not charted

Numeric day(s) of the month are not charted

- (2) When surveys from two different calendar years are applicable, the numeric date element of the label shall consist of the complete four-digit calendar year of each survey - separated by a hyphen (dash).

The oldest survey date is **ALWAYS** listed first

- (3) When surveys from three or more different calendar years are applicable, the date element of the label shall consist of the complete four-digit calendar year of **ONLY** the oldest and most recent surveys - separated by a hyphen (dash).

The oldest survey date is **ALWAYS** listed first

Interim calendar year date(s) is/are **ALWAYS** omitted

The following examples illustrate the various options for formulating the “*Depths from survey of ...*” label for a Disposal Area.

Examples:

A Disposal Area where the charted hydrography originates from a single survey conducted within one calendar year.

Survey date of the source document is 28 April 2001

Use the four-digit calendar year only, i.e. 2001

Depths from survey of 2001

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A Disposal Area where the charted hydrography originates from a single survey conducted during two different calendar years (unusual circumstance).

Survey date of the source document is 28 December 2000 and 3 January 2001

Use the four-digit calendar year only, i.e. 2000 and 2001

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from survey of 2000-2001

A Disposal Area where the charted hydrography originates from two or more surveys conducted within the same calendar year.

Survey dates of the source documents are 11 January 2001, 28 April 2001 and 21 May 2001 - ALL within the same calendar year.

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar year only, i.e. 2001

Depths from surveys of 2001

A Disposal Area where the charted hydrography originates from two surveys conducted during different calendar years.

Survey dates of the source documents are 11 January 1999 and 28 April 2001

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar years only, i.e. 1999 and 2001

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from surveys of 1999-2001

Examples (continued):

A Disposal Area where the charted hydrography originates from more than two surveys conducted during two different calendar years. This is a slight variation of the previous example. Note that the charted label is the same as in the prior example.

Survey dates of the source documents are 11 January 1999, 28 April 2001 and 21 May 2001

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar years only, i.e. 1999 and 2001

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from surveys of 1999-2001

A Disposal Area where the charted hydrography originates from more than two surveys conducted during more than two different calendar years.

Survey dates of the source documents are 15 June 1995, 11 January 1999 and 28 April 2001

The singular “survey” is revised to the plural “surveys”

Use the four-digit calendar years for only the oldest survey and most recent survey, i.e. 1995 and 2001 (interim dates, i.e. 1999, are not included)

The oldest survey date is always presented first

The dates are separated by a hyphen

Depths from surveys of 1995-2001

Collective Label (Alternative Labeling)

On smaller scale charts, a collective (single) label may be used to identify multiple proximate symbolized Disposal Areas. Using a collective label provides a degree of simplification, reduces the redundant clutter of identical labels and still retains the identity of charted features.

Generally, Disposal Areas are charted on the full range of nautical charts. This includes smaller scale charts, in areas of blue tint, with no charted hydrography. The purpose of charting these features is to provide the mariner with a general configuration of the area in the vicinity of major entrance channels. Charting these areas also provides additional emphasis to the mariner of the need to use a larger scale chart when entering or transiting these areas.

Multiple Disposal Areas may be symbolized to scale or as a minimum size symbol. Typically, on smaller scale charts, individual Disposal Areas are symbolized and labeled with the minimum label “*Disposal Area*” (See [Symbolization](#)). Whether a Disposal Area is charted to scale or as a minimum size symbol has no bearing on the use of a collective label.

WHEN the following conditions exist, individual labels may be combined into one collective label. The only modification is that the singular Feature Name label “*Disposal Area*” is revised to the plural “*Disposal Areas*”.

- (1) Identical Labels: The charted content of individual Disposal Area labels **MUST** be identical. This requirement almost always limits the use of a collective label to smaller scale charts where the identical label criteria is equal to the minimum label.
- (2) Labeling Preference: A collective label is generally used when multiple individual labels are placed adjacent to charted features. An individual label that can be located inside the limits of a symbolized Disposal Area is not normally a candidate for a collective label.
- (3) Proximity: Multiple Disposal Areas that are charted in close proximity to each other and the use of a single collective label clearly identifies/associates a charted single label being applicable to each corresponding charted feature.
- (4) Clarity: It is imperative that a collective label used for identifying multiple Disposal Areas not be subject to confusion with other symbolized features, such as [Spoil Area](#) limits, which are also common along most major entrance channels and symbolized in the same manner.

Location of Labels: The label for a Disposal Area shall be located inside the limits of the symbolized feature. When the label can not be located within the limits of a Disposal Area, it shall be placed adjacent to the feature so that the mariner will associate the label with the charted feature. The use of an arrow or leader to associate a label with a charted Disposal Area is discouraged.

Notes: Not applicable

Line Type and Weight: A Disposal Area shall be symbolized with a black dashed limiting line (0.2/2.0/0.75 mm). (0.008/0.08/0.03 inches)

The minimum size symbol, a 2.0 mm dashed black square, shall be used on small scale charts. The 2.0 mm dashed black square shall always be used when the greatest dimension of the Disposal Area is 2.0 mm or less at chart scale. The square 2.0 mm dashed symbol shall be used even when the charted larger scale symbolization is circular or irregular in shape. A controlling depth shall be charted within the limits of the Disposal Area when hydrography and other navigational detail are shown in the area.

The line symbol shall be broken **ONLY** where it would cause confusion in the presentation of more important information.

Color and Screening:

Color: A Disposal Area shall **ALWAYS** be symbolized in black. **ALL** labels shall be in black.

Screening: Not applicable

Feature Recommendation for a Notice to Mariners: A newly applied, revised or deleted Disposal Area shall be evaluated for a Notice to Mariners.

(The remainder of this page is intentionally blank.)

4.14.5.3.3 Dumping Grounds

Dumping grounds are area designated by the USACE for dumping, by permit, various types of materials. Generally, dumping grounds are located well offshore in deep water.

Sources for dumping grounds are derived from USACE permits and from publication in the Federal Register, CFR, LNM, etc.

Dumping Grounds [\(N c\)](#)

Dumping ground area limits shall be shown by a black dashed line (0.2/2.0/0.75 mm).

When existing depths in dumping grounds indicate that future dumping will not cause sufficient shoaling to create a danger to navigation, soundings and depth curves shall be charted within the limits.

Blue tint No. 1 shall be added to a dumping ground when justified by the charted hydrography.

The label "Dumping Ground" shall be added inside the limits of the dumping ground. It shall be in black 7 point Swiss Light Italic type, capital and lowercase letters, with size appropriate to the feature being charted and the scale of the chart. When a dumping ground is determined to be inactive, it shall be retained on the chart and labeled "Discontinued Dumping Ground". The hydrography, if charted shall be retained. Dumping ground limits shall not be removed from the chart until a new survey done after all dumping has ceased is available for chart updating.

(The remainder of this page is intentionally blank.)

4.14.6 COLREGS Demarcation Line

Regulations designed to govern vessel operations in waters under the jurisdiction of the United States are divided into two categories, International Rules and Inland Rules. The International Rules are the result of the Convention on the International Regulations for Preventing Collisions at Sea, 1972, (COLREGS), 28 U.S.T. 3459 as amended. The Inland Rules are given in the Inland Navigational Rules Act of 1980 (Pub. L. 96-591, 94 Stat. 3415, 33 U.S.C. 2001, December 24, 1980) as amended. The regulations establishing the lines of demarcation delineating those waters upon which mariners shall comply with the international regulations and those waters upon which mariners shall comply with the inland rules are given in 33 CFR 80. These lines are referred to as COLREGS demarcation lines. The inland rules apply in waters inside the line and the COLREGS apply in waters outside of the line.

The USCG publishes International and Inland navigation regulations and rules in Navigational Rules, International Inland (COMDTINST M16672.2B). This publication cancels CG-169, Navigational Rules, International Inland; CG-169-1, COLREGS Demarcation Lines; CG-172, Rules of the Road, Great Lakes; and CG-184, Rules of the Road, Western Rivers.

COLREGS Demarcation Lines (N a)

The charting of COLREGS Demarcation Lines shall conform to the following procedures:

COLREGS lines shall be charted on all coastal series charts (1:150,000 and larger) and on other charts as needed using a magenta dashed line (0.2/2.0/0.75 mm).

The label "*COLREGS DEMARCATION LINE*" shall be placed along the line, either inside or outside, as space permits. The label shall be shown in magenta on each chart at least once at the geographic limits for each separate CFR-referenced section and subsection. The second line of the label shall be the CFR section number and the reference to Note A, e.g., "*80.325a (see note A)*". Note that the subsection letter is shown without a space or parenthesis. These labels shall be 6 pt. Swiss Light Italic.

Where labels cannot be placed along the COLREGS line, they may be placed on land and parallel to the chart base. Leaders may be used for clarification, but should be avoided, if possible.

Section 4.14.7

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Labels in other locations (especially where space is limited), where labeling may be critical (such as in an important navigational area,) or where it is otherwise necessary to emphasize the line shall be abbreviated "*COLREGS*". This abbreviated label shall be in 7 pt. Swiss Light Italic. The abbreviated label may be judiciously omitted (retaining only the symbolized line) where the labels would be extremely close together or where several short lines are shown close together.

An explanation of the term "*COLREGS*" shall be added to those charts that carry the Symbols and Abbreviations note and to which the COLREGS line is being applied. Just below the Symbols and Abbreviations note, the following shall be added:

COLREGS: International Regulations for Preventing Collisions at Sea, 1972.

Demarcation lines are shown thus:



Some charts that fall within the COLREGS area will be completely seaward of the line. This includes certain areas of New England, Florida, Puerto Rico, the Aleutians, and other areas. To these charts, the following note shall be added in lieu of the addition to the Symbols and Abbreviations note:

COLREGS, 00.000 (see note A)

International Regulations for Preventing Collisions at Sea, 1972.

The entire area of this chart falls seaward of the COLREGS Demarcation Line.

The entire area of this chart falls seaward of the COLREGS Demarcation Line. This note must be "customized" with the proper CFR section and subsection reference(s) and shall be printed in magenta, 3½" wide, in 7 pt. Swiss Light type.

Deviations from these procedures shall be coordinated through the Branch Chiefs.

4.14.7 Maritime Boundaries

The shoreline and the low water line are used as baselines for determining the various maritime boundaries described by geographic coordinates in legal references including the United States Code and the CFR. The nautical chart is the legal graphic authority for most of these boundaries.

REVISED APRIL 1, 2004

Charted maritime boundaries referenced to the low water line include the following:

- Three Nautical Mile Line
- Territorial Sea and Contiguous Zone (12 nautical miles)
- Natural Resources Boundary (3 leagues or 9 nautical miles; Texas, Florida - Gulf of Mexico coast, Puerto Rico)
- Exclusive Economic Zone (200 nautical miles)
- Magnuson Fishery Conservation and Management Act Amendments (Alaska fishing limits)
- Political boundaries
- Marine Sanctuaries
- National Seashores
- National Parks
- State Parks

Other boundaries that are referred to the low water line are not charted. These include maritime areas defined in the following U.S. laws:

- Outer Continental Shelf Lands Act
- Submerged Land Act
- Presidential Proclamation of September 28, 1945 (the Continental Shelf)
- Seagoing Barge Act
- Public Law 96-234 (lines of demarcation dividing the high seas and inland waters)
- Oil Pollution Act (1961)
- Coastal Confluence Zone

International Maritime Boundaries ([N 41](#))

International maritime boundaries are territorial delimiting lines in water areas established by agreement between adjacent and opposite nations.

International maritime boundaries on Chart 50, Chart 513, Chart 514, Chart 530, Chart 11301, Chart 16003 and Chart 18765 shall remain a solid black crossed dashed line until further information is received from the Chief Geographer.

The international maritime boundary symbol ([N 41](#)) shall be used on all other charts. The international maritime boundary symbol shall not be used to replace the [Exclusive Economic Zone](#) boundary line, the [Territorial Sea](#) boundary line, the [Three Nautical Mile](#) boundary line, the [Territorial Sea and Contiguous Zone](#) boundary line nor the [Natural Resources Boundary](#) limiting line.

Specifications:

The international maritime boundary shall be symbolized by a magenta line of alternating crosses and dashes (Chart No. 1, Symbol [N41](#)): cross 2.50mm wide, 1.25mm tall; space 1.25mm; dash 2.50mm wide; line weight 0.20mm.

Each nation's name shall be charted in magenta with capital letters at appropriate intervals with 8 point Swiss Italic along the international maritime boundary line. Every effort shall be made to align national names directly opposite each other on opposite sides of the line.

See [Section 3.7](#) for international land boundaries.

Exclusive Economic Zone (EEZ)

A 200-nautical-mile EEZ for the United States was established on March 10, 1983. It is officially defined as follows:

The EEZ of the United States is a zone contiguous to the Territorial Sea and Contiguous Zone (12 nautical miles) of the United States, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands (to the extent consistent with the Covenant and the United Nations Trusteeship Agreement), and United States overseas territories and possessions. The EEZ extends to a distance 200 nautical miles from the baseline from which the breadth of the territorial sea is measured.

The term "baseline" or "closing line" is used in the international law of the sea to indicate the reference line from which the outer limits of the territorial sea and other offshore zones are measured; it is thus the dividing line between inland waters and the territorial sea.

The U.S. has sovereign rights and control over the living and nonliving natural resources within the 200-nautical-mile boundary.

The EEZ limit shall be shown by a black screened line (0.4 mm lineweight) interspersed at regular intervals by a "fish" symbol (see below). The length of line between the fish may be either 2.55 cm, 4.75 cm, or 9.70 cm in a series; but only one size shall be used to depict any one charted limit. The fish shall be space less frequently for long limits of little configuration, and vice versa. The fish may be moved along the line to avoid an area where the line changes direction. Labeling shall be in black in 7 pt. Swiss Regular Italic. The entire symbol, including the labels "*EXCLUSIVE ECONOMIC ZONE*", shall be printed without breaking for charted detail, using a 25 percent, 200-LPI biangle screen tint, so as not to obscure the overprinted detail. The symbol shall be applied so as to point the fish



UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

AUGUST 8, 2003

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Nautical Chart Manual: Correction Pages 4-275 through 4-278

Effective immediately, the following attachment replaces pages 4-275 through 4-278 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

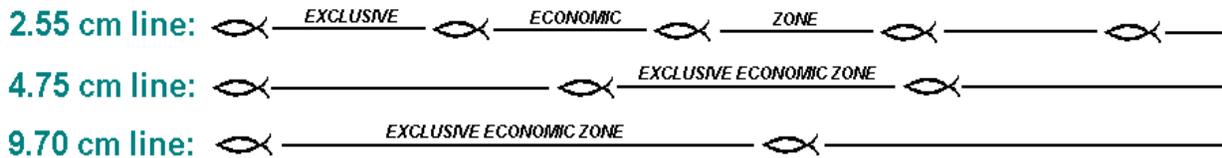
The attachment serves to correct all illegible notes and graphics located on these pages and which were introduced to the Nautical Chart Manual during its initial conversion to digital format in the year 2000.

Pages 4-275 through 4-278 are to be inserted into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition immediately after page 4-274.

Attachment

the fish in a clockwise direction around land masses, positioning and rotating the fish along the line axis.

Examples:



The EEZ must be precisely transferred to or plotted on the raster chart files without modification unless cleared by the Chief Geographer. The Chief Geographer is responsible for supplying graphics or geographic coordinates approved by the Interagency Committee on Delimitation of the U.S. coastline for any changes to existing charts or for the addition of such zones to new charts. Any revision to the territorial sea and contiguous zone baseline on subsequent printings of charts showing the EEZ line must also be submitted to the Chief Geographer for possible revisions to the line; no revision to the location of the line may be made without this clearance.

"EXCLUSIVE ECONOMIC ZONE" SYMBOLOGY IN THE GULF OF MAINE

The legends "UNITED STATES" and "CANADA" shall be shown opposite each other at regular intervals along the EEZ marine boundary between the US and Canada originating at 44° 46'35.346"N. 66° 54'11"W (Grand Manan Channel) and continuing southward to the 12-nautical mile territorial sea limit (see chart 13325).

The labels shall be in 10 pt. Swiss Light (All Caps) and placed inside the respective boundaries. The "EXCLUSIVE ECONOMIC ZONE" labels shall also be shown and the symbol (N 47) shall remain the same.

Closing Line
 Three Nautical Mile (3-Mile) Line
 Territorial Sea and Contiguous Zone (12 mile) Line.

The closing line (baseline) is the dividing line between inland waters and marginal seas across the entrance of a true bay.

The Three Nautical Mile Line marks the boundary of the waters within a three mile zone adjacent to the coast and seaward of the closing line.

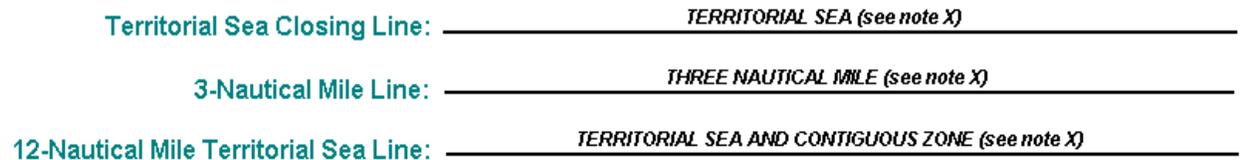
Section 4.14.7

NAUTICAL CHART MANUAL

The Territorial Sea and Contiguous Zone marks the boundary of the waters within a 12 nautical mile zone adjacent to the coast and seaward of the closing line.

These lines shall be shown on charts at the request of the State Department. All three shall be black screened unbroken lines of 0.5 mm line weight. As with the 200-mile symbol, labels shall be in 7 pt. Swiss Regular Italic type, and screening shall be with the 25 percent, 200-LPI biangle screen. The labels must be placed inside the appropriate areas and should refer to Note X (see below). The procedures for applying new or revised lines are the same as for the EEZ boundary line. Any changes to the HWL or LWL should be submitted to the Chief Geographer for revision of the 3 and 12 mile lines.

Examples:



Note X shall be printed on each chart that carries any of these lines, in solid black 7 pt. Swiss Light, 3 1/2" wide. The text of the note shall read as follows:

NOTE X

The 12-nautical mile territorial sea was established by Presidential Proclamation 5928, December 27, 1988, and is also the outer limit of the U.S. contiguous zone for the application of domestic law. The 3 nautical mile line, previously identified as the outer limit of the territorial sea, is retained because the proclamation states that it does not alter existing State or Federal law. The 9 nautical mile natural resources boundary off Texas, the gulf coast of Florida and Puerto Rico, and the 3 nautical mile line elsewhere remain the inner boundary of the Federal fisheries jurisdiction and the limit of states' jurisdiction under the Submerged Lands Act (P.L. 83-31; 67 Stat 29, March 22, 1953). These maritime limits are subject to modification, as represented on future charts. The lines shown on the most recent chart edition take precedence.

For the 3- and 12-mile line, the offshore edge of the line is the actual limit, while the axis of the closing line symbol is the actual limit.

Natural Resources Boundary (3-League Line)

The natural resources boundaries of Texas, Puerto Rico, and the west coast of Florida has been defined by public law as 3 marine leagues (9 nautical miles) seaward of the territorial sea baseline. Each jurisdiction is entitled to all lands, minerals, and other natural resources underlying the waters enclosed by its natural resources boundary.

The Interagency Committee on the Delimitation of the U.S. Coastline will furnish graphics showing the 3-league line for documentation. This line will be shown only on those charts that also show the territorial sea (3-mile) limit. It must be precisely transferred to the digital chart files, and any modifications must be submitted to the Chief Geographer for approval by the committee. Any revision to the territorial sea baseline on subsequent printings of charts showing the 3-league line must be submitted to the committee for possible revision to the line. No revision to the location of the line may be made without approval of the committee.

The 3-league line shall be shown by a black unbroken line of 0.5 mm lineweight. The label, "*NATURAL RESOURCES BOUNDARY (see note X)*", shall be in 7 pt. Swiss Regular Italic type and shall be placed inside the appropriate area and along the line. The offshore edge of the line is the actual limit. Both the line and label shall be charted in black with a 25 percent, 200-LPI biangle screen.

Note X shall be printed in solid black 7 pt. Swiss Light type set 3½" wide. Each area will have a note tailored to replace the existing charted Note X. Charts covering adjoining States with and without a 3-league will require only one Note X, the Note referring to the natural resources boundary. No revision to this new Note X may be made without approval by the committee.

The following note shall be used on charts that show the natural resources boundary of Puerto Rico:

NOTE X

The 12-nautical mile territorial sea was established by Presidential Proclamation 5928, December 27, 1988, and is also the outer limit of the U.S. contiguous zone for the application of domestic law. The 3 nautical mile line, previously identified as the outer limit of the territorial sea, is retained because the proclamation states that it does not alter existing State or Federal law. The 9 nautical mile natural resources boundary off Texas, the gulf coast of Florida and Puerto Rico, and the 3 nautical mile line elsewhere remain the inner boundary of the Federal fisheries jurisdiction and the limit of states' jurisdiction under the Submerged Lands Act (P.L. 83-31; 67 Stat. 29, March 22, 1953). These maritime limits are subject to modification, as represented on future charts. The lines shown on the most recent chart edition take precedence. The Puerto Rico natural resources boundary is the limit of the commonwealth's jurisdiction under Public Law 96-205, March 12, 1980; 94 Stat. 91.

Charts that show the natural resources boundary of Texas and the gulf coast of Florida shall include the following note:

NOTE X

The 12-nautical mile territorial sea was established by Presidential Proclamation 5928, December 27, 1988, and is also the outer limit of the U.S. contiguous zone for the application of domestic law. The 3 nautical mile line, previously identified as the outer limit of the territorial sea, is retained because the proclamation states that it does not alter existing State or Federal law. The 9 nautical mile natural resources boundary off Texas, the gulf coast of Florida and Puerto Rico, and the 3 nautical mile line elsewhere remain the inner boundary of the Federal fisheries jurisdiction and the limit of states' jurisdiction under the Submerged Lands Act (P.L. 83-31; 67 Stat. 29, March 22, 1953). These maritime limits are subject to modification, as represented on future charts. The lines shown on the most recent chart edition take precedence.

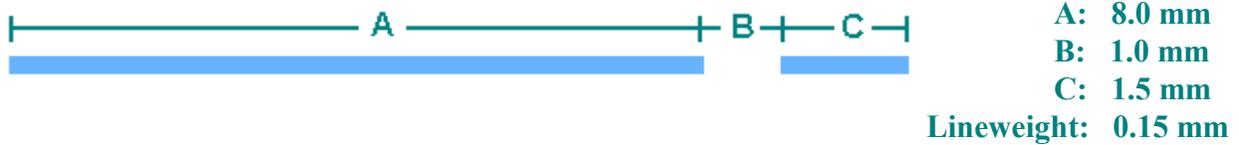
Section 4.14.7

NAUTICAL CHART MANUAL

The following procedures shall be used for charting certain nonmilitary areas such as State and national parks, reservations, wildlife preserves, marine sanctuaries and historical areas, Indian reservations, protected areas, critical habitats, and similar specially designated areas. These areas seldom enhance the navigational value of nautical charts and are usually considered background information. Subduing these features by printing them in blue will assist in reserving the use of magenta and black for charting features that are of greater navigational importance to the mariner.

Generally, reservation areas will be charted only if requested by the cognizant agency. However, additional areas may be charted if this will enhance the intended use of a chart. Any conflicts between the requested reservation limits, areas, and regulations and existing charted limits, areas, and regulations must be resolved by the requesting authority and supported by appropriate documentation prior to any chart application. Areas that are charted should be shown on all charts covering the area. Questions concerning the application of such areas shall be referred to the Chief, QAPSB, for disposition.

The reservation boundary symbol (see below) shall be a blue long-short dashed line.



Example:

A 1.0 mm, Blue 320 (10 percent, 120-LPI) screened band may be added to the inside edge of the entire outline if it is needed to avoid confusion. For example, where different reservations overlap, the screened band may be used to denote reservations of greater importance. The line symbol may be broken only where it would cause confusion in the presentation of more important information but not for soundings, symbols, type, or other routine detail. Judicious use of the reservation line and the band will preserve chart clarity and balance. Names and other labeling shall be in blue, 10 pt. Swiss Light type if the boundary includes mostly land area. Where the boundary is mostly in water areas, 10 pt. Swiss Light Italic is used, although the area should be labeled consistently on overlapping charts. Smaller type size may be used in congested areas.

The label "*protected area*" or a similar description (as determined from the regulations) shall be added if appropriate.

The CFR title and section number must be included in the chart label for federally regulated areas. The label "see note A" shall be charted only when the cited Federal regulations are stated in the Coast Pilot. (The Coast Pilot primarily includes only those regulations affecting navigation.) All labels referencing Note A must be carefully coordinated between the Production Branches and Coast Pilot. Where reference to Note A is not appropriate, the label may refer to another note or the appropriate Coast Pilot.

**NATIONAL OCEAN SERVICE
Office of Coast Survey
Marine Chart Division**

May 18, 2001

CARTOGRAPHIC ORDER 011/01

FILE WITH NAUTICAL CHART MANUAL VOLUME I, PART I, SECTION 4.14.7

TO: All Cartographers
Marine Chart Division

SUBJECT: [Particularly Sensitive Sea Areas \(PSSA's\)](#)

APPLICATION: All Affected Nautical Charts

Effective immediately, the attachment shall be replace pages 4-279 and 4-280 in the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition.

The attachment provides specifications for charting Particularly Sensitive Sea Areas on NOS Nautical Charts. Particularly Sensitive Sea Areas are designated by the [International Maritime Organization \(IMO\)](#) to provide a measure of protection for vulnerable local environments from possible damage by international maritime activities.

Nicholas E. Perugini
Captain, NOAA
Chief, Marine Chart Division

A complete label would be structured as follows:

FORT JEFFERSON NATIONAL MONUMENT
(protected area: 36 CFR 7.27; see note A)

The text of regulations should be charted, along with a label reference, only if the regulations are not included in the [Coast Pilot](#). They must be quoted in their entirety if a condensation approved by the cognizant authority is not available.

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Particularly Sensitive Sea Areas

Definition: A **Particularly Sensitive Sea Area (PSSA)** is an area that needs special protection through action by the International Maritime Organization (IMO) because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities.

General Requirements:

A Particularly Sensitive Sea Area (PSSA) shall only be charted when requested by a federal government agency and designated by the International Maritime Organization.

A PSSA is an environmentally sensitive area around which mariners should exercise extreme caution.

A PSSA shall be shown at all chart scales. Those portions plotting within areas that are charted without hydrography shall be omitted.

Feature Recommendation for a Notice to Mariners:

A newly designated, amended or revoked PSSA shall be recommended for a Notice to Mariners.

Line Type and Weight:

The PSSA boundary symbol shall be charted with a green long-short dashed line, 0.15mm (0.006") in thickness. Spacing for the long-short dashed line shall be charted: 8.0mm dash/ 1.0mm space/ 1.5mm dash (0.32"/.04"/.06").

A green screened band shall be charted along the entire inside edge of the green long-short dashed line component of the PSSA boundary symbol. See "[Color and Screening](#)" below for specifications pertaining to the screened band component of the PSSA boundary symbol.

The line symbol and screened band shall be broken only where they would cause confusion in the presentation of more important information. The line symbol and band shall not routinely be broken for [soundings](#), [bottom characteristics](#), type or other detail.

The green long-short dashed line component of the PSSA boundary symbol shall not be charted where it coincides with other charted limit lines, such as the limiting lines for restricted areas, anchoring areas, civil reservations, etc. The green screened band component of the PSSA boundary symbol shall be charted in conjunction with these other limiting lines where the PSSA boundary coincides with other charted limiting lines.

The following rules shall apply when the limits of a PSSA and the limits of a civil reservation coincide:

1. The blue long-short dashed limit line of the civil reservation symbol shall be charted.
2. The green long-short dashed limit line of the PSSA symbol shall not be charted.
3. The optional blue screened band of the civil reservation symbol shall not be charted.
4. The green screened band of the PSSA symbol shall be charted.

Neither component of PSSA boundary symbol shall be shown where it coincides with shoreline symbology.

Location and Orientation on the Chart:

PSSA boundary symbols shall be charted in their exact geographic positions.

Labels and Notes:

“PARTICULARLY SENSITIVE SEA AREA” labels shall be charted in capital letters with green 10 point Swiss Light Italic, within the limits of the PSSA, adjacent to the screened band and oriented along the screened band. When the scale of the chart does not permit charting PSSA labels within the PSSA limits, a label may be placed adjacent to the area, oriented with the baseline of the chart.

Smaller type may be used in congested areas.

“PARTICULARLY SENSITIVE SEA AREA” labels shall be charted with 10 point Swiss Light Italic at three or more appropriate locations in the water area of a chart that falls completely within a PSSA.

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Section 4.14.7

NAUTICAL CHART MANUAL

A note in 7 point Swiss Light type shall be added to any chart showing any portion of a PSSA boundary line. The note shall be used to explain what the symbol represents and where relevant information can be accessed. The note shall read:

PARTICULARLY SENSITIVE SEA AREA

The Particularly Sensitive Sea Area (PSSA) is indicated by a dashed green limiting line highlighted with a green screened band or a by a green screened band used in conjunction with the line symbol for other limits with which the PSSA coincides. A PSSA is an environmentally sensitive area around which mariners should exercise extreme caution. See U.S. Coast Pilot volumes for information regarding this area.

A note in 7 point Swiss Light type shall be added to any chart that falls completely within a PSSA. The note shall be used to alert the chart user to the existence of the PSSA and where relevant information can be accessed. The note shall read:

PARTICULARLY SENSITIVE SEA AREA

This chart falls entirely within the limits of a Particularly Sensitive Sea Area (PSSA). A PSSA is an environmentally sensitive area around which mariners should exercise extreme caution. See U.S. Coast Pilot volumes for information regarding this area.

PSSA notes and labels shall print in solid green.

Color and Screening:

A PSSA long-short dashed limit line and associated notes and labels shall print in solid green.

A PSSA shall be charted with a required 1.0mm, green 8 percent, 120-LPI screened band on the inside edge of the entire PSSA boundary.

ADDED MAY 18, 2001

Feature Removal from Chart:

A charted PSSA shall not be revised or removed until a federal government agency provides conclusive evidence that the PSSA designation has been rescinded.

4.15 Wire Drags and Wire Sweeps**4.15.1 Wire Drag Surveys (WD)**

Wire-drag surveys are no longer performed by NOS, having been supplanted by more modern methods such as side-scan sonar. However, the cartographer may occasionally encounter wire-drag surveys or field examinations.

A wire-drag is an apparatus used to survey areas where the normal sounding method is insufficient to ensure the discovery of all obstructions, pinnacles, rocks, wrecks, etc., above a given depth, or for establishing a cleared depth in an area over wrecks and obstructions. The drag consists essentially of a buoyed wore towed at the desired width and depth by two ships or launches. The area to be surveyed is usually completely covered with a system of overlapping strips, with the drag set at suitable depths, so that all obstructions within the area are discovered, located, and a minimum depth determined.

The purpose of a WD survey is to discover and chart all obstructions of small extent such as pinnacle rocks, boulders, sharp edges, coral formations, and wrecks which may be dangerous to navigation and which standard hydrographic surveys may fail to reveal.

In general, the drag is used for the following four classes of work:

- (1) to determine whether or not apparently clear areas are free from obstructions;
- (2) to find all obstructions in a shoal area;
- (3) to obtain the controlling depth in a channel; and
- (4) to locate and determine depths over submerged wrecks. WD information is used to supplement regular hydrographic surveys in charting.

4.15.2 Wire Sweep Surveys

A wire-sweep is a modification of the wire drag and is used in areas where the general depths are greater than the depths to be verified and where few, if any, obstructions are expected. The sweep must also be supplemented by the drag in the examination of obstructions discovered by the sweep. However, these disadvantages are outweighed by the speed of sweep investigations.

4.15.3 Wire-Drag Survey Sheets

The smooth sheets and field sheets for wire-drag and wire-sweep surveys are similar to the sheets used in regular hydrographic survey work. They have polyconic projections, the scale of which depends on the nature of the work. For inshore work, scales of 1:5,000, 1:10,000, and 1:20,000 are commonly used; for offshore work, scales of 1:30,000 or 1:40,000 are usually more suitable.

1. Depth of Drag

Drag depths are referred to the plane of MLLW on the Atlantic coast, the gulf coast, the Pacific coast, and in Alaska. An examination to a depth of 66 feet below the plane of reference is considered sufficient to safeguard surface navigation, but an examination to a depth of 300 feet may be necessary for submarine navigation. Therefore, it is NOS policy to drag inshore areas to an effective depth of 66 feet and in open areas, where general depths exceed 100 feet, to investigate suspected dangers by wire drag with a minimum effective depth of 100 feet.

On the Atlantic coast and in smooth waters elsewhere, a clearance of about 3 feet from the bottom is obtained. On the Pacific coast, where a significant ground swell is usually running, a clearance of about 5 feet is considered sufficient. Obstructions which are dangerous to surface navigation in channels, harbors, and approaches to harbors, are to be cleared by not more than 2 feet; in other areas having general depths of 60 feet or less, a clearance of 3 feet is to be obtained; in depths greater than 60 feet, clearances of 5 feet are acceptable. Obstructions are supposed to be cleared from opposing directions.

4.15.4 Area and Depth (A&D) Sheets

The area and depth sheet, called the "A&D sheet," is an overlay copy of the smooth sheet showing the outer limits of the various swept areas and the interior limits of sections cleared to various depths. It clearly and simply depicts the final results of drag operations and shall be used by the cartographer in place of the smooth sheet when applying a wire-drag survey to a chart.

The outline of each wire-drag strip is transferred directly from the smooth sheet to the A&D sheet. Where subsequent strips with greater depths cover all or part of the same area, the outlines are modified to show the maximum effective depths obtained over the area, as well as to show splits and other defects. The effective depth to which an area has been cleared is identified on the A&D sheet by a distinctive color (see color table). All pertinent soundings, groundings, and notes for each drag are shown.

When wire-dragging an area with overlapping strips, the overlaps at certain points may be insufficient or small areas called "splits" may remain uncovered due to temporary loss of horizontal control, discovery of shoals or obstructions, or drag failure. Where splits occur, they are depicted on the A&D



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Coast Survey

MARCH 14, 2002

MEMORANDUM FOR: All Cartographers
Marine Chart Division

FROM: Fannie B. Powers
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Nautical Chart Manual Correction Pages - [Cleared Depths](#)

Effective immediately, the following attachment replaces pages 4-281 through 4-284 in the Nautical Chart Manual, Volume 1, Part I, Seventh (1992) Edition, and serves to improve the following illegible graphics introduced to the Nautical Chart Manual during its conversion to digital format:

Nautical Chart Manual Volume	Nautical Chart Manual Page	Errors Introduced during Digital Conversion
1	4-282	Quality of cleared depth over rocks, wrecks, etc. examples distorted.
		Quality of maximum clearance over small shoal. example distorted.
		Quality of cleared depth note distorted

Pages 4-281 through 4-284 are to be inserted into the Nautical Chart Manual, Volume 1, Part 1, Seventh (1992) Edition immediately after page 4-268.

Attachment

by hachures; the area of the split shall be charted without green tint. Areas of insufficient overlap are outlined on the A&D sheet with a dotted line.

The maximum cleared effective depth is shown in the note, and the sounding is plotted. However, if the shoalest depth obtained is deeper than the effective depth of the drag where the grounding occurred, both the shoalest depth and the maximum cleared effective depth are shown in the note, and the effective depth of the shoalest grounding is plotted.

Cleared areas are surrounded by a line of the color of the effective depth cleared except where they adjoin an area of greater depth. In this case, the common boundary line takes the color of the greater depth. The colors used on A&D sheets to depict the effective depth of wire-dragged areas follows:

Effective Depth (in feet)	Color	Effective Depth (in meters)
1 to 19	Brown	0.3 to 5.8
20 to 29	Green	6.1 to 8.8
30 to 39	Blue	9.1 to 11.9
40 to 59	Red	12.2 to 18.0
60 to 79	Purple	12.3 to 24.1
80 and over	Orange	24.4 and over

4.15.5 Charting of Sweep Areas (I 24)

The outer limits of wire-dragged or wire-swept areas selected for charting shall be shown by a dashed line of solid green color (0.25/4.0/1.0 mm).

Interior limits of sections cleared to various depths shall be shown by a more closely spaced dashed line of solid green color (0.20/2.0/0.75 mm).

Figures indicating the depths to which a section has been cleared shall be shown in 10 pt. Swiss Light Italic type, in solid green, with a solid green wire-drag basket symbol under each figure.

An overall screened (8 percent, 120-LPI) green tint shall be charted to identify swept areas. However, areas not cleared or areas of insufficient overlap shall be charted without green tint.

Section 4.15.5

NAUTICAL CHART MANUAL

The following reference note shall be added to all charts showing areas swept by wire drag or wire sweep in solid green in 7 pt. Swiss Light type set 2" or 3½" wide:

WIRE-DRAGGED AREAS

The area tinted green was swept in 19__ for previously undetected dangers to navigation. All dangers found are shown on this chart.

4.15.6 Charting Cleared Depths (K 27, K 42, K f)

The maximum cleared depth over rocks, wrecks, obstructions, or shoals supersedes depths found by other means provided the specifications for clearance tolerances are met and shall be charted thus:

21 *Rk*

21 *Wreck*

21 *Obstn*

21 *h*

A dotted curve and blue tint should be shown as appropriate.

A cleared depth obtained by wire drag will take precedence over a sounding obtained by fathometer. However, a least depth obtained by measured methods, such as by a diver, shall take precedence for charting over a wire-drag cleared depth if it is confirmed as a least depth during final processing and approval.

To denote the maximum clearance obtained over small shoal areas (such as shoals along the coast of Maine), the basket symbol, and bottom characteristic (if available), shall be shown. If no bottom characteristic is available, the term "*shoal*" is to be used:

21 *Shoal*

The charted note under the Symbols and Abbreviations note shall read as follows:

21 Wreck, rock, obstruction, or shoal swept clear to the depth indicated.

For additional information on charting wire-drag and wire-sweep surveys, refer to the Wire-Drag Manual (NOS Publication 20-1) and the NOS Hydrographic Manual.

4.16 Side Scan Sonar

NOS has adopted the modern side scan sonar as an additional tool in the hydrographer's inventory of sensors with which to conduct complete and adequate hydrographic surveys. The basic system consist of a graphic recorder, an electromechanical tow cable, and a towfish containing the acoustic transducers. The transducer produces a sound signal that travels through the water until it strikes something and is reflected back to the transducer and recorded on a high resolution paper printout.

4.16.1 Basic Hydrographic Surveys

Side scan sonar may be required to supplement conventional echo sounding by searching the region between regular sounding lines for additional indications of dangers and topographic irregularities. Examples of features expected to be found are pinnacle rocks, coral heads, boulders, etc. A thorough examination may be required for charted vessel routing schemes, such as; traffic separation schemes, precautionary areas, traffic lanes, shipping safety fairways, etc.

4.16.2 Item Investigation

An item investigation is scheduled through the presurvey review process to examine a specific charted or reported feature. The purpose of the investigation is to prove or disprove the existence of the assigned feature at its charted or reported position, and if found, to determine its exact position, nature, extent, and least depth. Side scan sonar is being used for some item investigations as a tool to allow the hydrographer to determine a charting recommendation on the feature.

4.16.3 Charting Action

Side scan sonar is an acceptable method for detecting objects that have a high likelihood for acoustic detection. Once located, conventional hydrographic examination methods should be employed, including shoal development techniques, direct diver observation, or constant tension wire drag. Each complete examination must result in a positive and explicit recommendation for charting action in the Report of Item Investigation prepared by the hydrographer. Chart compilers will normally apply the results of the hydrographer's work to the charts only when the survey evaluator has concurred with the hydrographer's recommended disposition.