STATE OF OREGON

DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

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INVENTORY OF HEAVY MINERALS AND METALS SOUTHERN WASHINGTON, OREGON, AND NORTHERN CALIFORNIA CONTINENTAL SHELF AND COASTAL REGION

by

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NOTICE

The Oregon Department of Geology and Mineral Industries is publishing this paper because the subject matter is consistent with the mission of the Department. To facilitate timely distribution of information, camera-ready copy supplied by the authors has not been edited to our usual standards.

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SUMMARY

A comprehensive inventory of geological and geophysical data related to the nature and distribution of heavy mineral placer deposits of the southern Washington, Oregon and northern California continental shelves and coastal region was compiled in this study. The beach and coastal terrace deposits contain such strategic and economic minerals and metals as chromite, ilmenite (titanium), zirconium, and gold which are believed to occur within the continental shelf deposits of this region.

The inventory consists of four components: (1) text summary, (2) one degree latitude map sheets, (3) data base, and (4) reference or archive. The various types of data (sample locations and tracklines) are plotted on the map sheets and documented with the appropriate references. The data base consists of individual references which are listed in alphabetical order. The geophysical and geological information contained in the reference is presented as specific categories of data (e.g., kilometers of seismic trackline, number of heavy mineral samples) and each category is cross-referenced to the appropriate map sheet where the data are plotted. A brief text summary of the data coverage is presented for each map sheet (i.e.: A, B, C). Each component of the inventory stands alone and can be cross-referenced to the other components.

The data coverage varies considerably over the region. The most extensive geological sampling (grab samples and box cores) occurs off the Columbia River area of southern Washington and northernmost Oregon (sheet A), and Coos Bay to the Rogue River, Oregon (sheets D, E). The largest number of heavy mineral samples and analyses is also concentrated within these areas. Geophysical seismic surveys are concentrated off central and south-central Oregon (sheets C, D) and northern California (sheet F). Magnetic anomaly data are concentrated in local areas around the Columbia River area (sheet A) and the Sixes River and Rogue River (sheet E) areas of south-central to southern Oregon.

A long-range plan is presented which will serve as a guide to future research and exploration activities in the region. It is divided into three main components: (1) comprehensive summary and integration of existing data to identify promising heavy mineral and metal placer targets on the continental shelf, (2) field survey program of the continental shelf and (3) final summary, interpretation of field data and development of predictive models. The plan covers a period of four to five years depending upon the number of field seasons.

INTRODUCTION

Nature of Study

A comprehensive inventory of geological and geophysical data pertaining to the nature and distribution of heavy minerals and metals of the southern Washington, Oregon, and northern California continental shelves and adjacent coastal regions was compiled in this study. Rivers and beaches of southwest Oregon and northwest California historically have been mined for placer deposits containing gold (Horner, 1918). During mineral shortages of World War II, the coastal terraces of southwest Oregon and the Columbia River mouth were explored for chromite and ilmenite (Griggs, 1945; Kelly, 1947). These ancient terrace placers are likely analogs to the more recent offshore deposits potentially enriched in the strategic and economic minerals, chromite, titanium, zirconium and gold (Kulm et al., 1968a; Clifton, 1968; Bowman, 1972, 1973). Private individuals and companies and State and Federal agencies are expressing interest in the potential of these mineral deposits on the continental shelf because of the demarcation of the Exclusive Economic Zone, the uncertain supply of strategic minerals from foreign sources, and recent advances in offshore mining and ore processing technology. This inventory will serve as guide for future research and exploration in the region.

Scope of Work Under Contract

The College of Oceanography, Oregon State University (OSU), was contracted by the Oregon Department of Geology and Mineral Industries (DOGAMI) to perform a comprehensive data search and listing of studies relevant to the occurrence and development of heavy mineral and metal placers offshore of the Pacific Northwest.

The contract period extended from 2 December 1985 to 28 March 1986; this open-file report was completed at the end of this period and submitted to DOGAMI.

The area of study covered in the inventory includes the continental shelf, coastline, and coastal rivers from 47°N (southern Washington) to 41°N (northern California) latitude. This region contains the most information about offshore mineral potential in the Pacific Northwest. The data search focuses chiefly on studies that contain information about continental shelf structure, stratigraphy, sediment composition, heavy minerals and metals and their sources, and ocean currents. Coastal studies that are relevant to the shelf studies are included in the inventory.

This inventory utilizes both unpublished and published data that were obtained from a variety of sources as well as from College of Oceanography, Oregon State University archives.

CONTENTS AND USE OF INVENTORY

The inventory consists of the following four components: (1) text summary, (2) map sheet, (3) data base, and (4) reference or archive source. The inventory is centered around the index map (Figure 1) which is divided into six map sheets (A,B,C,D,E,F) consisting of one degree of latitiude. The continental shelf on each map extends from the shoreline seaward to approximately the 200-meter contour. The beach and immediately adjacent coastal terraces are represented by the coastline in these maps. Coastal terraces may extend several kilometers landward from the coastline.

Various types of data, such as sample locations and tracklines, are plotted on each of the map sheets. Documentation for the data reference or archive is listed in a separate bibliography. In addition, a separate data base is presented which summarizes the relevent information contained in the reference (source) that pertains to heavy minerals and metals of the six regions. The data base refers the reader to the appropriate map(s) and reference or archive that contains the plotted data.

The types of data used in the inventory include: (1) bathymetry, (2) seismic reflection and side scan records, (3) magnetic profiles, (4) sediment and rock samples, (5) sediment texture, heavy mineral and metals, (6) bottom photographs, and (7) current meter stations. These data have been used by various authors to determine the nature and distribution of heavy minerals and metals in the surface and near surface deposits, map the thickness of sediment overburden, locate ancient shorelines, determine the nature and distribution of sedimentary facies, model the magnetic anomalies and determine their source depths, describe the local and regional geology, and decipher the sedimentary processes that are responsible for the development of the sedimentary facies and associated placer deposits.

Text Summary

The data on each map sheet (A-F) are summarized in text form to provide an overview of the inventory for that particular sheet/ geographic region. In this section we present a brief description of the type and amount of work done in each of the one-degree latitude study areas (sheets). Bathymetry and geophysical data coverage are followed by offshore and onshore sampling coverage. The data coverage (i.e., tracklines or samples) for each area is termed "dense", "intermediate" or "sparse" and is used to compare the coverage in a particular area with that of the other areas in the inventory. The bathymetric contour interval is specified for each area and high-resolution bathymetry has a contour interval of ±5 meters and horizontal positioning of ±50 meters. Low- and high-resolution seismic profiling corresponds to low-frequency (50-500 Hz) and high-frequency (500-3500 Hz) acoustic sources, respectively. Magnetic field anomaly data is described in terms of regional maps (reconnaissance surveys) and local coverage (placer deposit surveys).

Map Sheets

Six map sheets (Figure 1) are used to plot the locations of various types of samples, tracklines, and photographic and current meter stations in the area. The bathymetry for five of the maps (46-41°N) was taken from U.S. Coast and Geodetic Survey (USCGS) maps and for one from navigational charts. Each map displays the 50, 100, 150, 200 and 250-meter contours which cover the entire continental shelf. Data are plotted on the continental shelf (i.e., from the shoreline to about the 200-meter contour) and farther seaward onto the continental slope, in some cases, to show the continuity of the sampling or survey transect. Different symbols are used to designate grab samples, cores, dredges, camera and current meter stations. Several studies are combined in each map with the size of a particular symbol being used to identify each study which is referenced by author and date in the figure caption accompanying the map. Where numerous studies were conducted in a given map, more than one map is utilized to avoid extreme congestion of the data points or lines.

Data Base

A data base was constructed using most of the references and archival sources of information. The data base format for each study includes: (1) complete reference, (2) geographic extent of study area, (3) subject or topic of study, and (4) methods of data collection and amount of coverage. The data base lists the reference (discussed below) alphabetically by author and describes the principal types of data given in the reference, the latitudinal location of the study area and the map sheet (Figure) where the data (i.e., sample and trackline locations) are plotted. The study is divided into the onshore and offshore areas in the data base. The geophysical studies conducted in the region and the kilometers of trackline run with each type of geophysical instrument (e.g., sparker, air gun) are listed under the onshore or offshore areas. The type of sampling device is indicated along with the numbers of samples analyzed for such parameters as grain size and heavy mineral content; both surface and subsurface samples are listed. Notes are given at the end of the data base to highlight the topical area treated in the reference. Studies of large geographic areas are divided into adjoining study areas (map sheets, Figure 1) within the data base listing and may contain up to six study areas. Each area is cross-referenced to the map sheets (Figures).

Reference and Archives

The bulk of the material used in this inventory was obtained from articles published in journals and books and from maps that are available in libraries to the public. Open-file reports of the U.S. Geological Survey (USGS) were obtained from several locations of the Survey. Reports and maps prepared for various State and Federal agencies by their personnel and by consultants as well as those prepared by private companies or

individuals were also used in this inventory. Most of the materials are in the public domain; permission was granted to use those materials that are not in the public domain. Unpublished data (sample locations and tracklines) were obtained from the Marine Geology and Geophysics archives in the College of Oceanography, Oregon State University, and they are identified in this report as archive data in the data bases.

LONG RANGE PLAN

Using the information compiled in this inventory, we have formulated a long range plan for further research and exploration of the heavy mineral and metal deposits of the continental shelf and coastal region. The primary emphasis should be placed on the placer deposits of the continental shelves off southern Washington - northernmost Oregon, southern Oregon, and northern California. The southern Oregon and northern California regions are closely related in terms of geographic location, sources of heavy minerals and metals, geology of the continental shelf and oceanographic conditions. The southern Washington - northern Oregon regions are closely related to sources of heavy minerals and metals in the vicinity of the Columbia River. The long-range plan is divided into the following three basic components:

(1) Comprehensive summary and interpretation of existing data on the continental shelf with the identification of the most promising heavy mineral and metal placer targets.

(2) Field program on the continental shelf consisting of at least two field seasons of data collection and analyses of shelf placer deposits.

(3) Final summary and interpretation of field work and preexisting data (item 1) on the continental shelf and in the coastal region.

The comprehensive summary of existing geological and geophysical data would determine which areas should be surveyed during the field seasons and what types of tools should be used in the surveys. A concurrent laboratory study of existing coastal and shelf samples should be conducted to characterize and locate the continental sources that supply heavy minerals and metals to the coastal and shelf regions. This entire study should be completed within one calendar year.

The summary of existing data on the continental shelf should include the following elements: (1) Bathymetry and side scan sonar records to locate ancient coastlines and wave-cut benches; (2) seismic reflection records to determine the structure and tectonics of bed rock and to determine the thickness of the unconsolidated sediment cover; (3) magnetic profiles to locate potential placer deposits containing magnetite and to define the size and shape of the placer bodies; (4) sedimentary facies of surface and near-subsurface deposits to establish the shelf stratigraphy; (5) heavy mineral and metal concentrations in surface and near-subsurface deposits to locate the primary placer bodies; (6) microfossil content of

the deposits to identify transgressive and regressive depositional cycles; and (7) integration of the above information to produce predictive models for the location of potential placer deposits.

During the field program, geophysical surveys, such as seismic and magnetic, should be combined with vibracoring to provide immediate ground truth for the interpretation of the geophysical data and selection of additional geophysical surveys. The first field season should be devoted to a reconnaissance of the potential targets outlined in the summary and interpretation of the existing data (item 1) and to the establishment of the stratigraphy of the continental shelf as it relates to the development of placer deposits. All geological and geophysical data collected during the first season would be analyzed prior to the second field season to develop the detailed survey plan and establish objectives. A third field season may be required, depending upon the project's success in using magnetic anomalies to prospect for the placer deposits. Failure to find a workable correlation between the magnetic anomalies and the placers would require considerably more ship time to locate and define the placer bodies. A total of two to three calendar years would be required to complete the field programs.

The final phase of the study would include the analyses of data collected during the second or third field seasons and the integration of these data with those collected during the first field season as well as those preexisting data described in item (1) above. The use of magnetic anomalies as an exploration tool could be tested with this combined geological and geophysical data base. The heavy mineral and metal placer deposits would be outlined with reasonable estimations of their extent, thickness, and value. Models would be developed for continental shelf sedimentation and stratigraphy in order to develop predictive models for locating additional placer deposits not directly sampled in the field programs. These models would be compared with models developed for the modern beach and Pleistocene marine terrace placer deposits in the adjacent coastal regions to further refine and enhance the predictive aspects of the continental shelf placer models. One calendar year would be needed to complete this final phase of the program.

A minimum of four years would be required to complete the long-range plan as outlined here. A fifth year, which would accommodate an additional field season, may be needed, making a total of three field seasons.

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INVENTORY

The heavy minerals and metals inventory described in this open-file report shows where the geophysical surveys and sediment sampling are concentrated or lacking on the continental shelf, beach, and coastal terraces of southern Washington, Oregon, and northern California. While the inventory itself does not point to the localities where heavy mineral and metal placer deposits are concentrated in these regions, the greatest number of samples and tracklines off southern Oregon are concentrated in the areas where such deposits are suspected from previous studies on the continental shelf, adjacent beaches, and coastal terraces. Samples and tracklines cluster in other regions for a variety of reasons, most of which are not related to studies of placer deposits.

Text Summary

Area A: Southern Washington 46-47°N

Continental shelf bathymetry for area A is contoured at the 20-m interval and extends from the shoreline to beyond the continental shelf break (Wagner and Batatian, 1985). High-resolution bathymetry exists for the Columbia River mouth (U.S. Army Corps of Engineers, 1986), but it is unavailable for the remainder of the shelf. Approximately 40 km of side scan sonar tracklines have been run in the Columbia River mouth. Outside of the Columbia River mouth, side scan data are unavailable for area A. Shelf currents have been monitored at five stations (Sternberg and Larsen, 1976; Smith and Hopkins, 1972).

Low-resolution seismic profiling in this area totals about 950 km of trackline (Wagner and Batatian, 1985). Low-resolution seismic coverage throughout area A is sparse. High-resolution seismic profiles have been taken on 40 km of trackline in the Columbia River mouth by the U.S. Army Corps of Engineers (1986) using the uniboom system. High-resolution seismic coverage outside the Columbia River mouth is generally unavailable.

Regional maps of magnetic field anomalies are compiled from shipborne magnetic and aeromagnetic records (Emilia et al., 1968; Wagner and Batatian, 1985). Regional magnetic coverage of area A is dense. Local coverage magnetics has been run over 40 km of trackline in the Columbia

River mouth (Washington Minerals Products, 1973). Local magnetic coverage outside the Columbia River mouth is unavailable.

Shelf grab samples from this area have been described (1) for grain size: 393 samples (McManus, 1972), 54 samples (Runge, 1966), 52 samples (Gross, 1967) and 31 samples (Venkatarathnam and McManus, 1973); and (2) for heavy minerals: 210 samples (White, 1967) and 14 samples (Venkatarathnam and McManus, 1973). Grab sample coverage in area A is very dense.

Shelf box cores or shallow multiple cores from a total of 37 sites in area A are well distributed and have been analyzed for sediment accumulation rate by Pb-210 (Nittrouer et al., 1979). Shallow core data coverage is intermediate in the area.

Beach and estuarine samples have been analyzed for heavy minerals or elemental abundances: 151 samples in two deposits, Columbia River estuary (Kelly, 1947); 45 samples, beach and Columbia River estuary (Washington Minerals Products, 1973); 25 transects, beach (Plopper, 1978); 12 samples (Day and Richards, 1906); and two samples (Peterson, unpublished data). Beach and estuarine sample coverage is dense in area A.

Area B: Northern Oregon 45-46°N

Shelf bathymetry for area B is contoured at the 10-m interval on U.S. Coast and Geodetic Survey Chart 1308N-22 (1968) and extends from the shoreline to beyond the shelf break. Higher resolution bathymetry is unavailable for the shelf. Side scan sonar coverage for area B is nonexistent with the exception of a one-square-kilometer area off the mouth of Tillamook Bay (U.S. Army Corps of Engineers, 1986). Two camera stations and two transmissometer stations (OSU Archives) and 20 current meter stations and 12 transmissometer stations (Harlett, 1972) have been occupied on the shelf.

Seismic profiles have been obtained along 1,200 km of trackline (OSU Archives) and include a mixture of air gun (low-resolution) and sparker (high-resolution) records. Seismic coverage is intermediate above 45°30′ latitude and is sparse south of this latitude.

Regional maps of magnetic anomaly data are available from one study by Emilia et al. (1968). Local magnetic records are unavailable for area B.

Shelf grab samples from this area have largely been analyzed for grain size: 172 samples (Runge, 1966), 62 samples (OSU Archives), 57 samples (McManus, 1972) and 6 samples (Gross, 1967). Few of the shelf samples have been analyzed for heavy minerals: 16 samples (White, 1967), 15 samples, provenance indicators only (Scheidegger et al., 1971) and 14 samples (Runge, 1966). Grain size data coverage is intermediate in area B, but heavy mineral data coverage is sparse.

Gravity cores have been collected from 10 shelf sites in area B and have been analyzed for grain size alone (Runge, 1966). Shelf core coverage in area B is sparse.

Beach samples in this area have been analyzed for heavy minerals: 13 samples (Twenhofel, 1946a) and eight samples (Peterson et al., 1986). Beach sample coverage in area B is sparse. River samples in this area have also been analyzed for heavy minerals: 11 samples (Kulm et al., 1968b) and three samples (Peterson et al., 1986; Peterson et al., 1984b). River sample coverage in area B is intermediate.

Area C: Central Oregon 44-45°N

Continental shelf bathymetry in area C is contoured at the 10 m interval on U.S. Coast and Geodetic Survey Chart 1308N-22 (1968) and extends across the full width of the shelf. Clarke et al. (1985) have run 400 km of high-resolution bathymetry in the southern half of area C. High-resolution bathymetry coverage in area C is sparse. Side scan sonar data is unavailable for area C with the exception of two one-square-kilometer areas offshore of Yaquina Bay and Depoe Bay (U.S. Army Corps of Engineers, 1986). Twenty-eight camera stations, 11 current meter stations, and 11 transmissometer stations have been occupied on the shelf (OSU Archives).

Seismic profiling in area C includes low-resolution records: 600 km of trackline by Muehlberg (1971) and 950 km of trackline by OSU (Oregon State University Archives), and high-resolution records: 400 km of trackline by Clarke et al. (1985). These high-resolution records taken with a uniboom and sparker represent about 25 percent of the total seismic records available in area C. Seismic coverage is sparse north of 44°30'N latitude but is intermediate south of this latitude.

Regional maps of magnetic anomaly data in this area are available from one study (Emilia et al., 1968). Local magnetic records are unavailable in this area with exception of a small beach placer near Newport, Oregon (Peterson et al., 1986).

Shelf grab samples have been analyzed (1) for grain size: 164 samples (Runge, 1966), 125 samples (Bushnell, 1964), 101 samples (Maloney, 1965), and 62 samples (OSU Archives); and (2) for heavy minerals: 28 samples (Bushnell, 1964), seven samples (Runge, 1966), seven samples, provenance indicators only, (Scheidegger et al., 1971). Both Runge and Scheidegger et al. utilized grab samples from Bushnell (1964). Nonetheless, grab sample grain size coverage is dense in area C. By comparison, heavy mineral data coverage for the shelf is sparse.

Gravity cores from four shelf sites (Clarke et al., 1985) and box cores from 15 shelf sites (Roush, 1970) and five shelf sites (Maloney, 1965) have been analyzed for sediment grain size. No analyses were made for heavy minerals in the core samples. Shallow core coverage in area C is intermediate.

Beach samples analyzed for heavy minerals include 14 samples (Twenhofel, 1946a) and 14 samples (Peterson et al., 1986). Beach sample coverage in this area is sparse. Kulm (1965) has extensively sampled the Yaquina Bay sediments for heavy minerals and has analyzed four river samples for heavy minerals. Peterson et al. (1984b) have analyzed samples from three small estuaries for heavy minerals as provenance indicators. River and estuarine sample coverage for area C is dense.

Area D: South-Central Oregon 43-44°N

Bathymetry of the shelf in area D is contoured at the 10-m interval on U.S. Coast and Geodetic Survey Chart 1308N-17 (1968). High-resolution bathymetry, 1,350 km of trackline, is available for much of area D (Clarke et al., 1985). High-resolution bathymetry coverage in area D is intermediate. Side scan sonar records are available for approximately one-square-kilometer areas offshore each of the Siuslaw, Umpqua, and Coquille harbor entrances (U.S. Army Corps of Engineers, 1986). Side scan sonar coverage of area D is sparse. Twelve camera stations were occupied on the shelf (OSU Archives), but there are no current measurements.

Low-resolution seismic records have been taken along 550 km of trackline (OSU Archives). High-resolution seismic records are available from 1,750 km of trackline (Clarke et al., 1985; Mackay, 1969). About 50 percent of the seismic records in this area are high-resolution sparker and uniboom. Seismic coverage is dense north of 43°20'N latitude but is only intermediate south of this latitude due to overlapping tracklines.

Regional magnetic anomaly data for area D are available from Emilia et al. (1968). Local magnetic data have been collected for 30 km of trackline by Kulm et al. (1968a). Local magnetic coverage in area D is sparse.

Continental shelf grab samples have been analyzed for (1) grain size: 138 samples (Runge, 1966) and 78 samples (OSU Archives); (2) for heavy minerals: 70 samples (OSU Archives), 22 samples (Runge, 1966), and 15 samples, provenance indicators only, (Scheidegger et al., 1971); and (3) for gold: 31 samples (Clifton, 1968; Clifton et al., 1967). Grab sample coverage of area D is intermediate.

Shelf cores from this area include 18 gravity cores less than 2 m in length (Clarke et al., 1985) and box cores from 12 sites (Roush, 1970) and three sites (Maloney, 1965) which were analyzed for grain size. Shelf core coverage in area D is sparse.

Beach and coastal terrace samples have been analyzed for heavy minerals and elemental abundance: extensive bore hole sampling in six terrace mine sites (Griggs, 1945), 20 beach and terrace samples (Twenhofel, 1943; Twenhofel, 1946a,b), five samples (Clifton et al., 1967), four samples (Peterson et al., unpublished data), four samples (Horner, 1918) and three samples (Day and Richards, 1906). Beach and terrace sample

coverage in this area is dense.

River samples analyzed for heavy minerals include four samples (Kulm et al., 1968b), two samples (Twenhofel, 1946b), and extensive sampling of the Siuslaw estuary (Peterson et al., 1984b). River sample coverage in area D is sparse.

Area E: Southern Oregon 42-43°N

Continental shelf bathymetry for area E is contoured at the 10-m interval and extends across the full width of the shelf on U.S. Coast and Geodetic Survey Chart 1308N-17 (1968). High-resolution bathymetry has been run along 50 km of trackline north of 42°40'N latitude (Clarke et al., 1985) but is unavailable for the rest of area E. Side scan sonar records are unavailable except for one-square-kilometer areas offshore each of the Rogue and Coquille River harbor entrances (U.S. Army Corps of Engineers, 1986). Twenty-one camera stations have been occupied on the shelf (OSU Archives), but there are no current measurements.

Low-resolution seismic profiling in this area has been taken along 675 km of trackline (OSU Archives). High-resolution seismic records include 300 km of sparker trackline (Mackay, 1969), 250 km of sparker trackline (Chambers, 1969), and 50 km of uniboom trackline (Clarke et al., 1985). About 50 percent of the seismic profiles in this area are from high-resolution records. Seismic coverage in area E is intermediate north of 42°20'N latitude but is sparse south of this latitude.

A regional map of magnetic anomaly data is available from one study (Emilia et al., 1968). Local magnetic records are available from 60 km of trackline in the northern part of the area (Kulm et al., 1968a). Local magnetic coverage in area E is sparse.

Continental shelf grab samples have been analyzed (1) for grain size: 148 samples (OSU Archives), 60 samples (Chambers, 1969) and 20 samples (Runge, 1966); (2) for heavy minerals: 148 samples (OSU Archives), 76 samples (Chambers, 1969) and four samples (Runge, 1966); and (3) for gold: 91 samples (Clifton et al., 1967; Clifton, 1968). Grab sample coverage in this area is dense.

Shelf cores have been collected at 23 box core sites (OSU Archives), 21 box cores (Chambers, 1969), 19 piston cores (Spigai, 1971) and four piston cores (Chambers, 1969). Shallow core coverage in area E is dense.

Beach samples were analyzed for heavy minerals: 12 samples (Twenhofel, 1946b), nine samples (Clifton et al., 1967), five samples (Day and Richards, 1906), four samples (Luepke, 1980b), four samples (Peterson, unpublished data) and two samples (Griggs, 1945). Beach sample coverage for area E is intermediate. River samples analyzed for heavy minerals include 75 samples, from Sixes River, (Boggs, 1969); five samples (Kulm et al., 1968b); three samples (Twenhofel, 1946b); and three samples (Peterson,

unpublished data). River sample coverage in this area is intermediate.

Area F: Northern California 41-42°N

Continental shelf bathymetry in area F is contoured at the 10-m interval on U.S. Coast and Geodetic Survey Chart 1308N-12 (1969). High-resolution bathymetry has been taken along 550 km of trackline in this area (Field et al., 1980, 1982a). High-resolution bathymetric coverage is dense in the central part of area F but is minimal outside the central region. Extensive side scan sonar records (155 km of trackline) have been collected offshore of the Klamath River mouth (Field et al., 1982b) but are generally unavailable elsewhere on the shelf.

High- and low-resolution seismic records have been taken along 550 km of trackline (Field et al., 1980, 1982a). High-resolution seismic records are also available from an additional 460 km of trackline (Borgeld, 1985). High-resolution seismic coverage is intermediate in area F.

Published regional magnetic data are minimal in area F (Emilia et al., 1968). However, up to 500 km of regional magnetic data might be available from Field et al. (1980). Local magnetic coverage in this area is unavailable.

Shelf grab samples from 20 sites have been analyzed for grain size (Borgeld, 1985). Shelf grab sample coverage in this area is sparse for grain size data and nonexistent for heavy mineral data.

Shelf cores have been collected and analyzed for grain size from 14 box core sites and four piston core sites (Borgeld, 1985) and from 11 gravity core sites (Field et al., 1980). Shelf core coverage in area F for grain size data is sparse and for heavy mineral data is nonexistent.

Beach sands have been analyzed for heavy minerals from three sites each (Peterson, 1986; Day and Richards, 1906). Beach sample coverage in area F is sparse. River samples analyzed for heavy minerals include two samples each (Kulm et al., 1968b) and (Peterson et al., 1986). River sample coverage in area F is sparse.

MAP SHEETS

Sheet A	47° to 46°N
Sheet B	46° to 45°N
Sheet C	45° to 44°N
Sheet D	44° to 43°N
Sheet E	43° to 42°N
Sheet F	42° to 41°N

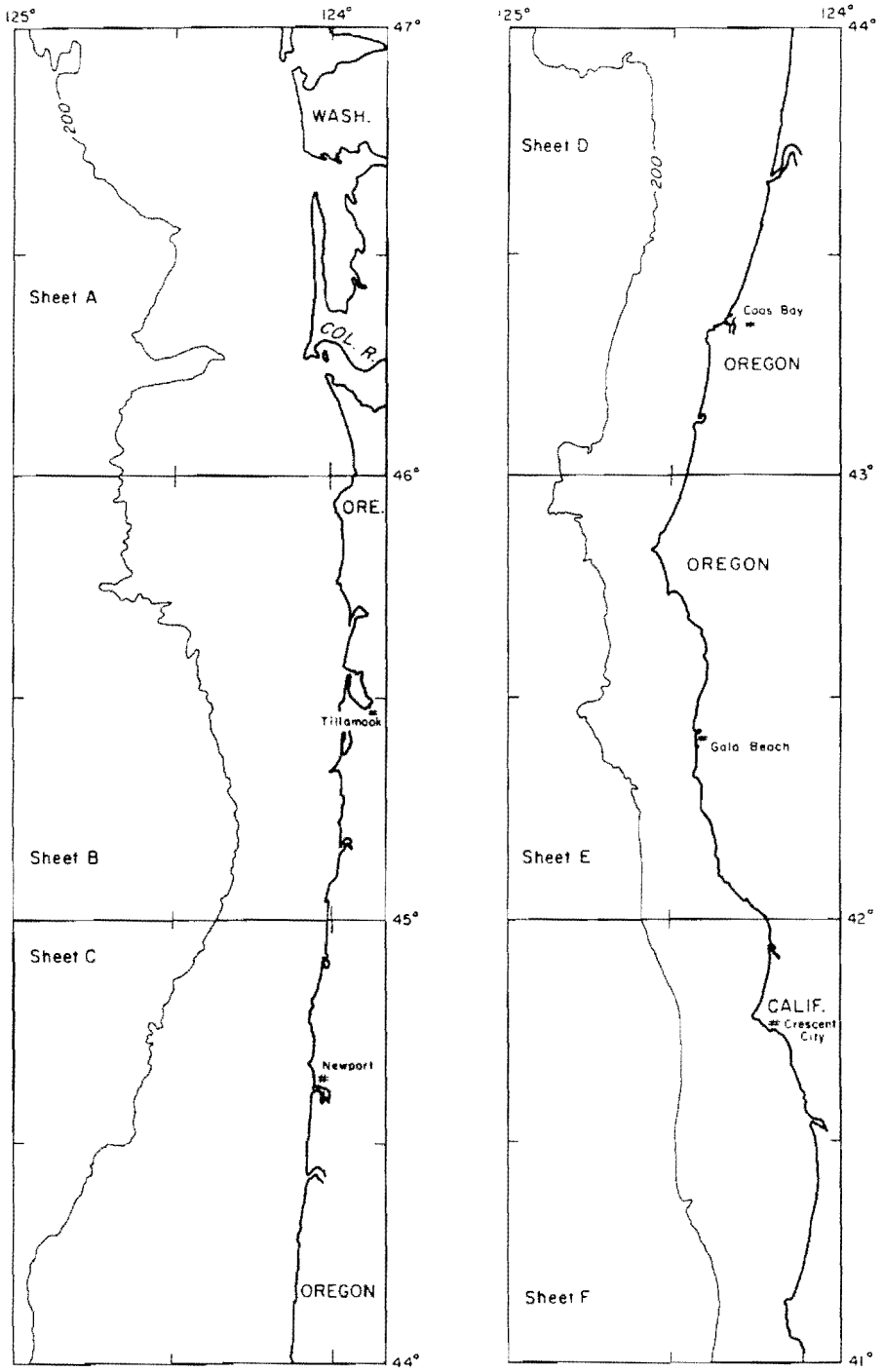

Figure 1. Regional index map of the inventory area--southern Washington, Oregon, and northern California. The study area is divided into six one-degree latitude map sheets A-F. Contours in meters.

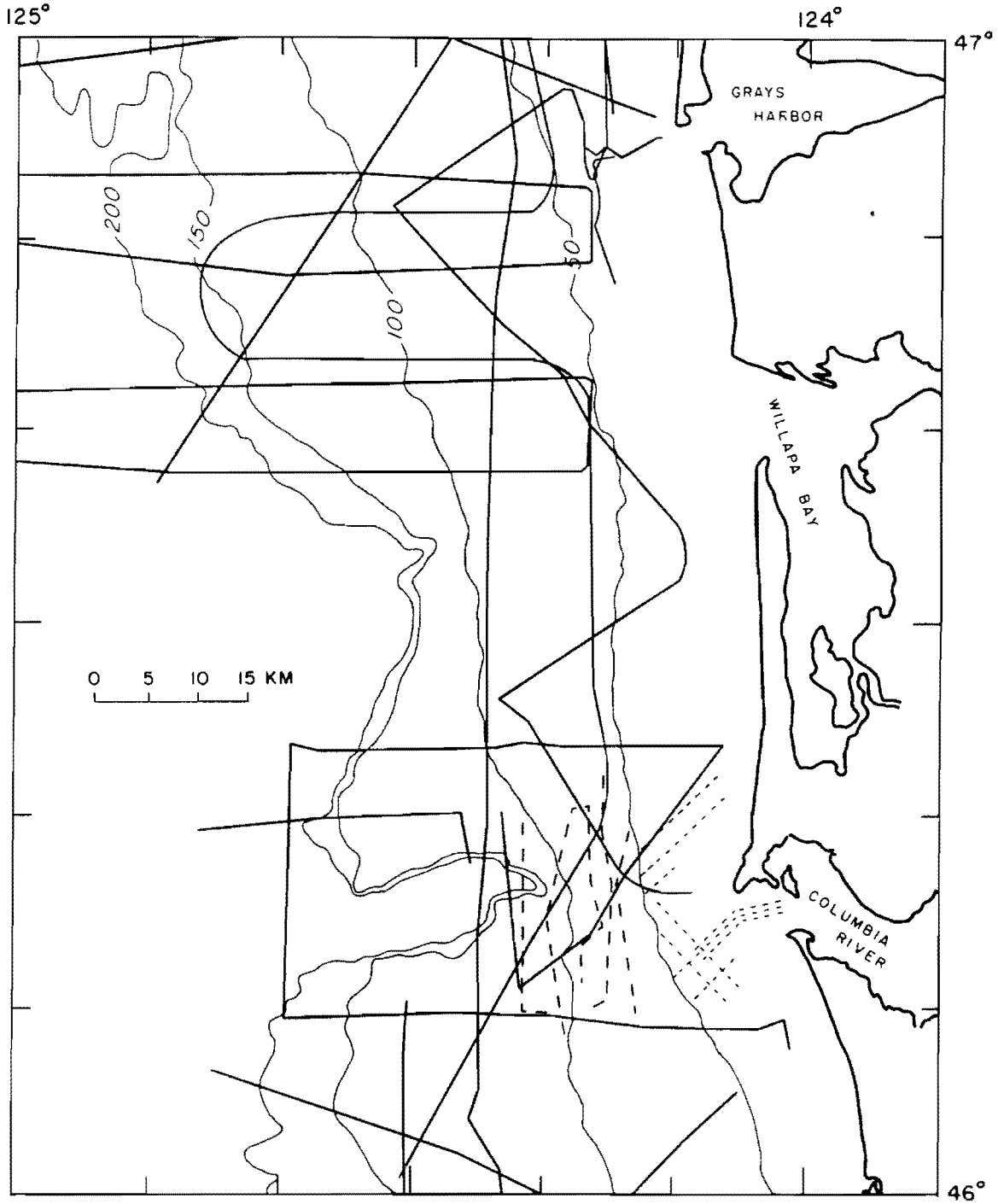

Figure 2. Map Sheet A of southern Washington continental shelf showing location of seismic tracklines (——— Wagner and Batatian, 1985; — — —Berg et al., 1966;-----U.S. Army Corps of Engineers, 1986); and side scan sonar tracklines (----- U.S. Army Corps of Engineers, 1986). Contours in meters.

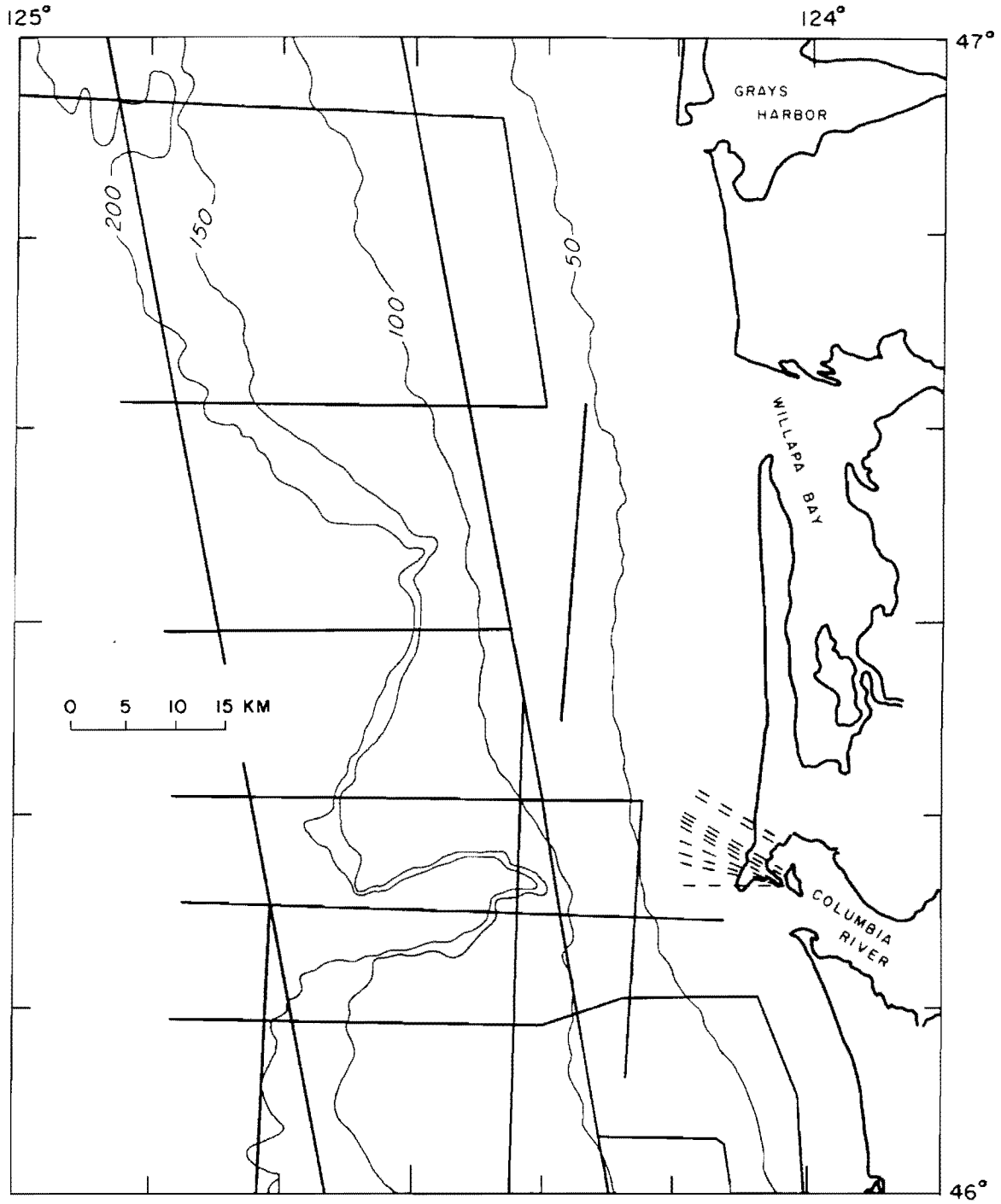

Figure 3. Map Sheet A of southern Washington continental shelf showing location of magnetic tracklines (—— Emilia et al., 1968; — — — Washington Mineral Products, Inc., 1973). Contours in meters.

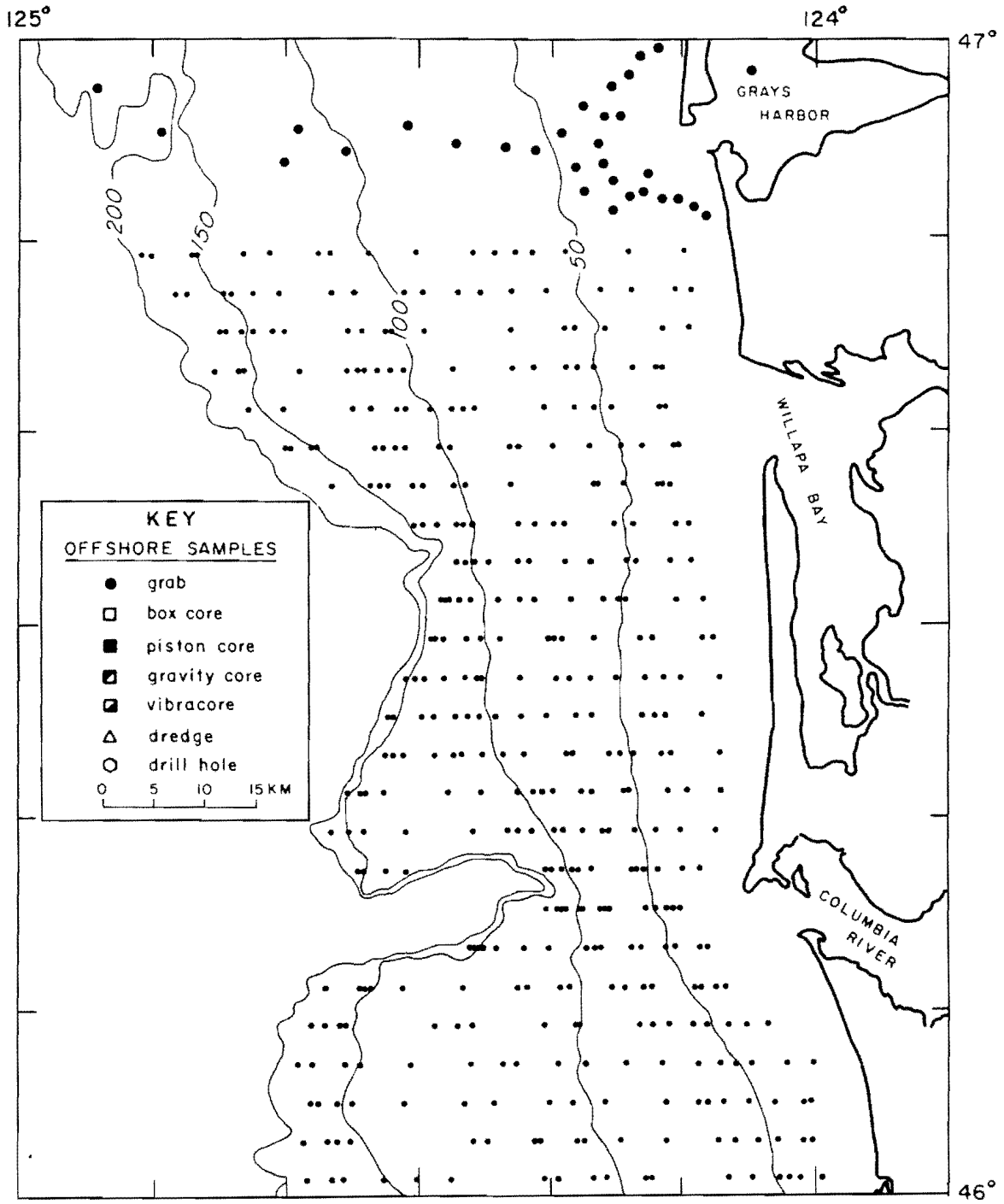

Figure 4. Map Sheet A of southern Washington continental shelf showing location of sample sites (• McManus, 1972; ● Venkatarathnam and McManus, 1973). Contours in meters.

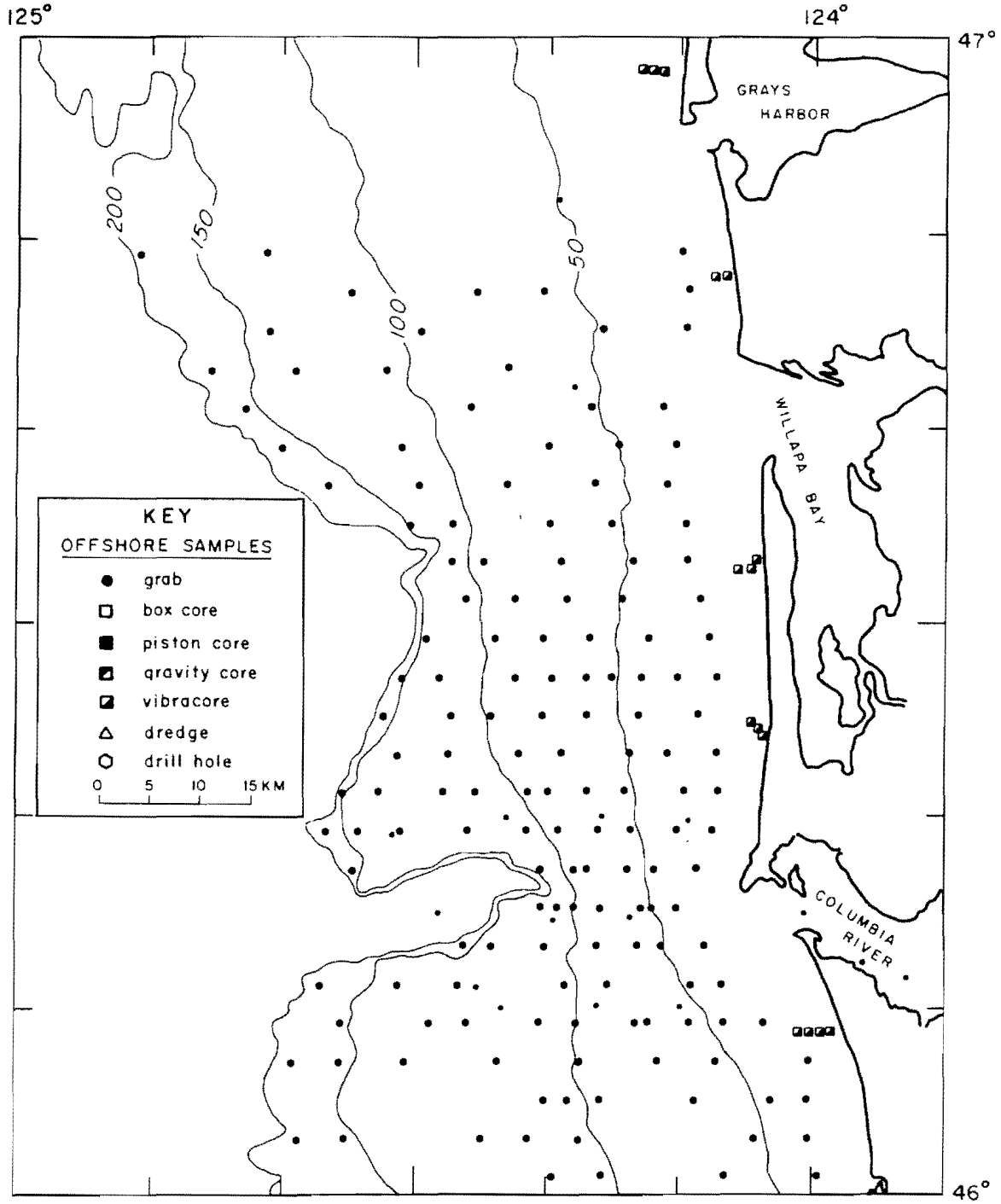

Figure 5. Continuation of Figure 4. Map Sheet A of southern Washington continental shelf showing location of sample sites (• White, 1967; • White, 1967, - cross reference McManus, 1972; ▪ Roberts, 1972). Contours in meters.

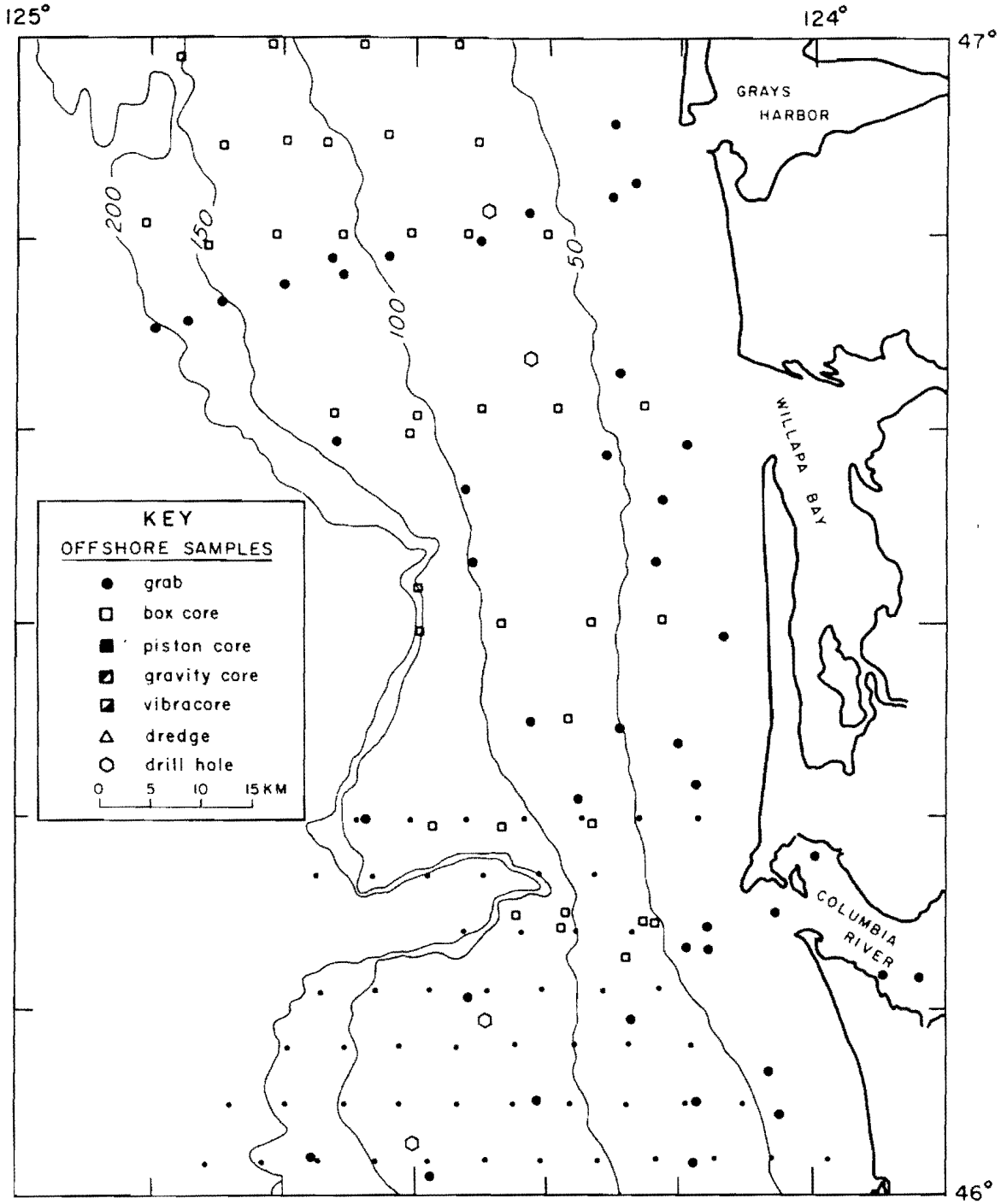

Figure 6. Continuation of Figure 4. Map Sheet A of southern Washington continental shelf showing location of sample sites (• Runge, 1966; ● Gross et al., 1967; □ Nittrouer et al., 1979; ○ Wagner and Batatian, 1985). Contours in meters.

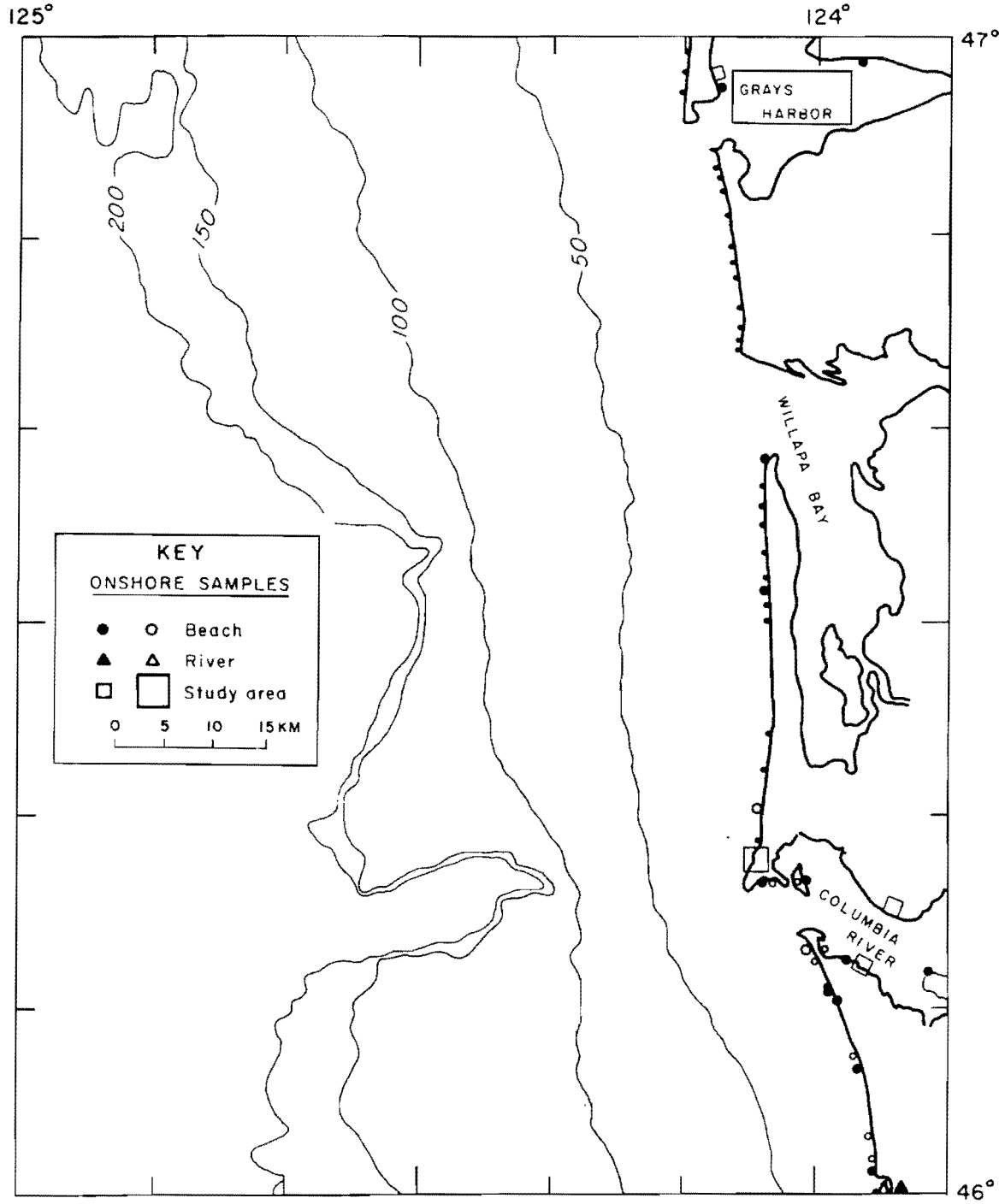

Figure 7. Map Sheet A of southern Washington coastal region (beach, terrace, and river) showing location of sample sites (• transect Plopper, 1978; ● Day and Richards, 1906; o Twenhofel, 1946a; O Peterson, unpublished data; □ Thorsen, 1964; □ Kelly, 1947; □ Washington Mineral Products, Inc., 1973; □ Peterson et al., 1984b; ▲ Kulm et al., 1968b). Contours in meters.

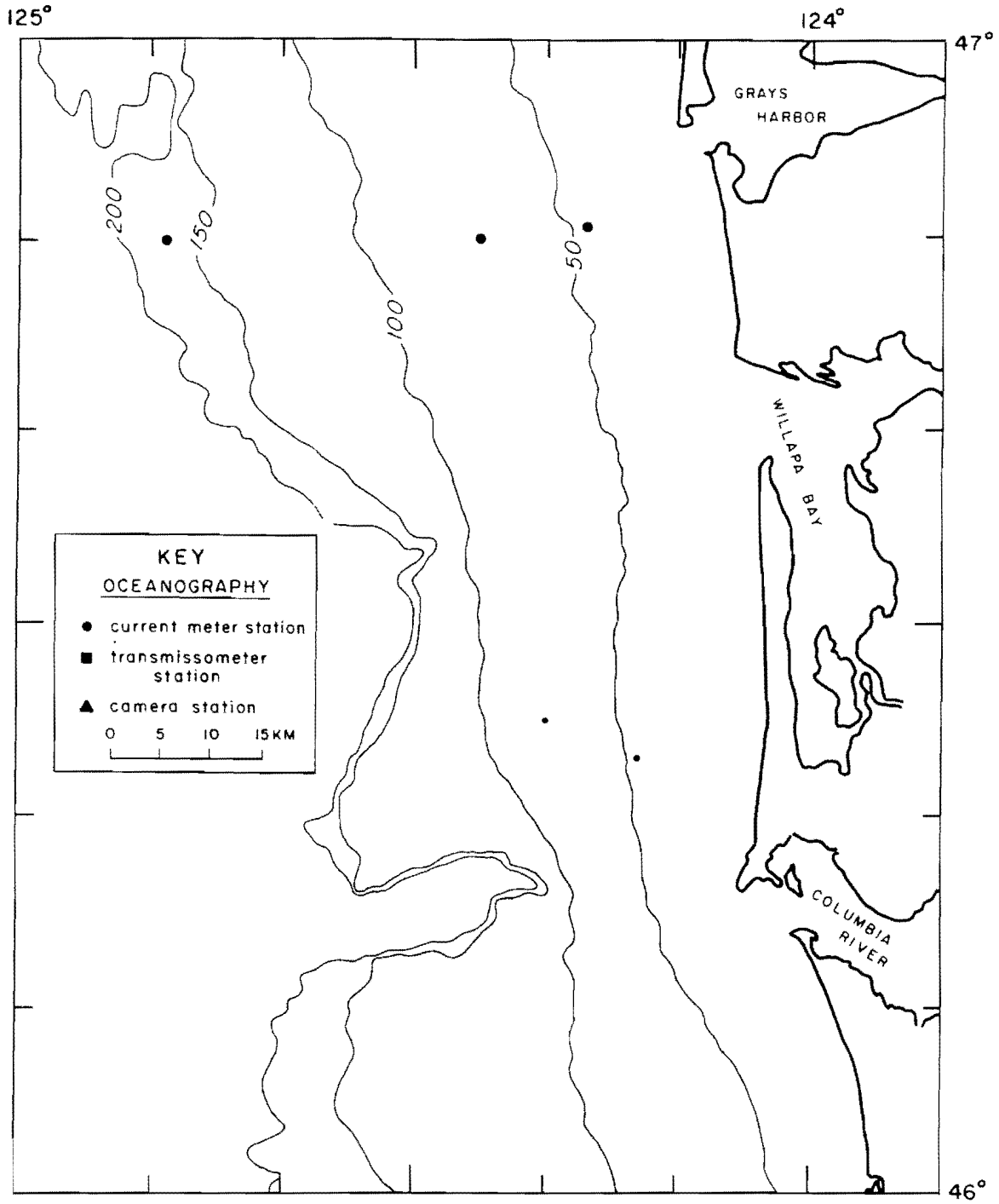

Figure 8. Map Sheet A of southern Washington continental shelf showing location of oceanographic stations (• Smith and Hopkins, 1972; ● Sternberg and Larsen, 1976). Contours in meters.

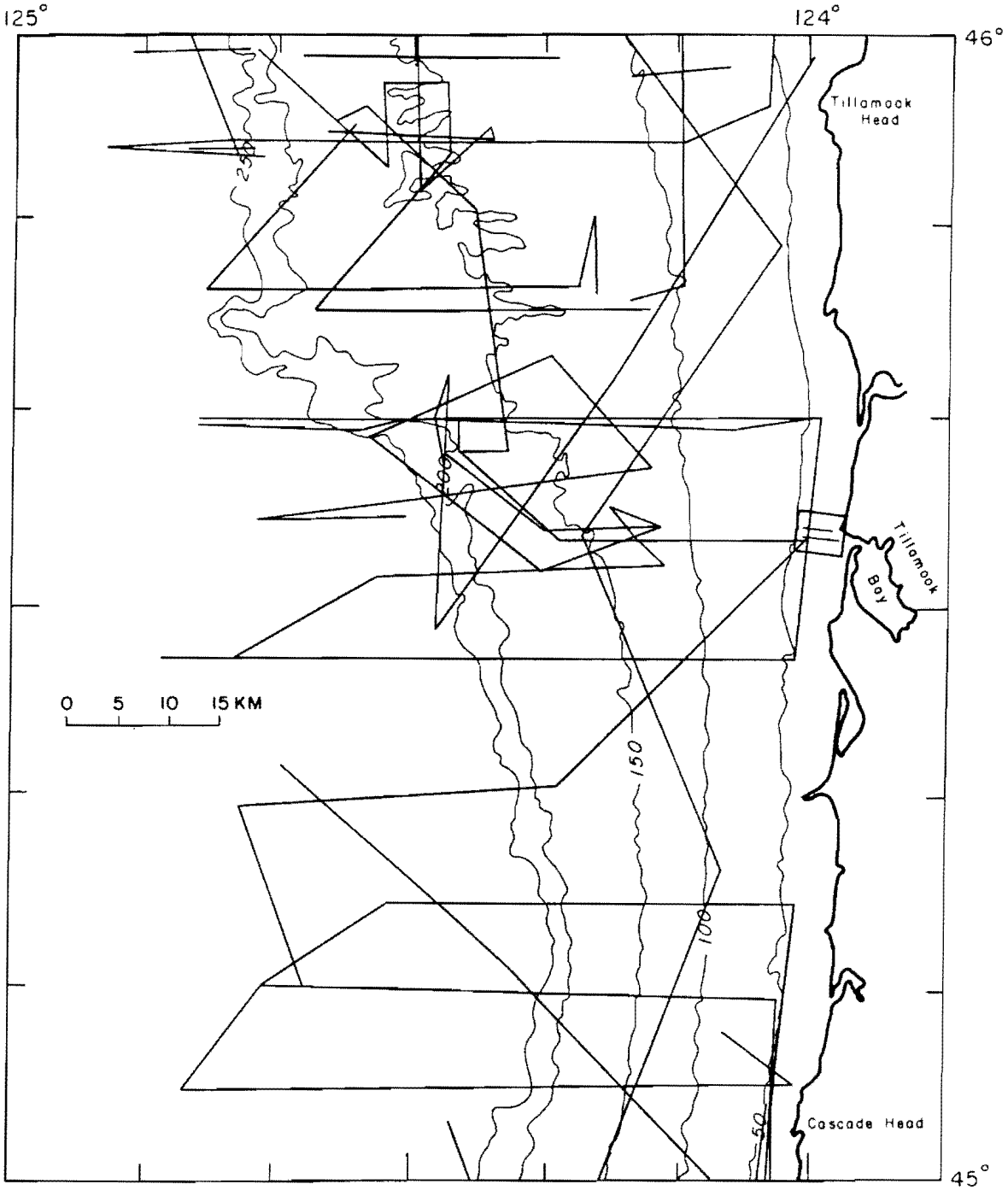

Figure 9. Map Sheet B of northern Oregon continental shelf showing location of seismic tracklines (—— OSU Archives, unpublished; ▭ U.S. Army Corps of Engineers, 1986); and scan sonar tracklines (▭ U.S. Army Corps of Engineers, 1986). Contours in meters.

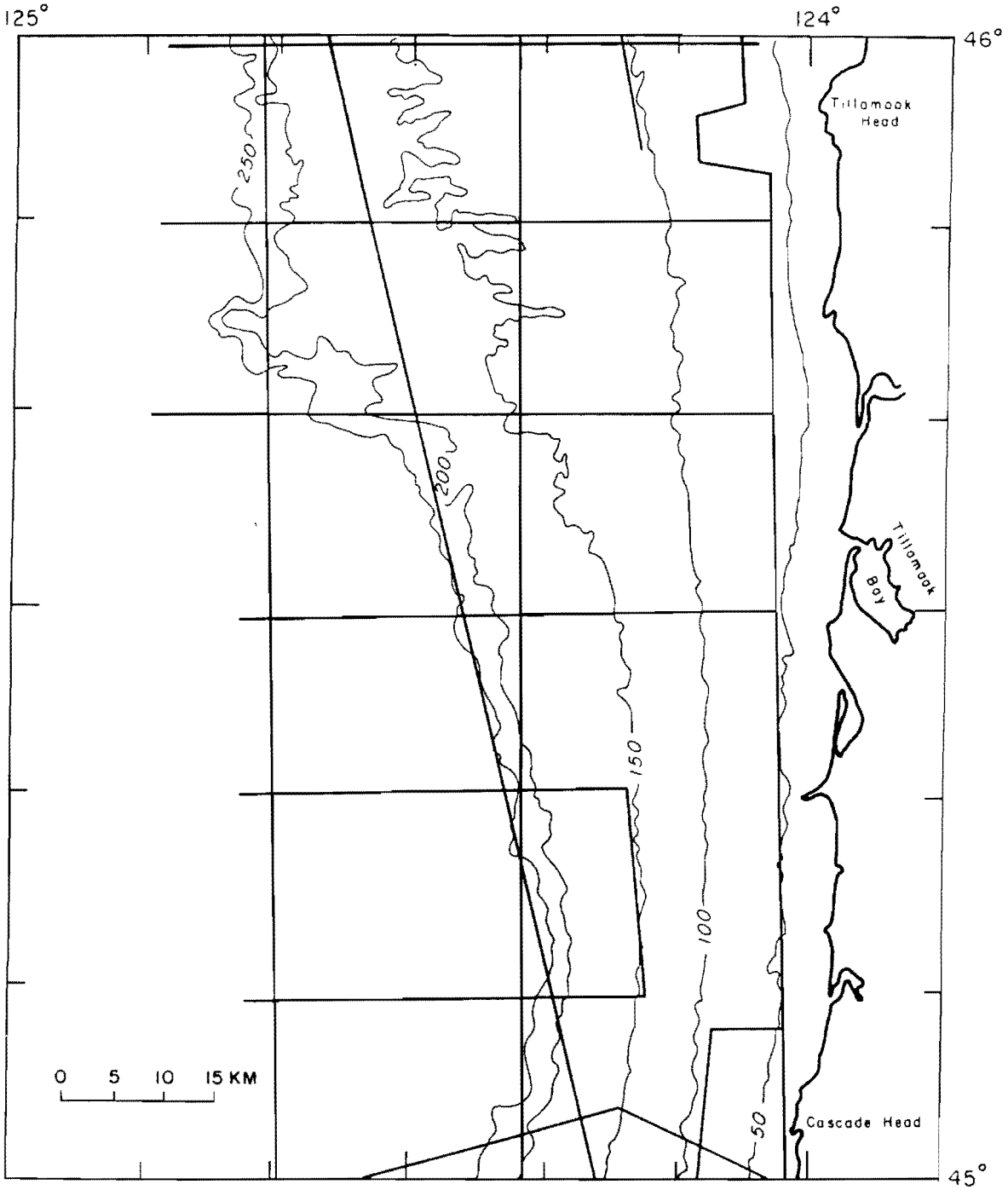

Figure 10. Map Sheet B of northern Oregon continental shelf showing location of magnetic tracklines (——— Emilia et al., 1968). Contours in meters.

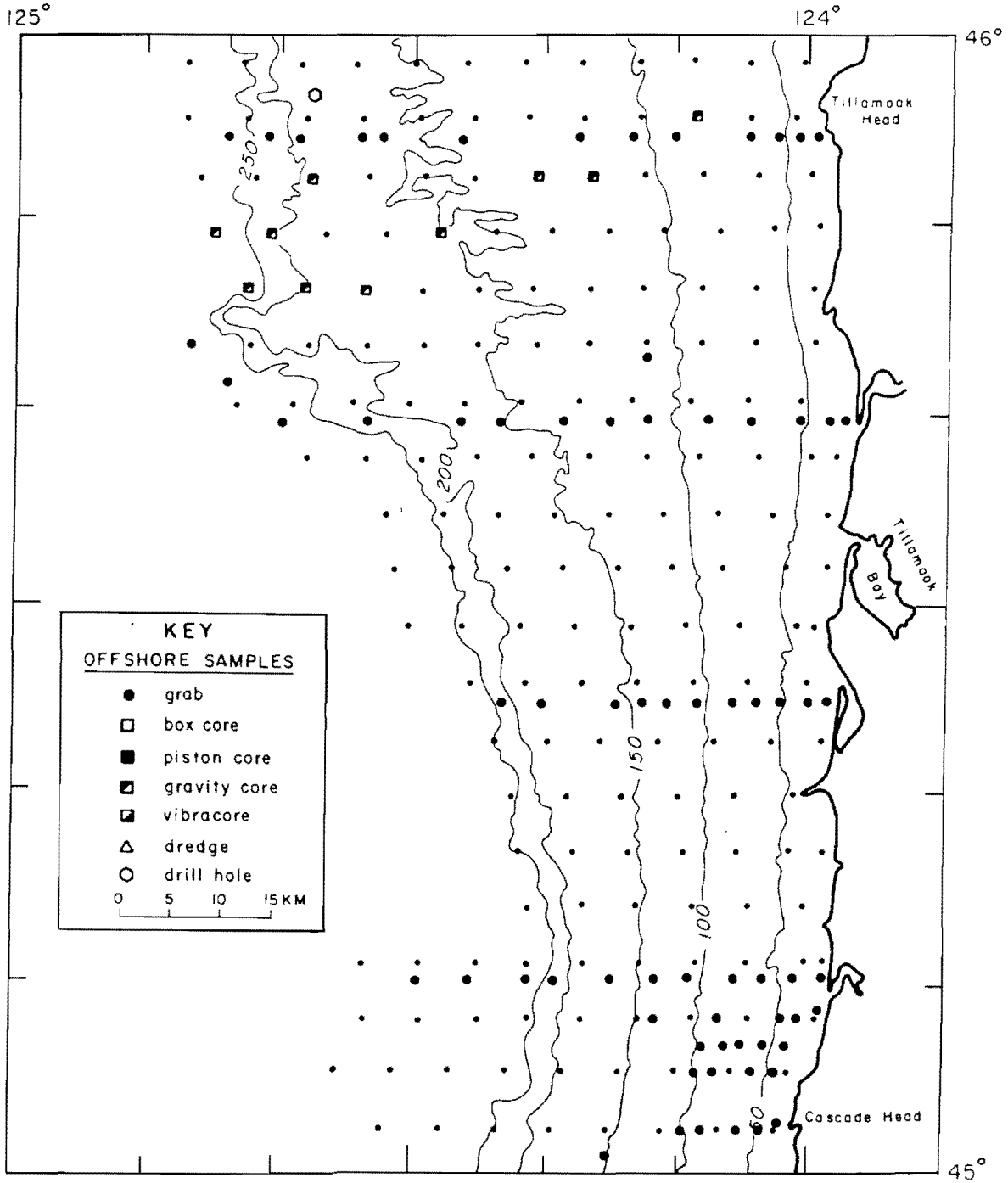

Figure 11. Map Sheet B of northern Oregon continental shelf showing location of sample sites (•■ Runge, 1966; ● OSU Archives, unpublished; ○ Kulm et al., 1984). Contours in meters.

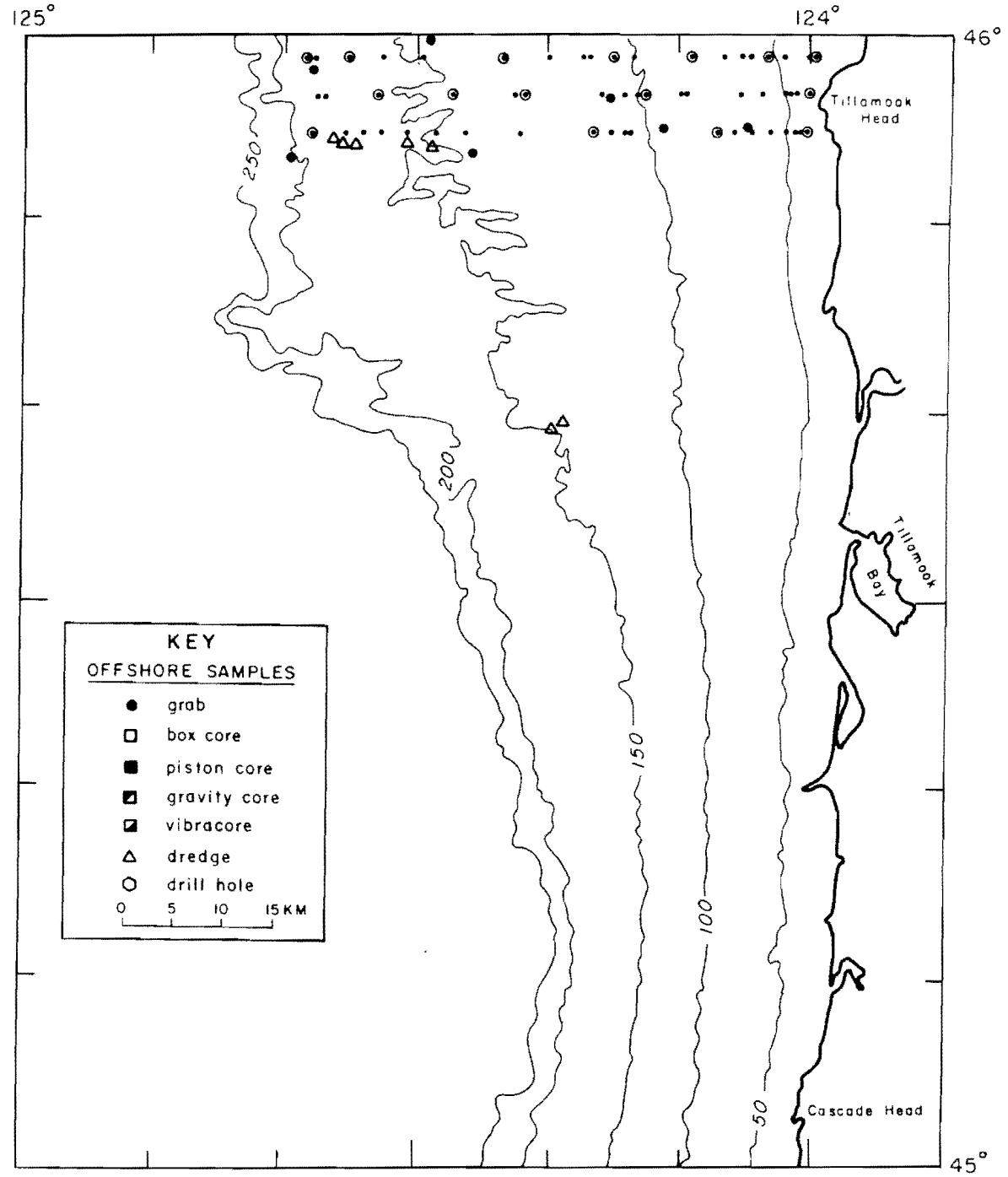

Figure 12. Continuation of Figure 11. Map Sheet B of northern Oregon continental shelf showing location of sample sites (• McManus, 1972; ⊙ White, 1967; ● Gross et al., 1967; △ OSU Archives, unpublished). Contours in meters.

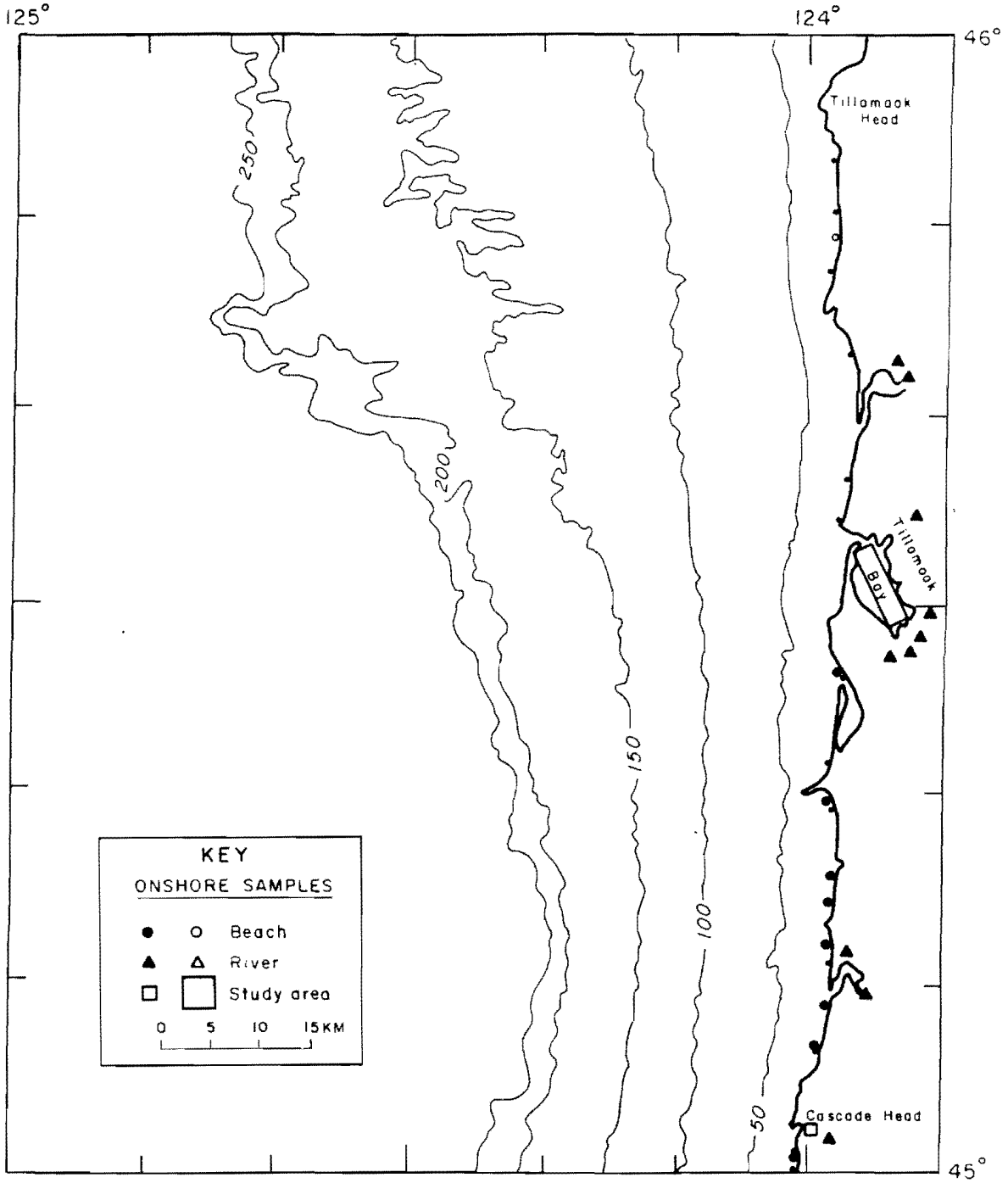

Figure 13. Map Sheet B of northern Oregon coastal region (beach, terrace, and river) showing location of sample sites (• Twenhofel, 1946a; ● Peterson et al., 1986; o ▲ Kulm et al., 1968b; □ Peterson et al., 1984b). Contours in meters.

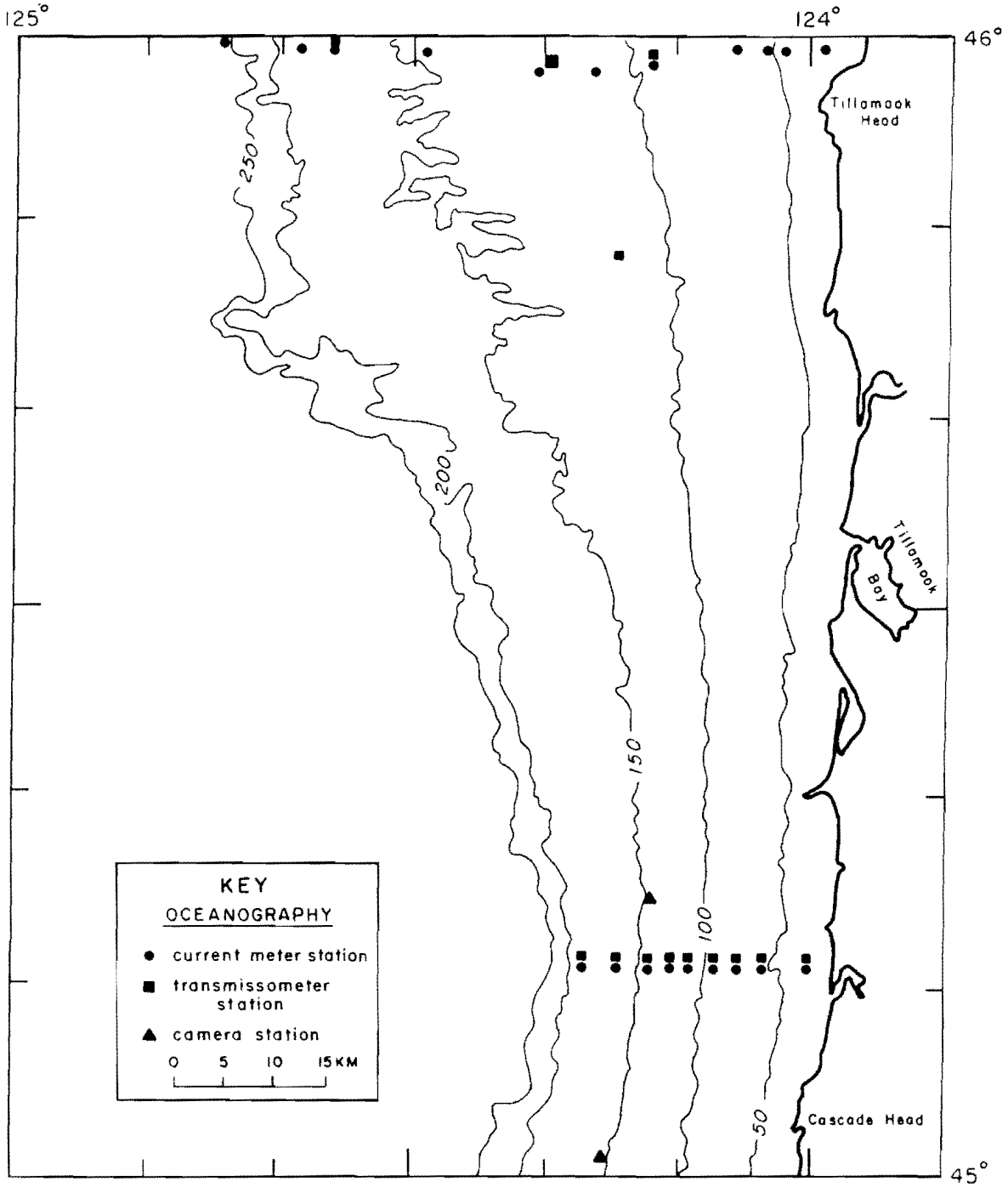

Figure 14. Map Sheet B of northern Oregon continental shelf showing location of oceanographic stations (● ■ Harlett, 1972; ■ ▲ OSU Archives, unpublished). Contours in meters.

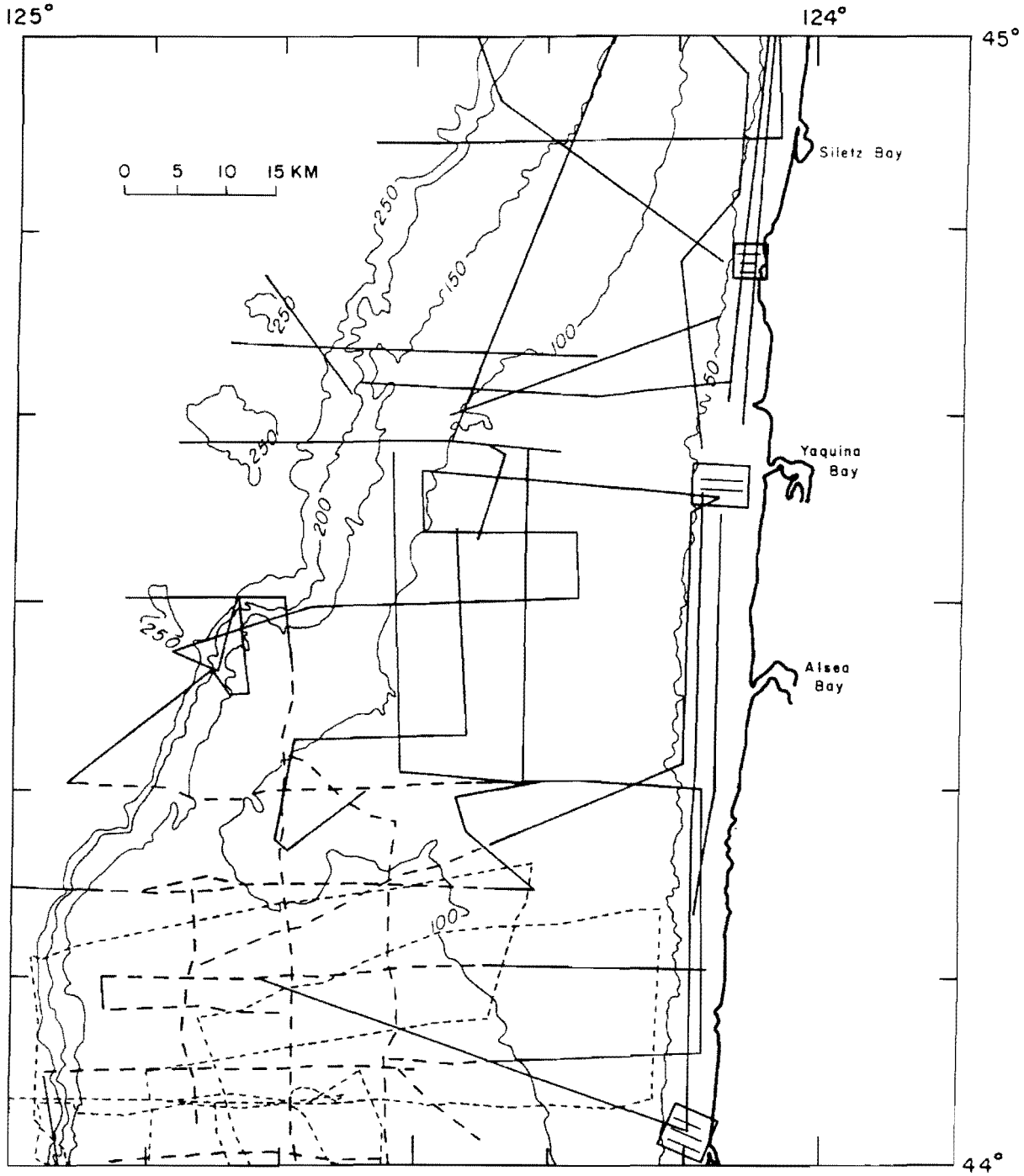

Figure 15. Map Sheet C of central Oregon continental shelf showing location of seismic tracklines (——— OSU Archives, unpublished; — — — Muehlberg, 1971; ----- Clarke et al., 1985; U.S. Army Corps of Engineers, 1986); and side scan sonar tracklines (U.S. Army Corps of Engineers, 1986). Contours in meters.

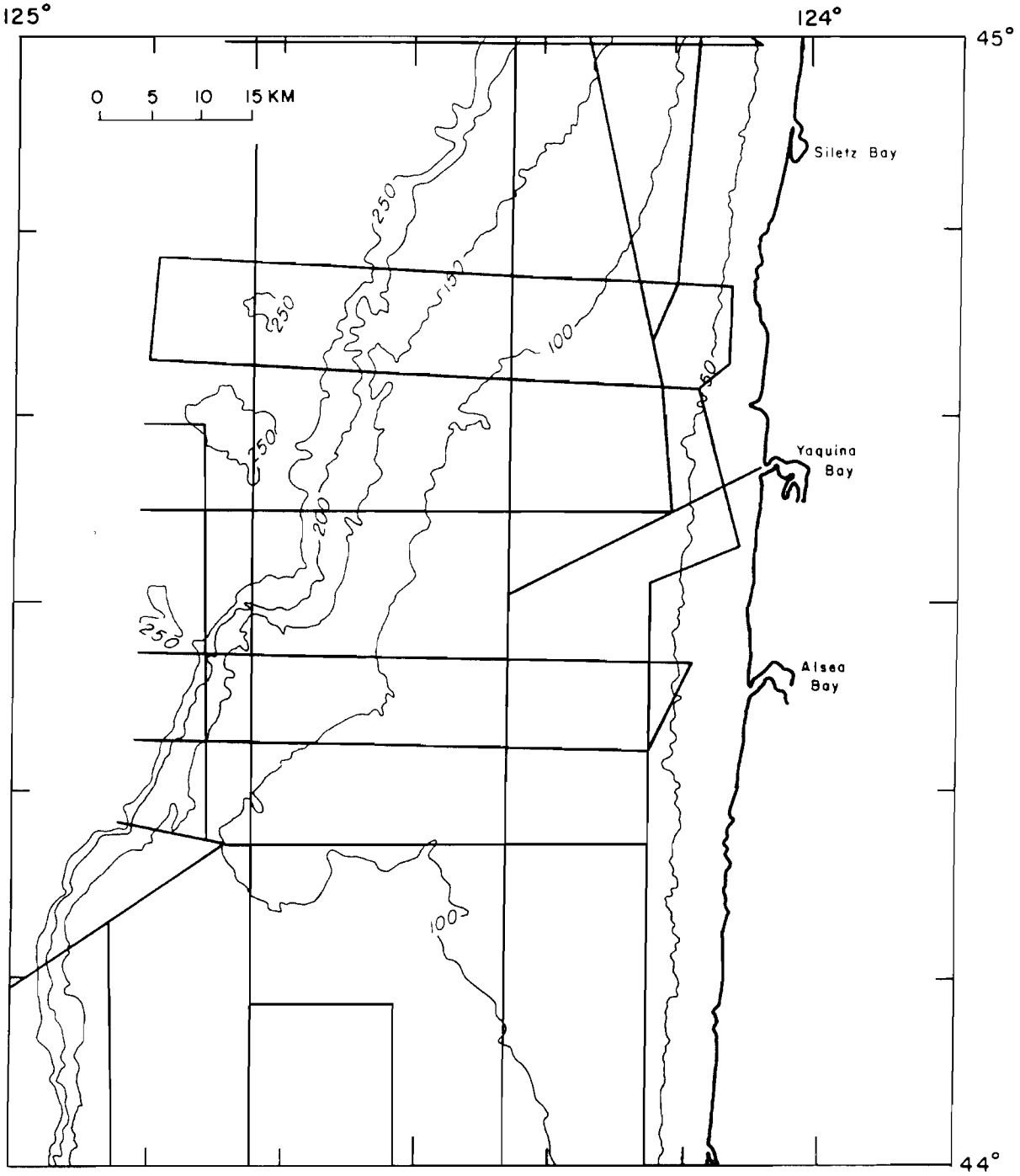

Figure 16. Map Sheet C of central Oregon continental shelf showing location of magnetic tracklines (—— Emilia et al., 1968). Contours in meters.

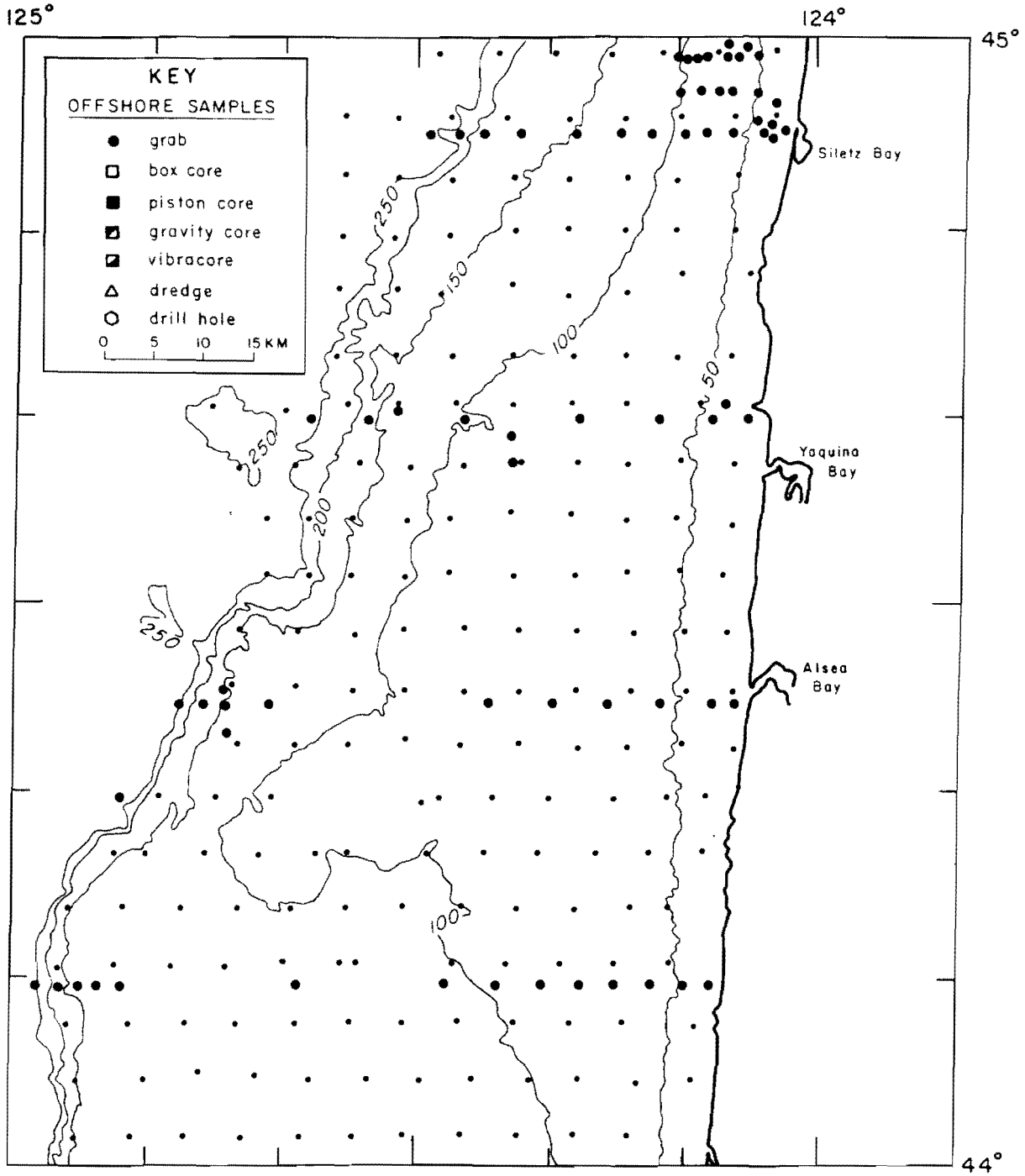

Figure 17. Map Sheet C of central Oregon continental shelf showing location of sample sites (• Runge, 1966; • Bushnell, 1964 - incorporated in Runge 44°20'N. to 44°57'N.; ● OSU Archives, unpublished). Contours in meters.

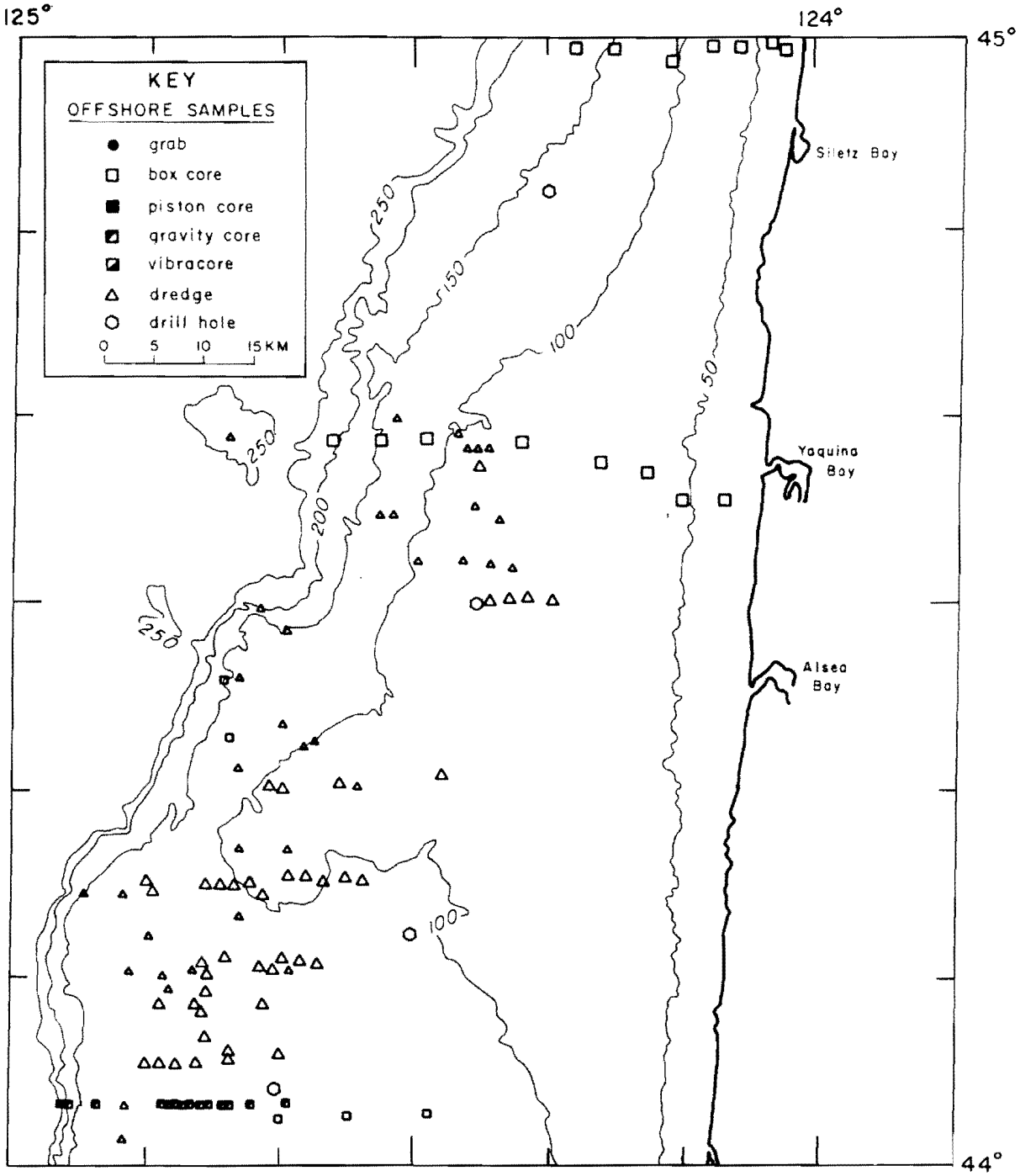

Figure 18. Continuation of Figure 17. Map Sheet C of central Oregon continental shelf showing location of sample sites (● Clarke et al., 1985; □ △ Maloney, 1965; □ Roush, 1970; △ OSU Archives, unpublished; ○ Kulm et al., 1984). Contours in meters.

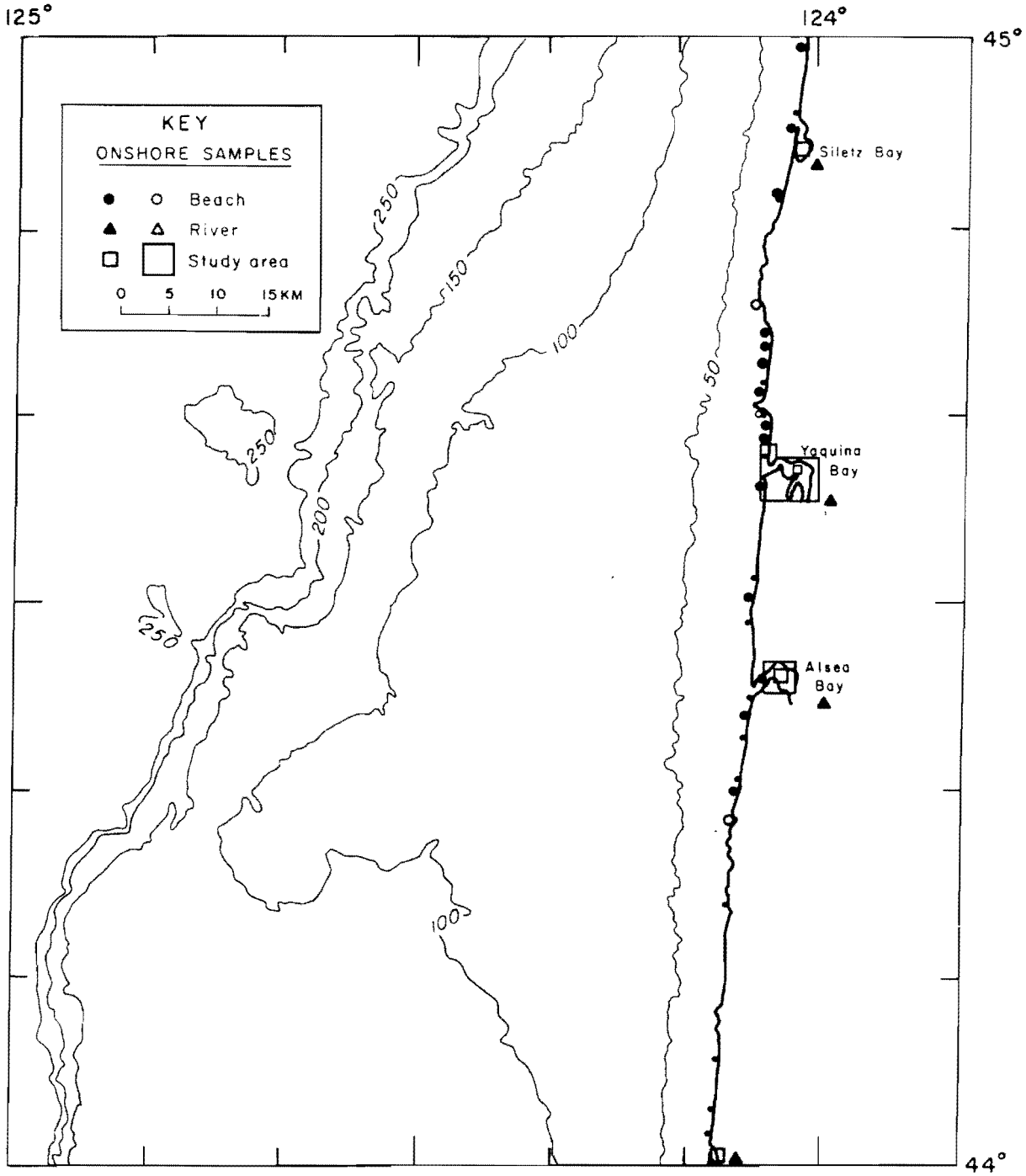

Figure 19. Map Sheet C of central Oregon coastal region (beach, terrace, and river) showing location of sample sites (• Twenhofel, 1946a; ● Peterson et al., 1986; ° Pardee, 1934; ○ ▲ Kulm et al., 1986b; ▫ Day and Richards, 1906; ☐ Peterson et al., 1984b; ☐ Peterson 1984a; ☐ Kulm, 1965). Contours in meters.

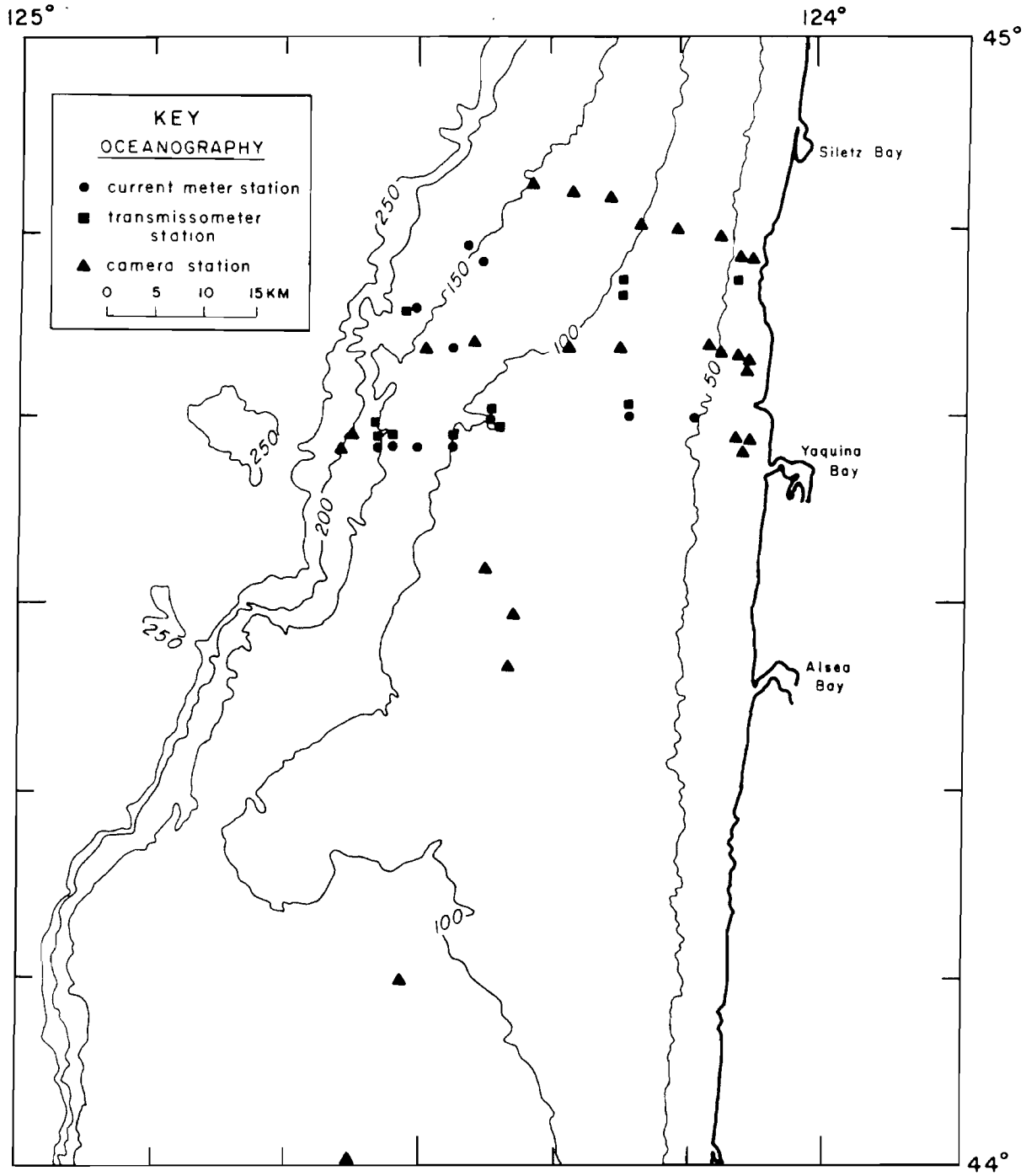

Figure 20. Map Sheet C of central Oregon continental shelf showing location of oceanographic stations (● ■ Harlett, 1972; ▲ OSU Archives, unpublished). Contours in meters.

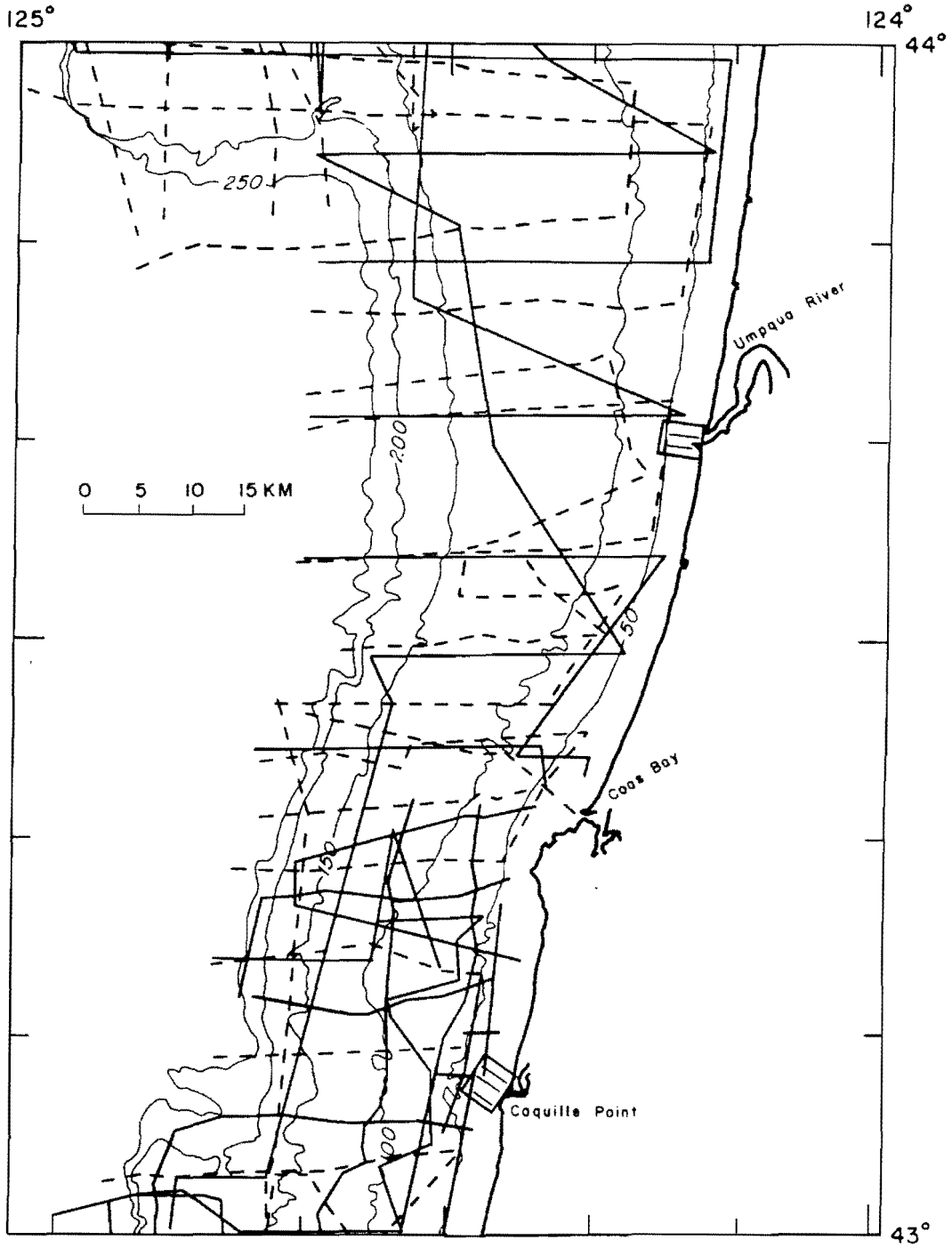

Figure 21. Map Sheet D of south-central Oregon continental shelf showing location of seismic tracklines (——— OSU Archives, unpublished, includes Mackay, 1969, 44°20'N. to 44°00'N.; — — — Clarke et al., 1985; [=] U.S. Army Corps of Engineers, 1986); and side scan sonar tracklines ([=] U.S. Army Corps of Engineers, 1986). Contours in meters.

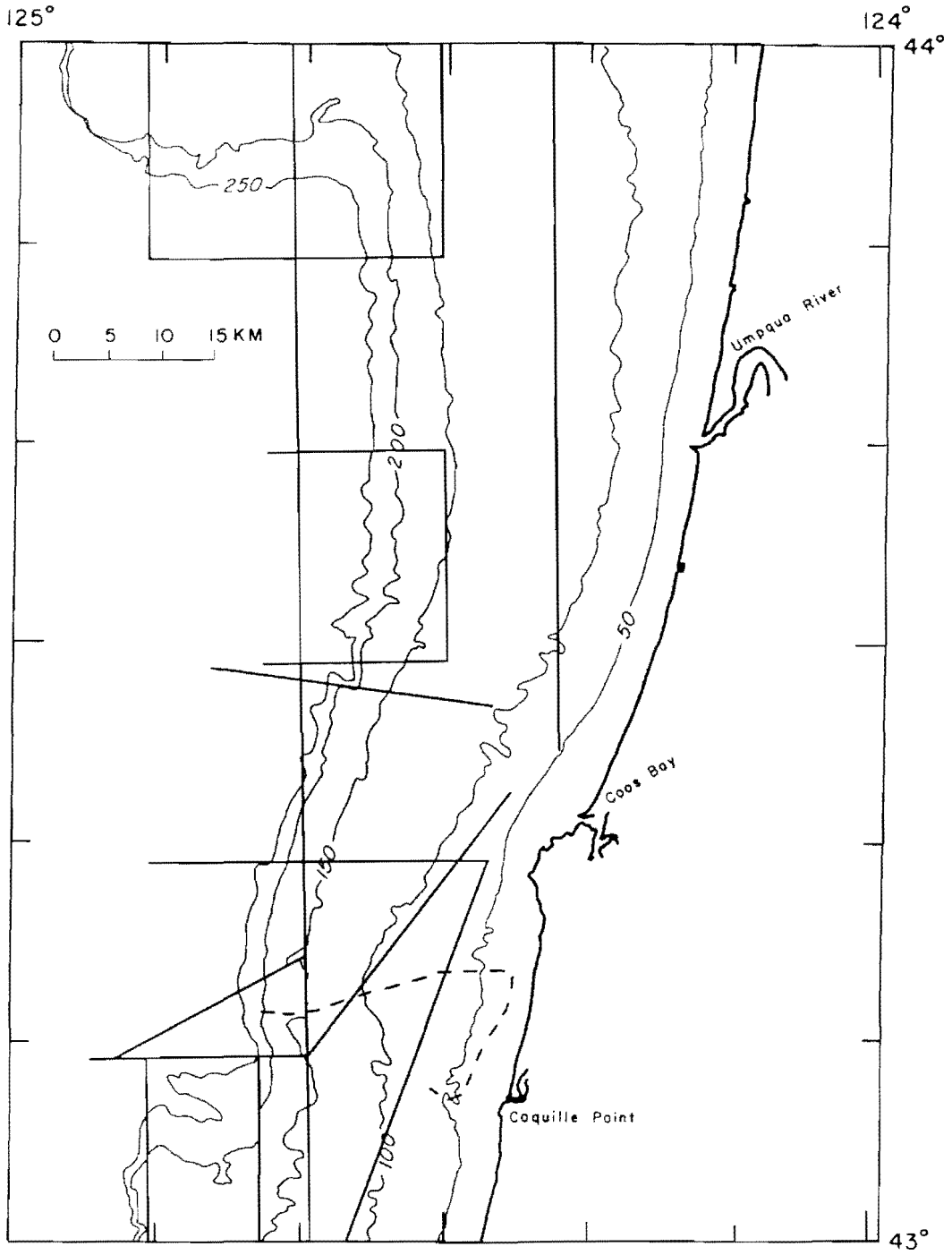

Figure 22. Map Sheet D of south-central Oregon continental shelf showing location of magnetic tracklines (—— Emilia et al., 1968; — — — Kulm et al., 1968a). Contours in meters.

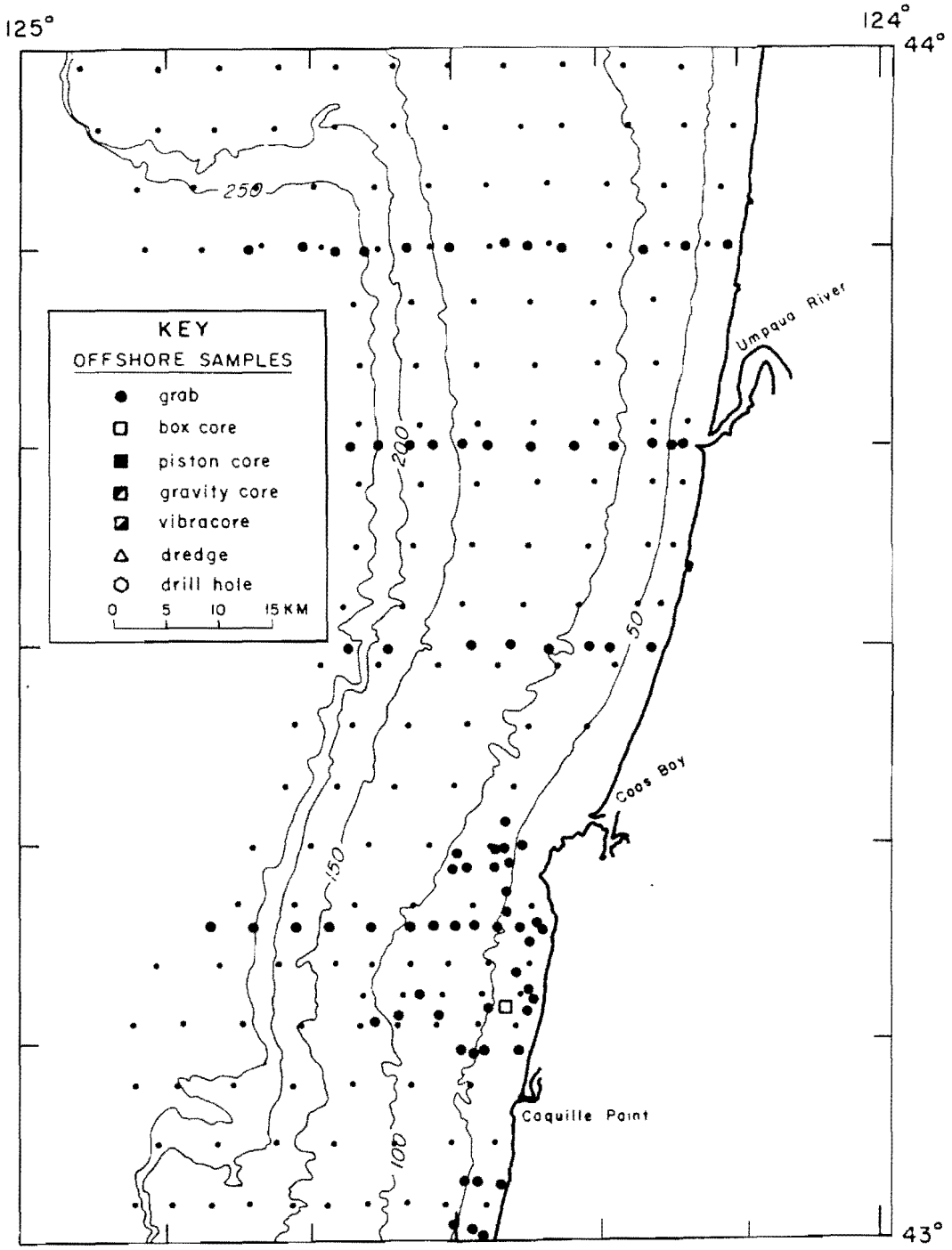

Figure 23. Map Sheet D of south-central Oregon continental shelf showing location of sample sites (• Runge, 1966; ● □ OSU Archives, unpublished). Contours in meters.

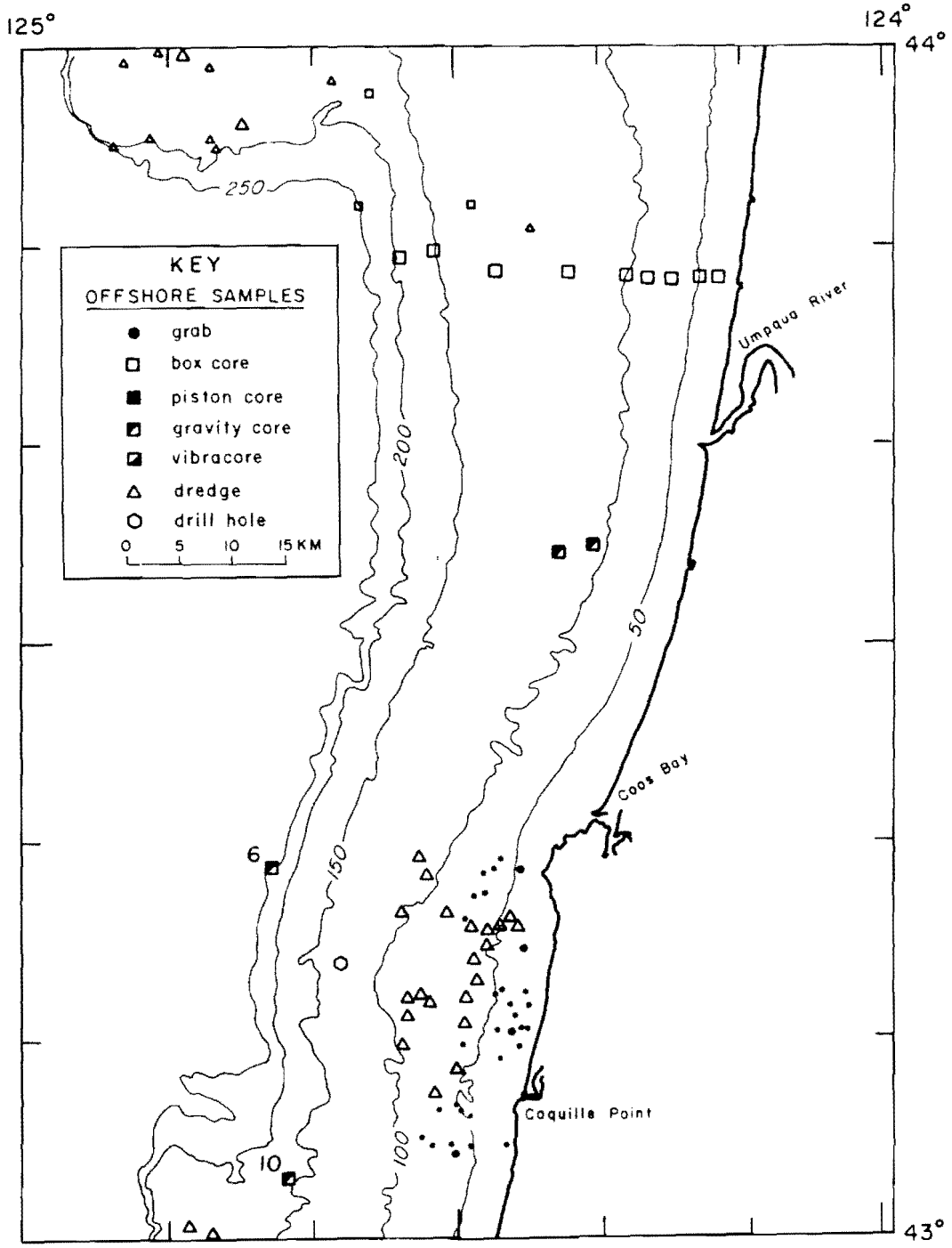

Figure 24. Continuation of Figure 23. Map Sheet D of south-central continental shelf showing location of sample sites (• Clifton, 1968; • Clifton et al., 1967; □ △ Maloney, 1965; □ Roush, 1970; ◩ Clarke et al., 1985; △ OSU Archives, unpublished; ○ Kulm, et al., 1984). Contours in meters.

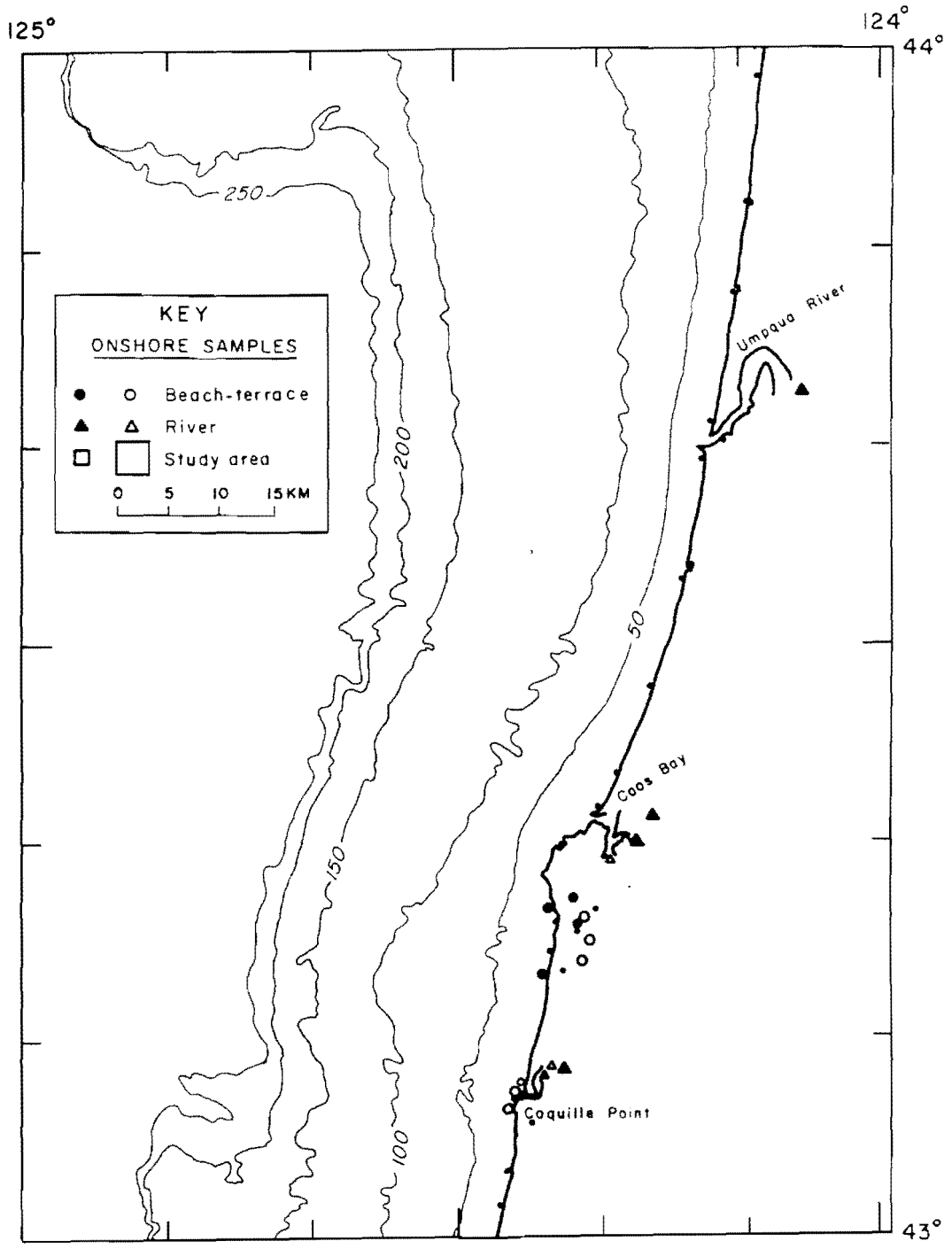

Figure 25. Map Sheet D of south-central Oregon coastal region (beach, terrace, and river) showing location of sample sites (• △ Twenhofel, 1946a,b; ● ▲ Peterson et al., unpublished data; ○ ▲ Kulm et al., 1968b; ○ Clifton et al., 1967). Contours in meters.

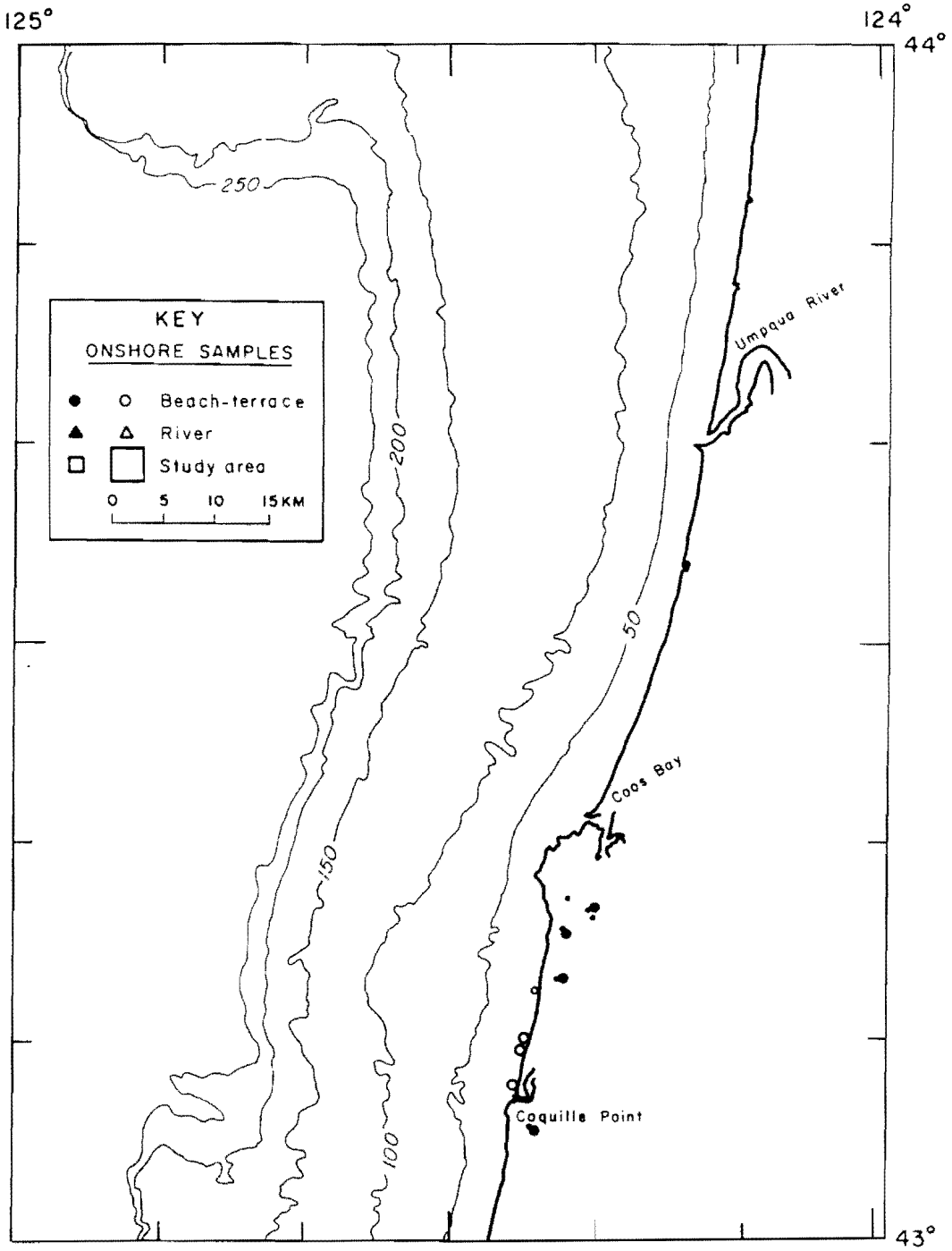

Figure 26. Continuation of Figure 25. Map Sheet D of south-central Oregon coastal region (beach, terrace, and river) showing location of sample sites (• Griggs, 1945; ● Horner, 1918; ○ Pardee, 1934; ○ Day and Richards, 1906). Contours in meters.

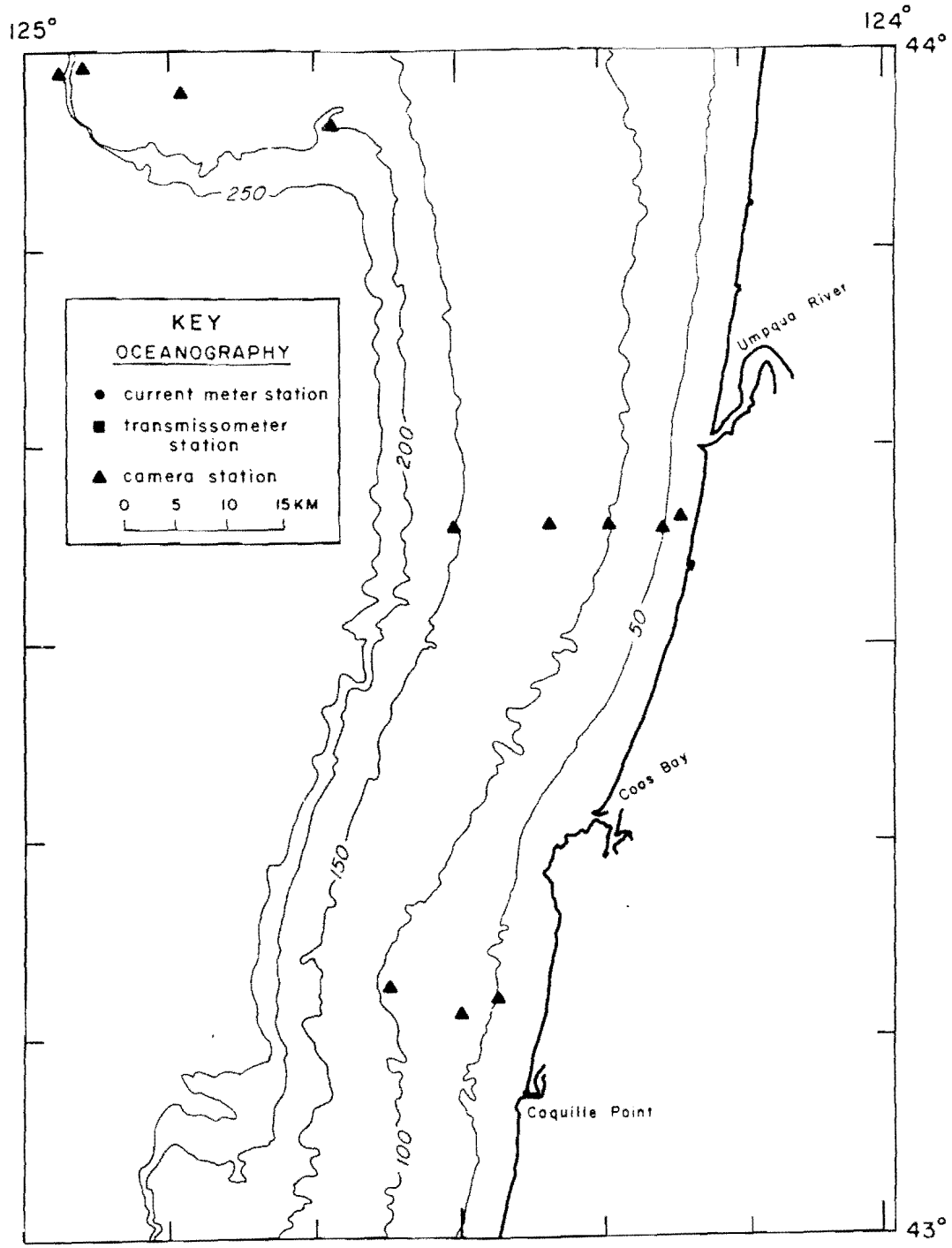

Figure 27. Map Sheet D of south-central Oregon continental shelf showing location of oceanographic stations (▲ OSU Archives, unpublished). Contours in meters.

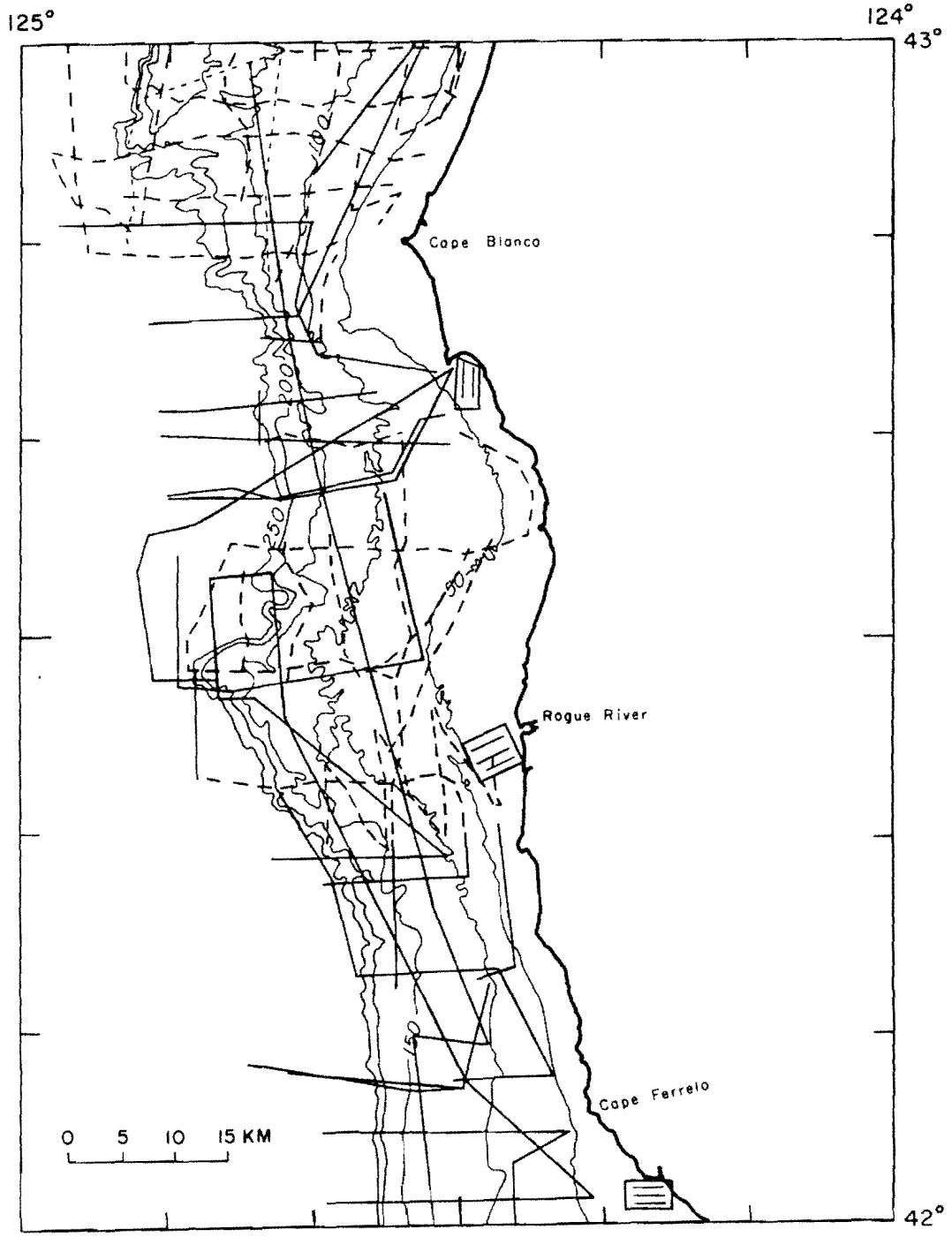

Figure 28. Map Sheet E of southern Oregon continental shelf showing location of seismic tracklines (—— OSU Archives, unpublished; – – – Mackay, 1969, above 42°45'N.; – – – Chambers, 1969, 42°20'N. to 42°40'N.; - - - - - Clarke et al., 1985, above 42°50'N.; U.S. Army Corps of Engineers, 1986); and side scan sonar tracklines (U.S. Army Corps of Engineers, 1986). Contours in meters.

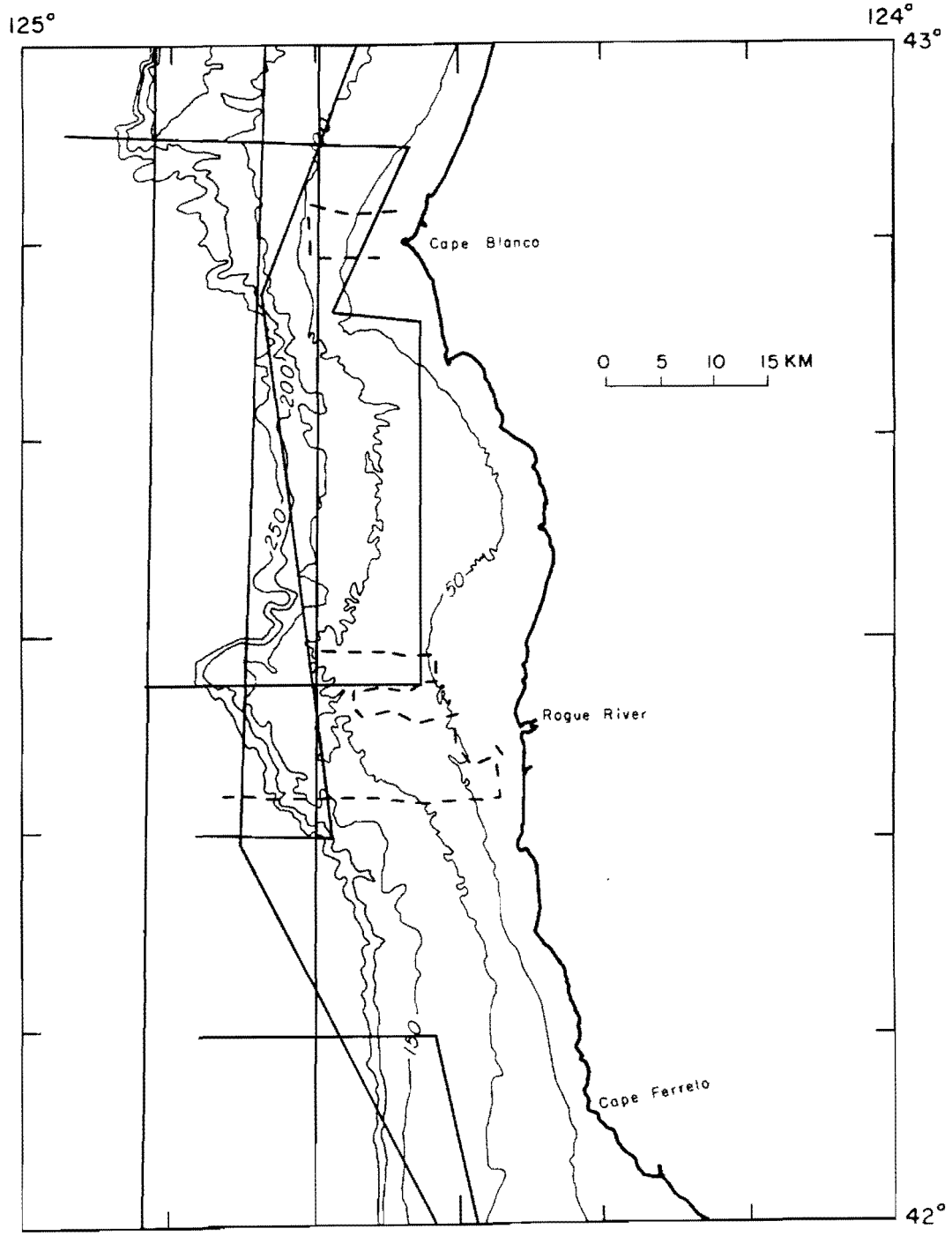

Figure 29. Map Sheet E of southern Oregon continental shelf showing location of magnetic tracklines (——— Emilia et al., 1968; – – – Kulm et al., 1968a; cross reference - Chambers, 1969, off the Rogue River). Contours in meters.

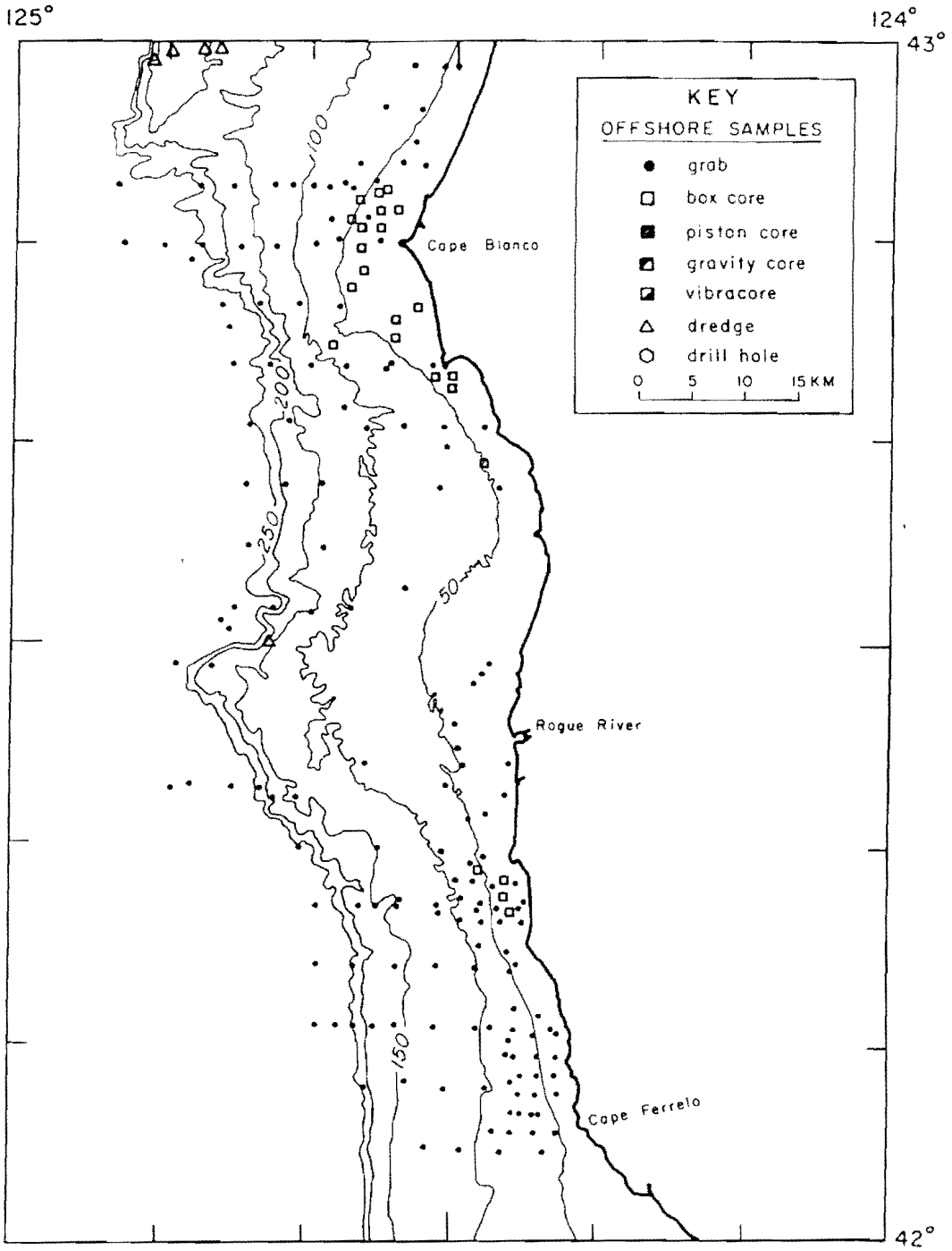

Figure 30. Map Sheet E of southern Oregon continental shelf showing location of sample sites (• □ △ OSU Archives, unpublished). Contours in meters.

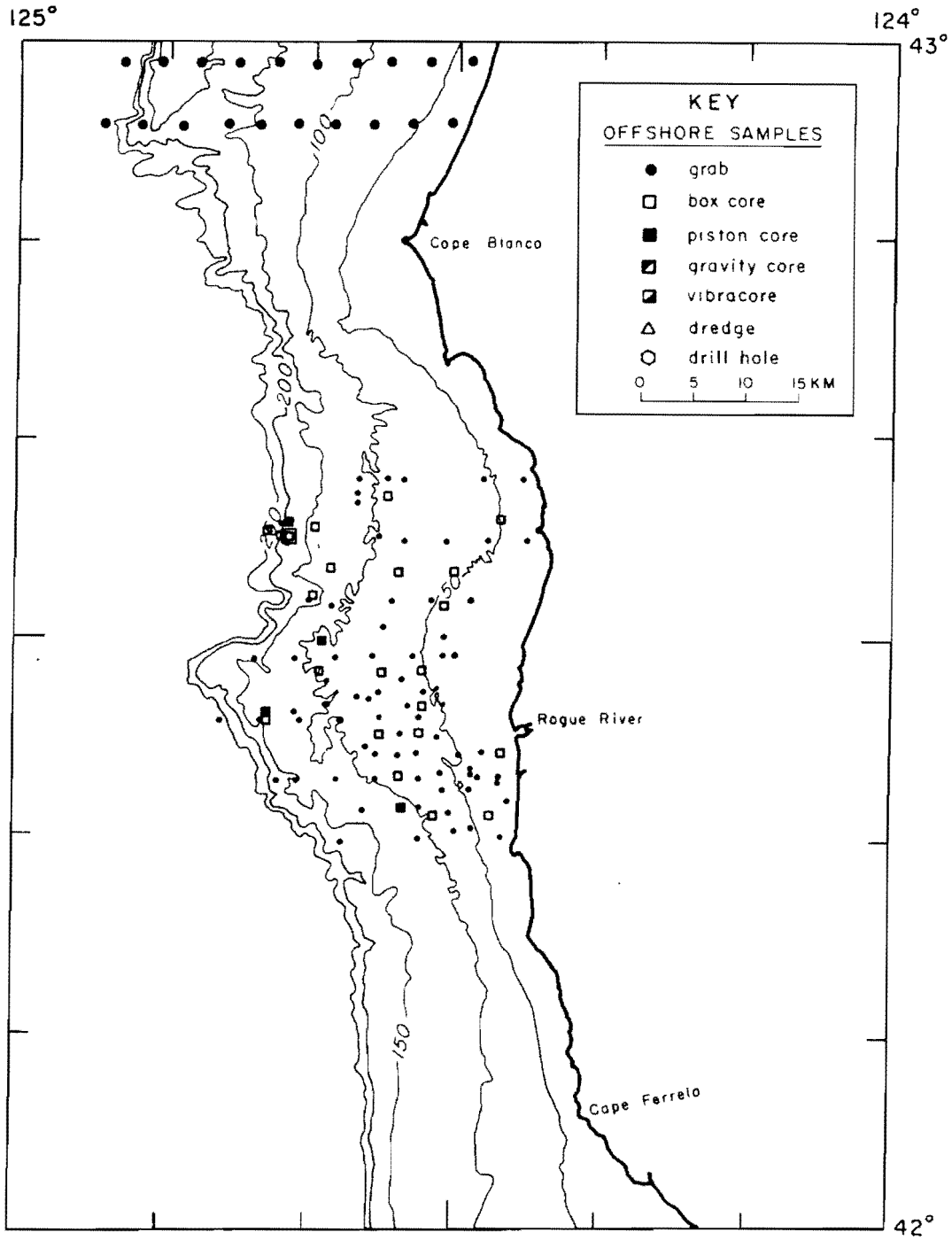

Figure 31. Continuation of Figure 30. Map Sheet E of southern Oregon continental shelf showing location of sample sites (• □ ■ Chambers, 1969, ● Runge, 1966; ◙ Bowman, 1972, sample from Chambers, 1969). Contours in meters.

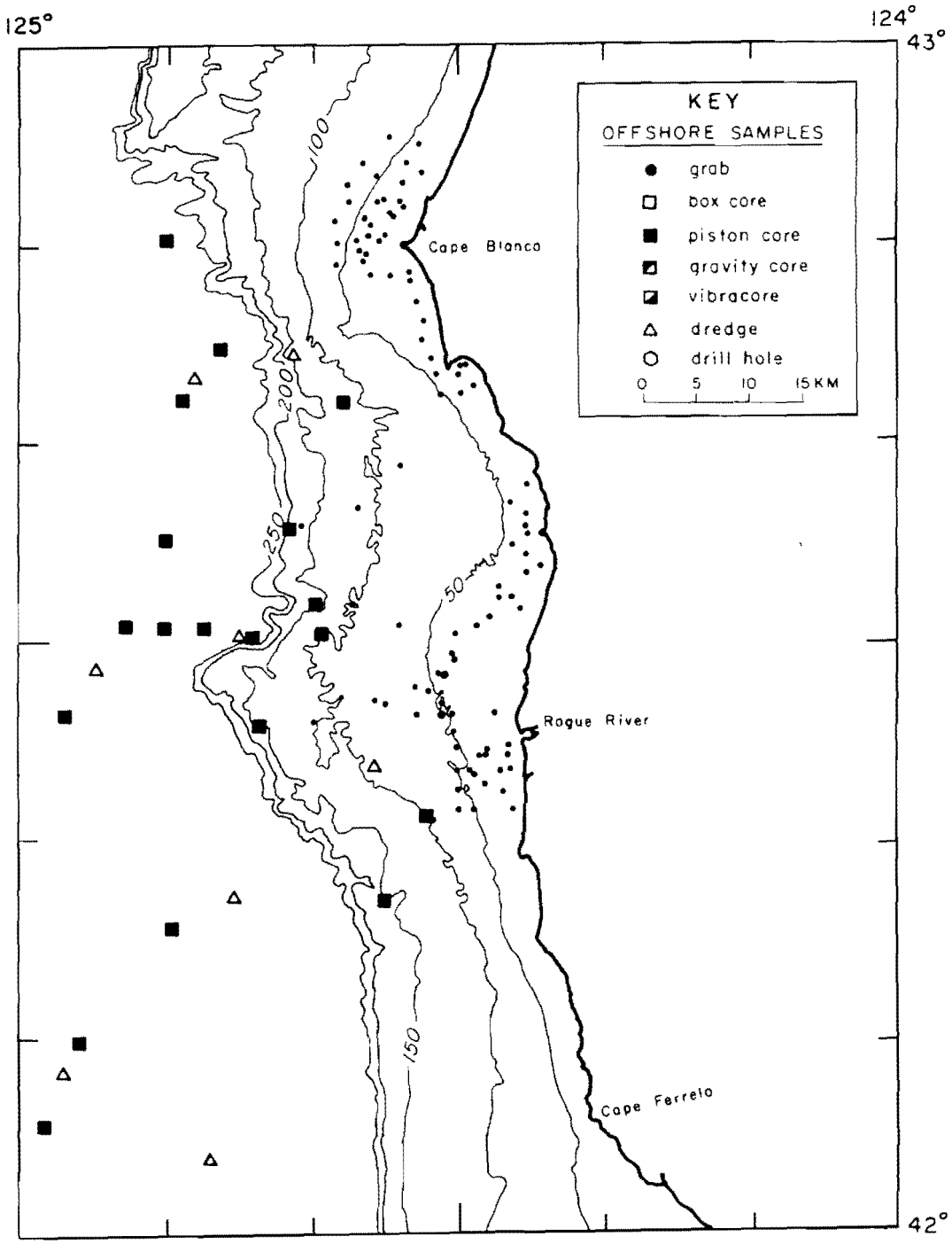

Figure 32. Continuation of figure 30. Map Sheet E of southern Oregon continental shelf showing location of sample sites (• Clifton, 1968; • Clifton et al., 1967; ■ △ Spigai, 1971). Contours in meters.

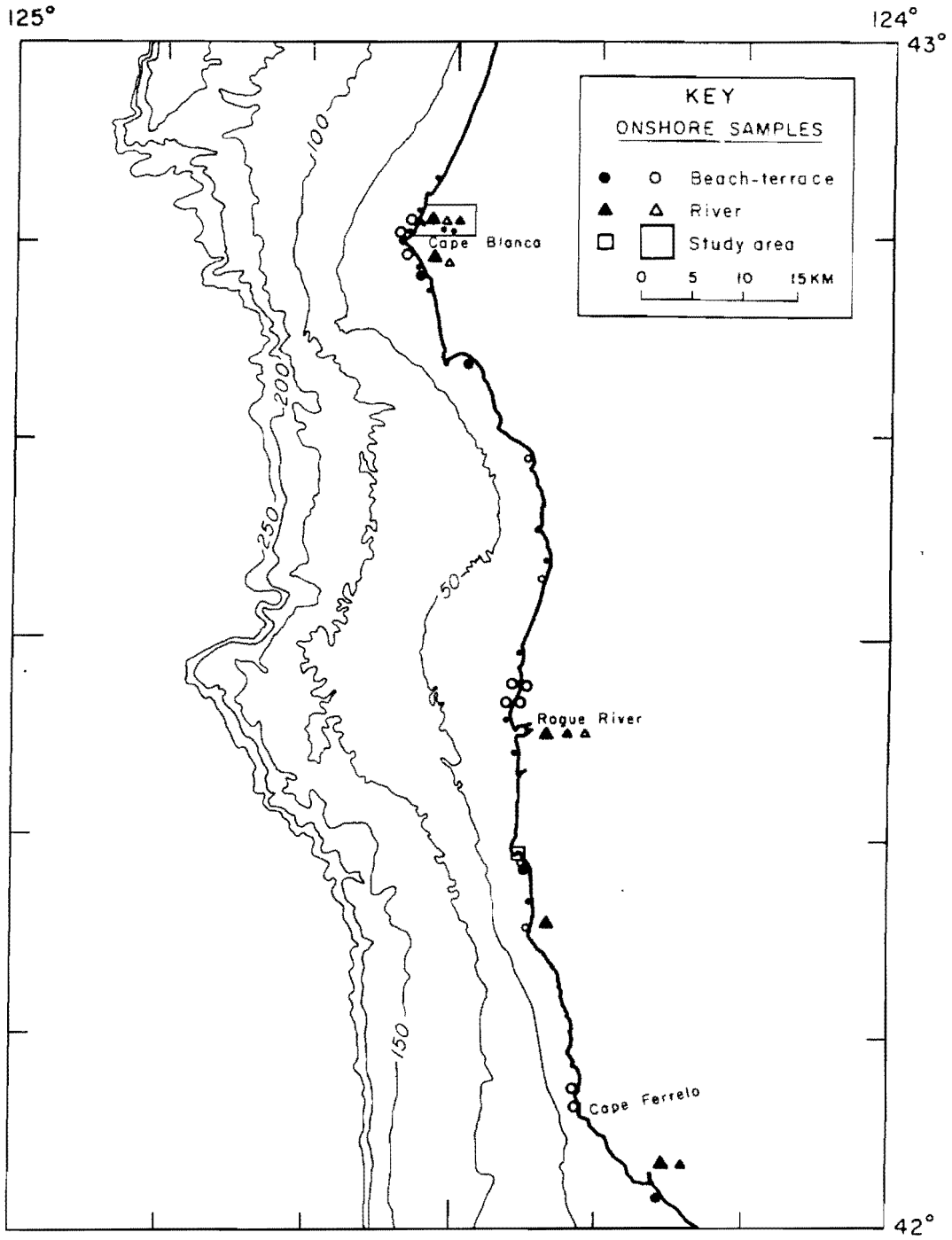

Figure 33. Map Sheet E of southern Oregon coastal region (beach, terrace, and river) showing location of sample sites (• △Twenhofel, 1946b; ● ▲ Peterson, unpublished data; ○ Luepke, 1980b; O Clifton et al., 1967; □ ▲ Kulm et al., 1968b; ▭ Boggs, 1969). Contours in meters.

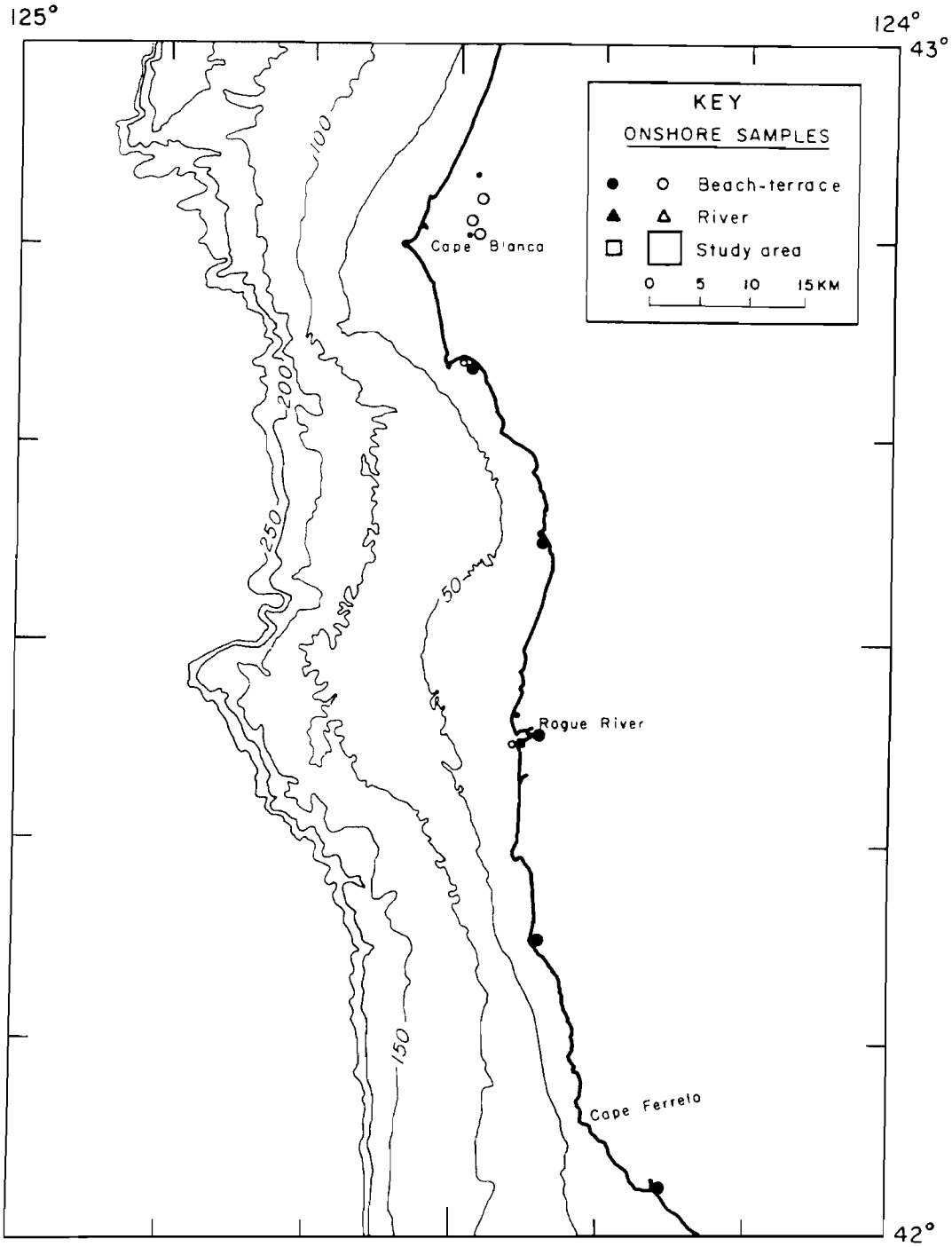

Figure 34. Continuation of Figure 33. Map Sheet E of southern Oregon coastal region (beach, terrace, and river) showing location of sample sites (• Griggs, 1945; O Horner, 1918; o Pardee, 1934; ● Day and Richards, 1906). Contours in meters.

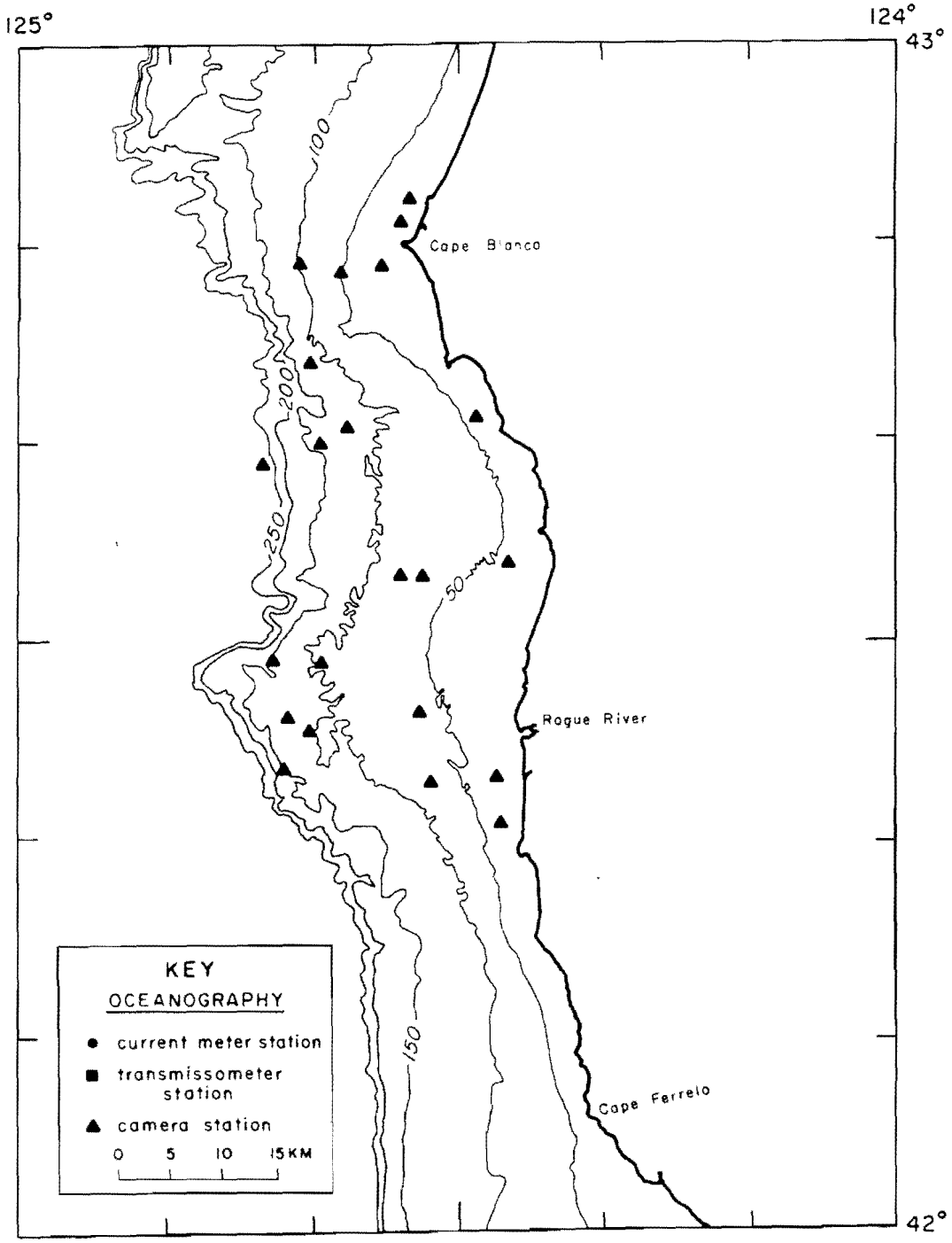

Figure 35. Map Sheet E of southern Oregon continental shelf showing location of oceanographic stations (▲ OSU Archives, unpublished). Contours in meters.

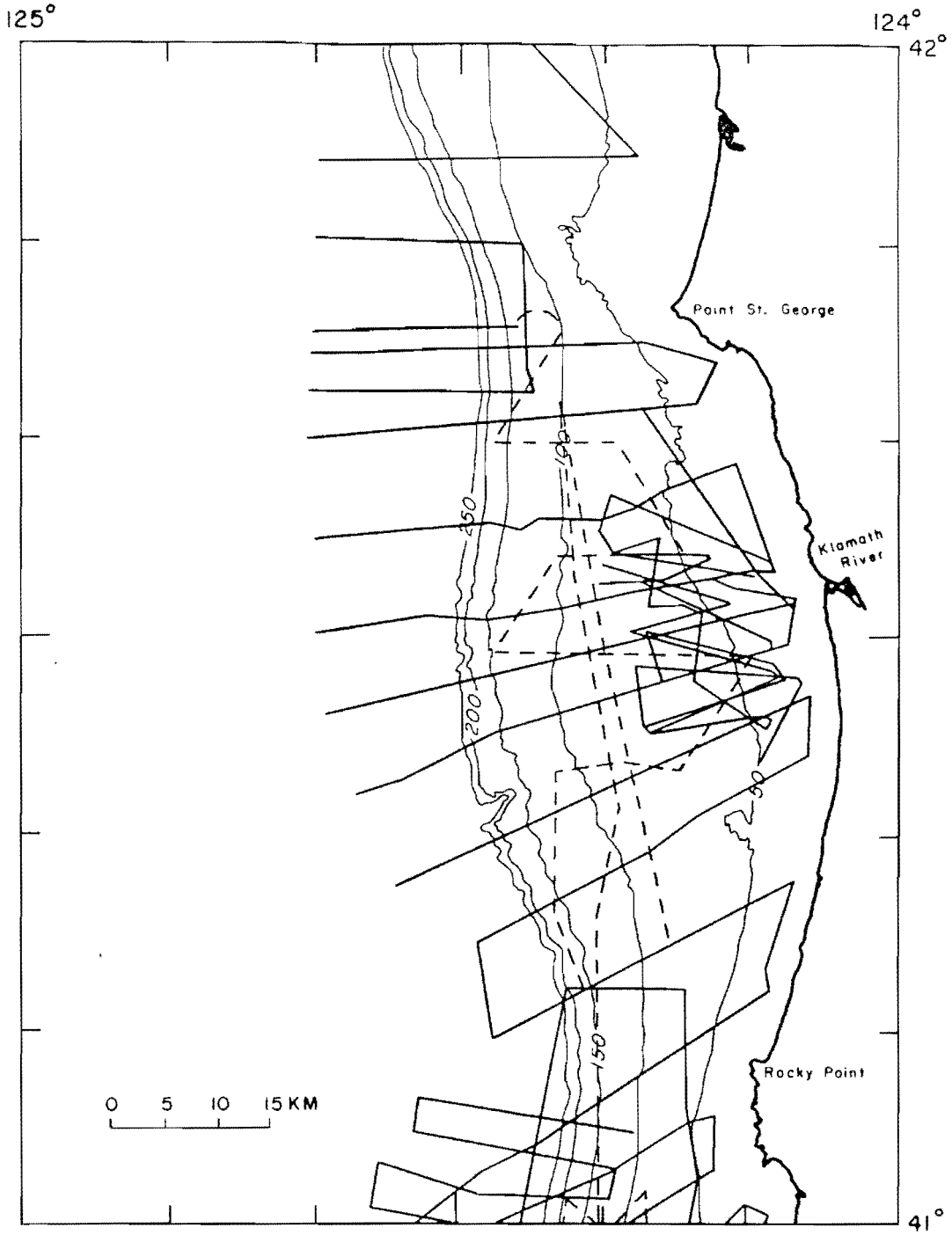

Figure 36. Map Sheet F of northern California continental shelf showing location of seismic tracklines (—— Field et al., 1980; —— Field et al., 1982a, study off Klamath River mouth; — — — Borgeld, 1985). Contours in meters.

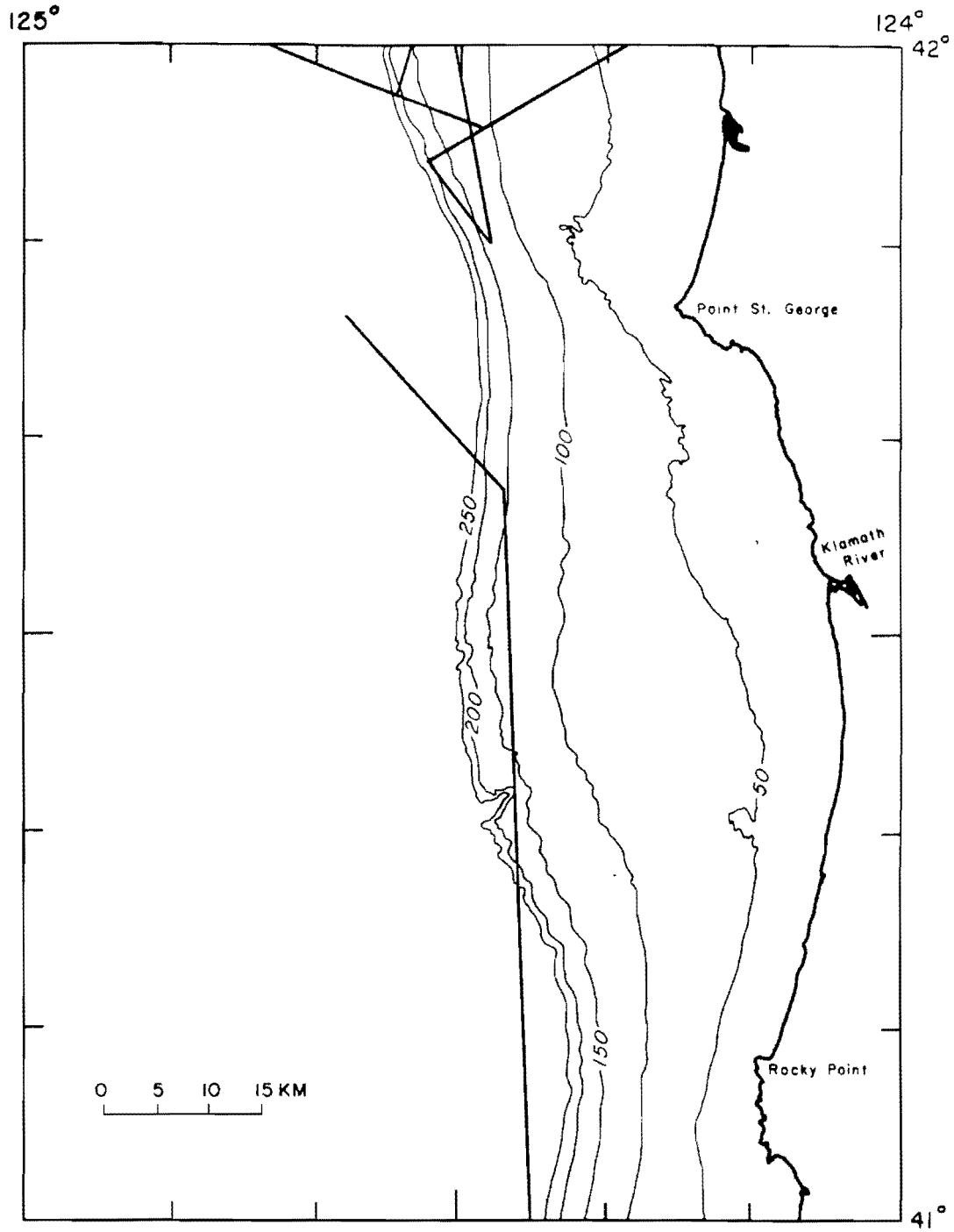

Figure 37. Map Sheet F of northern California continental shelf showing location of magnetic tracklines (—— Emilia et al., 1968). Contours in meters.

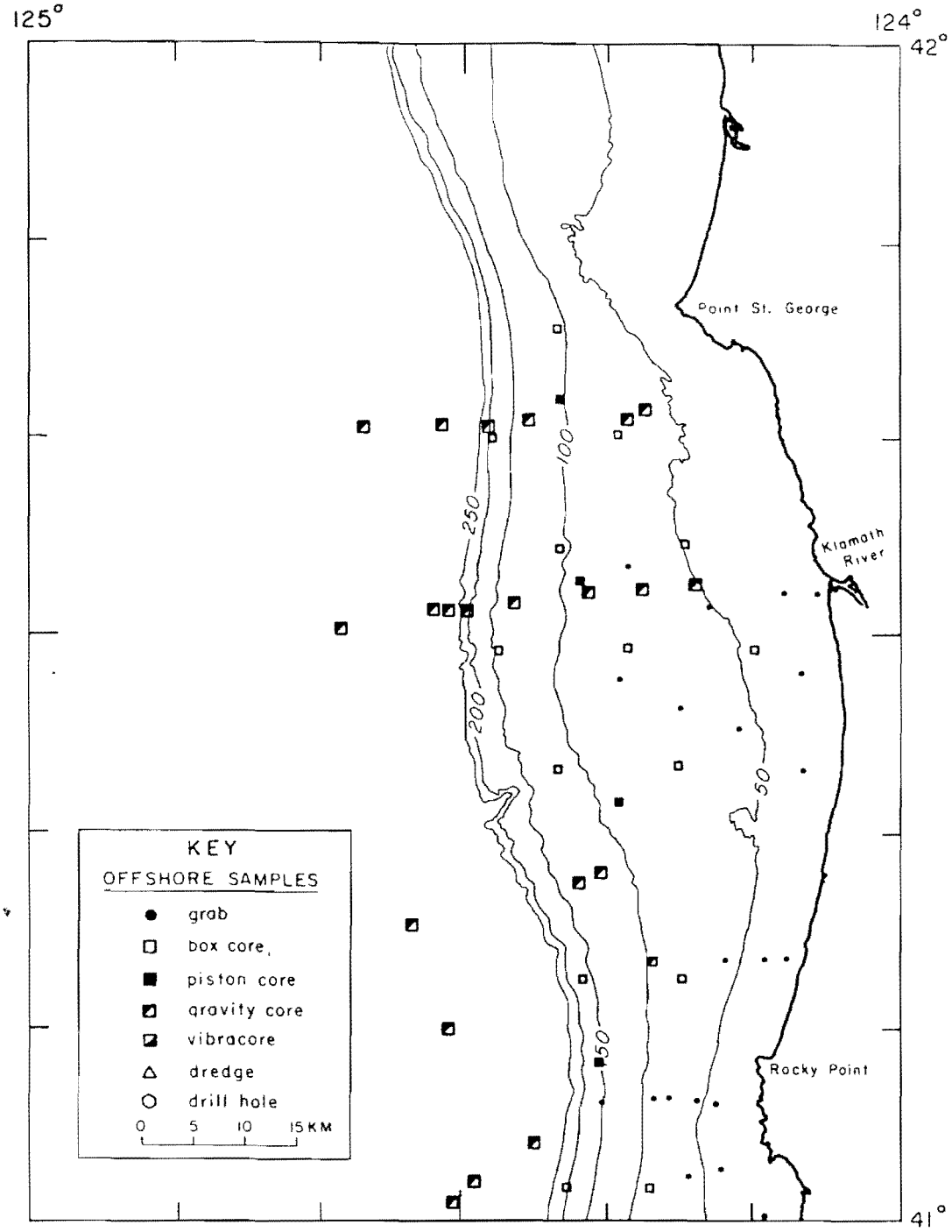

Figure 38. Map Sheet F of northern California continental shelf showing location of sample sites (• □ ■ ◪ Borgeld, 1985; ◪ Field et al., 1980). Contours in meters.

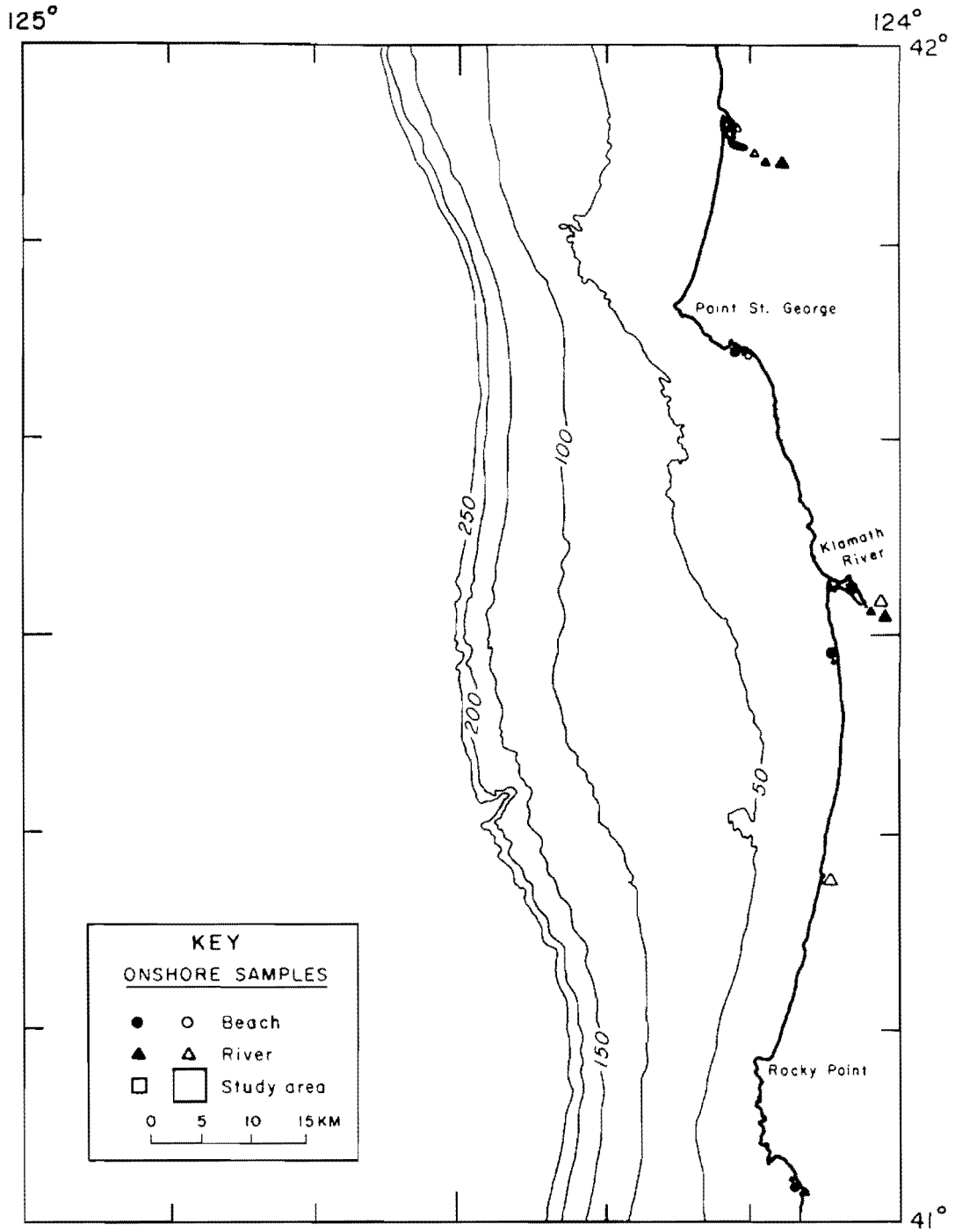

Figure 39. Map Sheet F of northern California coastal region (beach, terrace, and river) showing location of sample sites (• △ Day and Richards, 1906; ● ▲ Peterson, unpublished data; ○ Horner, 1918; ▲ Kulm et al., 1968b; △ Borgeld, 1985). Contours in meters.

KEY TO DATA BASE

The data base summarizes each reference in outline format. The reader should refer to the Text Summary (page 3) and the Data Base (page 4) in the "Contents and Use of the Inventory" for details. A detailed discussion of the Data Base is given in the "Inventory" under Text Summary (pages 7 to 12). Each data base is subdivided into several of the following components, depending upon the type of data given in the reference:

Source of Information

Reference - Source of information listed by author in alphabetical order.

Locational and Topical Information

Index Map - Map coverage of the study area within the overall inventoried region (refer to map sheets A,B,C,D,E,F of Figure 1).

Data Type - Topical information in study: e.g., structure, stratigraphy, sedimentation processes, sediment composition, oceanography, magnetic survey, assay, and references.

Study Area - Location of study area in degrees of latitude from north to south (e.g., 44°20'N-43°00'N).

Morphologic Feature Inventoried and Location

Offshore - Morphologic Feature: Continental Shelf

and/or

Onshore - Morphologic Features: Beach/Terrace/River/Estuary

Data Degree Sheet - Map Sheets A,B,C,D,E,F of Figure 1 with the simplified bathymetry in meters. Data from a given offshore or onshore study area may be divided among several data degree sheets (i.e., map sheets) depending upon the geographic extent of the study. Exceptions are listed in the notes (*).

Methods of Data Acquisition

Methods - Geophysical (labeled geophysics), geological sampling (labeled sampling), and oceanography.

(Continued on next page)

Data Acquired in Study

Geophysics: Geophysical surveys, e.g., bathymetry, seismic reflection, magnetics, and side scan sonar.

Fig. = Figure number (map sheet) where the data are plotted.

Trackline (km) = Trackline coverage given in kilometers.

Instrument = Type of geophysical instrument used in survey (e.g., sparker and air gun for seismic reflection and proton precession magnetometer for magnetics).
PDR = Precision depth recorder.

Resolution = Bathymetry with contour intervals ±5 m and horizontal positioning ± 50 m = high-resolution, and greater intervals and distances = low-resolution. Seismic profiling with acoustic source frequencies of 50 to 500 H_z = low-resolution and 500 H_z to 3.5 kH_z = high-resolution.

Sampling: Sediment sampling with grab samplers (grab and shipek) and cores (box, gravity, piston, and borehole).

Fig. = Figure number (map sheet) where data are plotted.

Box(12) = Number of box cores (i.e.,12) obtained in study.

Grain size = Number of samples (i.e.,25) analyzed for grain size.
25

H. Min. = Number of samples (i.e.,14) analyzed for percent heavy
14 minerals.

Assemb. = Number of samples (i.e.,8) analyzed for heavy mineral
8 assemblages (e.g., mineral species hornblende, garnet, opaques), except where otherwise specified (*).

Element = Number of samples analyzed (i.e.,12) for elements such as gold,
12 chrome, iron, titanium, platinum, cobalt, copper and nickel.

gold = 35 samples analyzed by gold assay
35

Oceanography: Oceanographic surveys with current meters (currents), cameras (photographs), and transmissometers (water column turbidity).

Fig. = Figure number (map sheet) where the data are plotted.

Notes = Additional comments about the inventory reference, e.g., discussion of models, maps, and data.

****

Reference: Baker, E.T., 1973, Distribution and composition of suspended sediment in the bottom waters of the Washington continental shelf and slope: Journal of Sedimentary Petrology, v. 43, no. 3, p. 812-821.

Index Map: Sheet A, Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 47°20'N. to 46°00'N.

Offshore
Notes: clay study

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Reference: Berg, J.W., Jr., King, J.M., and Carlson, P.R., 1966, Seismic reflection studies of buried channels off the Columbia River: Ore Bin, v. 28, no. 8, p. 145-150.

Index Map: Sheet A, Figure 1

Data Type: Structure, stratigraphy
Study Area: 46°25'N. to 46°05'N.

Offshore
Data Degree Sheet A
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic	2	68	sparker	high
Magnetic				
Side scan				

Notes:

****

Reference: Boggs, S., Jr., 1969, Distribution of heavy minerals in the Sixes River, Curry County, Oregon: Ore Bin, v. 31, no. 7, p. 133-150.

Index Map: Sheet E, Figure 1

Data Type: Sediment composition
Study Area: 42°55'N. to 42°45'N.

(Continued: Boggs, 1969)

Onshore
Data Degree Sheet E
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	33	75	75	75	
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Terrace and provenance study

****

Reference: Borgeld, J.C., 1985, Holocene stratigraphy and sedimentation on the northern California continental shelf (Ph.D. thesis): Seattle, Washington, University of Washington, 177 p.

Index Map: Sheet F, Figure 1

Data Type: Stratigraphy, sediment composition, sedimentation processes
Study Area: 41°50'N. to 40°20'N.

Offshore
Data Degree Sheet F
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry	36	460	3.5 kHz	high
Seismic	36	460	3.5 kHz	high
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	38	28	0		
shipek	38	14	13		
Subsurface					
box(24)	38	52	0		
piston(9)		-	-		
gravity(11)	38	5	3		
Oceanography					
Sea level					

Notes: Piston cores have C-14 age data and sedimentation rates.
Holocene facies model discussed.
Samples numbers south of 41 degrees are not included.

(Continued: Borgeld, 1985)

Onshore
Data Degree Sheet F
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	39		12		
shipek					
Subsurface					
box					
piston					
borehole					

Notes: These 12 grab samples are river sediment samples.

****

Reference: Bowman, J.C., Jr., 1972, Sedimentation, economic enrichment and evaluation of heavy mineral concentrations on the southern Oregon continental margin (Ph.D. thesis): Corvallis, Oregon, Oregon State University, 136 p.

Index Map: Sheet D, E; Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 43°30'N. to 42°10'N.

Offshore
Data Degree Sheet E
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box(1)	31	1	1		
piston					
borehole					
Oceanography					
Sea level					

Notes: Box core sample 6708-43 is described in Chambers, 1969. Investigation of opaque oxides.

(Continued: Bowman, 1972)
Onshore
Data Degree Sheet D
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	33		1		chrome ore concentrate
Subsurface					
box					
piston					
borehole					

Notes: Sample concentrate of chromitiferous ore obtained from Pleistocene terrace deposit near Bandon, Oregon. Specific location unavailable.

****

Reference: Bushnell, D.C., 1964, Continental shelf sediments in the vicinity of Newport, Oregon (M.S. thesis): Corvallis, Oregon, Oregon State University, 107 p.

Index Map: Sheet C, Figure 1

Data Type: Sediment composition, oceanography
Study Area: 44°58'N. to 44°20'N.

Offshore
Data Degree Sheet C
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	17	125	28	7	
shipek					
Subsurface					
box					
piston					
borehole					
Oceanography					
currents					

Notes: These samples are incorporated with Runge (1966).

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Reference: Chambers, D.M., 1969, Holocene sedimentation and potential placer deposits on the continental shelf off the Rogue River, Oregon (M.S. thesis): Corvallis, Oregon, Oregon State University, 103 p.

Index Map: Sheet F, Figure 1

Data Type: Structure, stratigraphy, sediment composition, oceanography, magnetic survey

Study Area: 42°40'N. to 42°20'N.

Offshore

Data Degree Sheet F

Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry	28	250	sparker	high
Seismic	28	250	sparker	high
Magnetic	29	60	shipborne	
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab	31	60	76	0	
shipek					
Subsurface					
box(25)	31	71	71	21	
piston(4)	31	18	18	5	
borehole					
Oceanography					
Sea level					

Notes:

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Reference: Clarke, S.H., Jr., Field, M.E., and Hirozawa, C.A., 1985, Reconnaissance geology and geologic hazards of the offshore Coos Bay Basin, Oregon: U.S. Geologic Survey Bulletin 1645, 41 p.

Index Map: Sheet C, D, E; Figure 1

Data Type: Structure, stratigraphy, sediment composition
Study Area: 44°15'N. to 42°15'N.

Offshore
Data Degree Sheet C
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic	15	400	3.5, 12 kHz, sparker, uniboom	high
Magnetic				
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box					
piston					
gravity(15)	18	4			

Data Degree Sheet D
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic	21	1350	3.5, 12 kHz, sparker, uniboom	high
Magnetic				
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
grab					
shipek					
Subsurface					
box					
piston					
gravity(26)	24	4			

(Continued: Clarke and others, 1985)
Data Degree Sheet E
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic	28	50	3.5, 12 kHz sparker, uniboom	
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples			
		Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Forty one samples were collected for stratigraphic and sedimentologic information and gas analysis.
Maps: Geologic map, structural map, distribution of major sediment types, isopach map of Quaternary sediment.

****

Reference: Clifton, H.E., Hubert, A., and Phillips, R.L., 1967, Marine sediment sample preparation for analysis for low concentrations of fine detrital gold: U.S. Geological Survey Circular 545, 11 p.

Index Map: Sheet D, E; Figure 1

Data Type: Sediment composition, assay
Study Area: 43°30'N. to 42°05'N.

Offshore/Onshore
Data Degree Sheets D, E
Methods

Sampling	Fig.	Number of Samples			
		Grain Size	H. Min.	Assemb.	Element Au
Surface					
grab	24,32				30
shipek	25,33				
Subsurface					
box					
piston					
borehole					

Notes: Number of samples from each category are as follows: marine terrace 6, beach 15, stream 3, offshore 6.

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****

Reference: Clifton, H.E., 1968, Gold distribution in surface sediments on the continental shelf off southern Oregon: a preliminary report: U.S. Geological Survey Circular 587, 6 p.

Index Map: Sheet D, E; Figure 1

Data Type: Sediment composition, assay
Study Area: 43°20'N. to 42°20'N

Offshore
Data Degree Sheets D, E
Methods

Sampling	Fig.	Number of Samples			
		Grain Size	H. Min.	Assemb.	Element Au
Surface					
grab	24,32				120
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Data degree sheet D has 27 grab sample locations.
Lower detection limit for gold is 5 ppb.
Cross reference to Kulm et al. (1968).

****

Reference: Clifton, H.E., Hunter, R.E., and Phillips, R.L., 1971, Depositional structures and processes in the non-barred high-energy nearshore: Journal of Sedimentary Petrology, v. 41, no. 3, p. 651-670.

Index Map: Sheet E, Figure 1

Data Type: Sedimentation processes, oceanography
Study Area: 43°00'N. to 42°00'N.

Onshore
Notes: Describes observations of depositional structures and discusses their origin.

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Reference: Creager, J.S., and Sternberg, R.W., 1972, Some specific problems in understanding bottom sediment distribution and dispersal on the continental shelf, IN Swift, D., Duane, D.B., and Pilkey, O.H., eds., Shelf sediment transport: process and pattern, Stroudsburg, Pa., Dowden, Hutchinson, & Ross, p. 347-362.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Sedimentation processes
Study Area: Continental shelf study--general

Offshore
Notes: Distribution and dispersal of sediment

****

Reference: Currie, R.G., and Bornhold, B.D., 1983, The magnetic susceptibility of continental shelf sediments, west coast Vancouver Island, Canada: Marine Geology, v. 51, p. 115-127.

Index Map: None

Data Type: Sediment composition, magnetic survey
Study Area: 50°15'N. to 49°00'N.

Offshore
Notes: Magnetic susceptibility model for placer exploration-anomalies.

****

Reference: Day, D.T., and Richards, R.H., 1906, Useful minerals in the black sands of the pacific slope: U.S. Geological Survey, Mineral resources of the United States, 1905, p. 1175-1221.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Sediment composition, assay
Study Area: 47°00'N. to 41°00'N.

Onshore
Data Degree Sheets A, B, C, D, E, F
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element Au/Pt
Surface					
grab	7,19,26	55	55		55
shipek	34,39				
Subsurface					
box					
piston					
borehole					

Notes: Black sand beach and terrace samples.

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Reference: Emilia, D.A., Berg, J.W., Jr., and Bales, W.E., 1966, A magnetic survey off the Pacific Northwest coast: Ore Bin, v. 28, no. 12, p. 205-210.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Magnetic survey
Study Area: 49°00'N. to 38°00'N.

Offshore
Data Degree Sheets A, B, C, D, E, F
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic				
Magnetic	3,10,16 22,29,37	17,000	shipborne proton precession	low
Side scan				

Notes: Contains maps of total magnetic intensity off the coast of Oregon, Washington, and northern California. Approximately 8000 km of magnetic trackline off Oregon.

****

Reference: Emilia, D.A., Berg, J.W., Jr., and Bales, W.E., 1968, Magnetic anomalies off the northwest coast of the United States: Geological Society of America Bulletin, v. 79, p. 1053-1062.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Magnetic survey
Study Area: 49°00'N. to 38°00'N.

Offshore
Notes: Trackline data noted in Emilia et al., 1966, reference. This paper has maps of positive magnetic anomalies in Or., Ca., and Wa.

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Reference: Field, M.E., Clarke, S.H., Jr., and White, M.E., 1980, Geology and geologic hazards of offshore Eel River Basin, northern California continental margin: U.S. Geological Survey Open-File Report 80-1080, 80 p.

Index Map: Sheet F, Figure 1

Data Type: Structure, stratigraphy, sediment composition
Study Area: 42°00'N. to 40°30'N.

Offshore
Data Degree Sheet F
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic	36	5140	sparker	high
	36	3495	boomer	
	36	6364	3.5 kHz	
	36	1775	12 kHz	
Magnetic		1279	proton precession	low
Side scan		*	sonar	high

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box					
gravity(63)	38	40			
dart					

Notes: Lithology map of surface sediments.
Isopach map of surface sediments.
Discussion of folds, faults, and piercement structures.
Seismic trackline includes area south of 41°N.
Approximately 400 km of trackline on shelf for data degree Sheet F.
* Side scan sonar records not quantified.

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****

Reference: Field, M.E., Gardner, J.V., Jennings, A.E., and Edwards, B.D., 1982a, Earthquake-induced sediment failures on a 0.25 degrees slope, Klamath River delta, California: Geology, v. 10, p. 542-546.

Index Map: Sheet F, Figure 1

Data Type: Structure, sedimentation processes
Study Area: 41°38'N. to 41°23'N.

Offshore
Data Degree Sheet F
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic	36	112	3.5 kHz, uniboom	high
Magnetic				
Side scan		112(?)*	sonar	high

Notes: * Side scan sonar records not quantified.

****

Reference: Field, M.E., and Hall, R.K., 1982b, Sonographs of submarine sediment failure caused by the 1980 earthquake off northern California: Geo-Marine Letters, v. 2, p. 135-141.

Index Map: Sheet F, Figure 1

Data Type: Structure, sedimentation processes
Study Area: 41°35' to 41°25'

Offshore
Data Degree Sheet F
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic				
Magnetic				
Side scan	36	155	sonar	high

Notes: Sediment failure features: toe ridge, pressure ridge, sand boils, collapse features, sediment flows, gas seeps.

****

****

Reference: Fowler, G.A., Orr, W.N., and Kulm, L.D., 1971, An upper Miocene diatomaceous rock unit on the Oregon continental shelf: Journal of Geology, v. 79, p. 603-608.

Index Map: Sheet C, D; Figure 1

Data Type: Stratigraphy, sediment composition
Study Area: 44°20'N. to 43°10'N.

Offshore
Data Degree Sheets C, D
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
dredge(3)	18,23				
Subsurface					
box					
piston(5)	18,23				
borehole					

Notes: Diatomaceous strata correlation, paleontology.
Cross reference bedrock geologic map to Mackay (1969).
Data degree sheet C includes 3 cores.
Data degree sheet D includes 2 cores and 3 dredge sites.
Cross reference sample sites to OSU Archives.

****

Reference: Fox, W.T., and Davis, R.A., Jr., 1978, Seasonal variation in beach erosion and sedimentation on the Oregon coast: Geological Society of America Bulletin, v. 89, p. 1541-1549.

Index Map: Sheet C, Figure 1

Data Type: Sedimentation processes
Study Area: 44°40'N. to 44°35'N.

Onshore
Notes:

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Reference: Gray, J.J., and Kulm, L.D., 1985, Mineral resources map, offshore Oregon: Oregon Department of Geology and Mineral Industries, Geological Map Series GMS-37, scale 1:500,000.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Mineral resources
Study Area: 46°15'N to 42°00'N.

Offshore
Notes:

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Reference: Griggs, A.B., 1945, Chromite-bearing sands of the southern part of the coast of Oregon: U.S. Geological Survey Bulletin 945-3, p. 113-150.

Index Map: Sheet D, E; Figure 1

Data Type: Sediment composition
Study Area: 43°30'N. to 42°20'N.

Onshore
Data Degree Sheets D, E
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element Cr/Fe
grab shipek	26,34		19	12	
Subsurface ore piston borehole	26,34			4	5

Notes: Numerous mine descriptions and annotated bibliography of older references included in this report.

****

Reference: Gross, M.G., and Nelson, J.L., 1966, Sediment movement on the continental shelf near Washington and Oregon: Science, v. 154, p. 879-885.

Index Map: Sheet A, Figure 1

Data Type: Sedimentation processes
Study Area: 46°40'N. to 46°00'N.

Offshore
Notes: Study of radionuclides added to the Columbia River.

****

Reference: Gross, M.G., McManus, D.A., and Ling, H., 1967, Continental shelf sediment, northwestern United States: Journal of Sedimentary Petrology, v. 37, no. 3, p. 790-795.

Index Map: Sheet A, B; Figure 1

Data Type: Sediment composition
Study Area: 48°50'N. to 45°50'N.

(Continued: Gross and others, 1967)
Offshore
Data Degree Sheets A, B
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	6,12	58			
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Sixty seven samples were collected north of 47°N.
Data sheet A has 52 sample sites and data sheet B has 6 sites.
Samples supplemented by the University of British Columbia.
Analyses: total carbon conc, organic carbon content.

****

Reference: Harlett, J.C., 1972, Sediment transport on the northern Oregon continental shelf (Ph.D. thesis): Corvallis, Oregon, Oregon State University, 120 p.

Index Map: Sheet B, C; Figure 1

Data Type: Sedimentation processes, oceanography
Study Area: 46°00'N. to 44°35'N.

Offshore
Data Degree Sheets B, C
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box					
piston					
borehole					
Oceanography	Fig.				
Current meter	14,20	31 stations			
Transmissometer	14,20	24 stations			

Notes: Data sheet B has 20 current meter sites and data sheet C has 11 current meter sites.
Topic: sediment transport model.

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****

Reference: Horner, R.R., 1918, Notes on the black sand deposits on southern Oregon and northern California: U.S. Bureau of Mines Technical Paper 196, 41 p.

Index Map: Sheet D, E, F; Figure 1

Data Type: Sediment composition, assay
Study Area: 43°20'N. to 41°45'N.

Onshore
Data Degree Sheets D, E, F
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element Au/Pt
Surface					
grab	26,34,39				37
shipek					
Subsurface					
box					
piston					
borehole					

Notes: These samples are from beach and terrace placer deposits. Mine locations are given in the report.

****

Reference: Hunter, R.E., Clifton, H.E., and Phillips, R.L., 1970, Geology of the stacks and reefs off the southern Oregon coast: Ore Bin, v. 32, no. 10, p. 185-201.

Index Map: Sheet E, Figure 1

Data Type: Structure, stratigraphy
Study Area: 42°55'N. to 42°05'N.

Offshore
Notes: Study of geology of the area.
Comparison of offshore and onshore geology.

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****

Reference: Hunter, R.E., Clifton, H.E., and Phillips, R.L., 1979, Depositional processes, sedimentary structures, and predicted vertical sequences in barred nearshore systems, southern Oregon coast: Journal of Sedimentary Petrology, v. 49, no. 3, p. 711-726.

Index Map: Sheet D, E; figure 1

Data Type: Sedimentation processes
Study Area: 43°05'N. to 42°15'N.

Onshore
Notes: Topics include hydrodynamic processes, structural facies, and predicted vertical sequences.
Compares this study with other nearshore systems.

****

Reference: Karlin, R., 1978, Sediment sources and clay mineral distributions off the Oregon coast: evidence for a poleward slope undercurrent (M.S. thesis): Corvallis, Oregon, Oregon State University, 88 p.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 46°50'N. to 42°00'N.

Offshore
Notes: Clay mineralogy study.
Samples are from Baker, 1973, and Spigai, 1971.

****

Reference: Kelley, J.C., and McManus, D.A., 1970, Hierarchical analysis of variance of shelf sediment texture: Journal of Sedimentary Petrology, v. 40, p. 1335-1339.

Index Map: Sheet A, B; Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 46°50'N. to 45°50'N.

Offshore
Notes: Coverage of 450 samples shown, but no initial data is given.

****

****

Reference: Kelly, J.V., 1947, Columbia River magnetite sands, Clatsop County, Oregon, and Pacific County, Washington: Hammond and McGowan deposits: U.S. Bureau of Mines Report of Investigations 4011, 7 p.

Index Map: Sheet A, Figure 1

Data Type: Sediment composition, assay
Study Area: 46°20'N. to 46°10'N.

Onshore
Data Degree Sheet A
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element: Fe, TiO2
Surface					
grab					
shipek					
Subsurface					
box					
piston					
borehole-					151
(auger)	7				

Notes: This paper covers terrace black sand placer deposits.
103 auger holes @ Hammond.
48 auger holes @ McGowan.

****

Reference: Keser, J.C., 1979, Wide-angle seismic refraction and reflection studies of the northern California and southern Oregon continental margins (M.S. thesis): Corvallis, Oregon, Oregon State University, 88 p.

Index Map: Sheet D, E, F; Figure 1

Data Type: Structure, stratigraphy
Study Area: 44°00'N. to 40°30'N.

Offshore
Notes: Air gun instrument used for low resolution.

****

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Reference: Komar, P.D., Neudeck, R.H., and Kulm, L.D., 1972, Observations and significance of deep-water oscillatory ripple marks on the Oregon continental shelf, IN Swift, D., Duane, D.B., and Pilkey, O.H., eds., Shelf sediment transport: process and pattern, Stroudsburg, Pa., Dowden, Hutchinson & Ross, p. 601-619.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sedimentation processes, oceanography
Study Area: 46°15'N. to 42°00'N.

Offshore
Notes:

****

Reference: Komar, P.D., Kulm, L.D., and Harlett, J.C., 1974, Observations and analysis of bottom turbid layers on the Oregon continental shelf: Journal of Geology, v. 82, p. 104-111.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sedimentation processes, oceanography
Study Area: 46°15'N. to 42°00'N.

Offshore
Notes:

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Reference: Kulm, L.D., 1965, Sediments of Yaquina Bay, Oregon (Ph.D. thesis): Corvallis, Oregon, Oregon State University, 184 p.

Index Map: Sheet C, Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 44°40'N. 44°34'N.

Onshore
Data Degree Sheet C
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	19	97	71	33	
shipek					
Subsurface					
box					
piston(31)	19	30	13	9	
borehole					
Oceanography					

Notes:

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Reference: Kulm, L.D., Heinrichs, D.F., Buehrig, R.M., and Chambers, D.M., 1968a, Evidence for possible placer accumulations on the southern Oregon continental shelf: Ore Bin, v. 30, no. 5, p. 81-104.

Index Map: Sheet D, E; Figure 1

Data Type: Sediment composition, magnetic survey
Study Area: 43°20'N. to 42°05'N.

Onshore
Data Degree Sheets D, E

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic				
Magnetic	22,29	136	proton precession	
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab		*	173		
shipek		*			
Subsurface					
box(52)		*	71		
piston		*			
borehole					
Oceanography					

Notes: Maps include:
Distribution of surface sediment types.
Heavy mineral concentrations in surface sediments.
* Textural parameters were determined for 311 surface and subsurface samples.
Runge (1966) collected samples on a 2 mile grid from Coos Bay to Cape Blanco.
Model: Offshore placer accumulations

****

Reference: Kulm, L.D., Scheidegger, K.F., Byrne, J.V., and Spigai, J.J., 1968b, A preliminary investigation of the heavy mineral suites of the coastal rivers and beaches of Oregon and northern California Ore Bin, v. 30, no. 9, p. 165-184.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Sediment composition
Study Area: 46°20'N. to 41°00'N.

(Continued: Kulm and others, 1968b)
Onshore
Data Degree Sheets A, B, C, D, E, F

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	7,13,19 33,39			32	
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Map includes: Distribution of typical heavy mineral suites of coastal drainages and beaches of CA/OR.
Data degree sheets A, B, C, D, E, F have the following number of sample sites respectively: 1, 12, 6, 5, 6, 2.

****

Reference: Kulm, L.D., and Fowler, G.A., 1974, Oregon continental margin structure and stratigraphy: A test of the imbricate thrust model, IN Burk, C.A., and Drake, C.L., eds., The geology of continental margins, New York, Springer-Verlag, p. 261-283.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Structure, stratigraphy, sediment composition
Study Area: 46°20'N. to 42°00'N.

Offshore
Data Degree Sheets A, B, C, D, E

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic	9,15, 21,28,36	8000+	air gun/ sparker	high
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb. rock	Element
Surface					
grab					
shipek					
Subsurface					
dart	11,17, 23,30			100+	
piston					
borehole					

Notes: Structure of continental shelf and slope.
Geologic map of continental shelf.
Rock samples dated and document relative amounts of tectonic movement.
Model: Imbricate thrust sequence.

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Reference: Kulm, L.D., Roush, R.C., Harlett, J.C., Neudeck, R.H., Chambers, D.M., and Runge, E.J., 1975, Oregon continental shelf sedimentation: interrelationships of facies distribution and sedimentary processes: Journal of Geology, v. 83, p. 145-175.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 46°20'N. to 42°00'N.

Offshore
Notes: This paper is a compilation of >900 grab/core samples, >100 box core samples, 500 bottom photographs.
This paper compiles Oregon State University data. Cross reference to OSU Archives, for sample locations.
Sedimentary structures are discussed.
Model: Sedimentary facies.
The majority of data is supplemented from previous unpublished theses and reports: Bushnell (1964), Chambers (1969), Roush (1970), Runge (1966), Kulm (1968a), Maloney (1965).

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Reference: Kulm, L.D., 1978, Coastal morphology and geology of the ocean bottom--the Oregon region, IN Krauss, R., ed., The marine plant biomass of the Pacific Northwest, Corvallis, Or., Oregon State University Press, p. 9-35.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Structure, sedimentation processes
Study Area: 46°15'N. to 42°00'N.

Offshore
Notes: Topics include morphology, erosion, sediment sources, continental shelf sediments and structure.

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Reference: Kulm, L.D., Loubere, P.W., and Peper, J.S., 1984, Geology of continental margin and Cascadia Basin: Kulm, L.D., et al., eds., Ocean Margin Drilling Program Regional Data Synthesis Series Atlas 1, Western North American continental margin and adjacent ocean floor off Oregon and Washington, Woods Hole, Ma., Marine Science International, sheet 29.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Structure, stratigraphy
Study Area: 46°15'N. to 42°00'N.

Offshore
Notes: Geologic map of the continental margin geology showing location of offshore drill holes.

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Reference: Luepke, G., 1980a, Bibliography of the geology of the Oregon-Washington continental shelf and coastal zone, 1899-1978: U.S. Geological Survey Open-File Report 80-467, 27 p.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: References
Study Area: 48°00'N. to 42°00'N.

Offshore/Onshore
Notes:

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Reference: Luepke, G., 1980b, Opaque minerals as aids in distinguishing between source and sorting effects on beach-sand mineralogy in in southwestern Oregon: Journal of Sedimentary Petrology, v. 50, no. 2, p. 489-496.

Index Map: Sheet E, Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 42°40'N. to 42°05'N.
Onshore
Data Degree Sheet E
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					Ti,Cr
grab	33				82
shipek					
Subsurface					
box					
piston					
borehole					
Oceanography					

Notes: Four beaches were studied (numbers of samples follows in parentheses): Arizona Beach (19), Euchre Creek Beach (18), Cape Sebastian Beach (18), and Whalehead Beach (21). Graphs show distribution of magnetite in samples, and chromium, titanium, and %Ti/%Cr in magnetite.

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Reference: Mackay, A.J., 1969, Continuous seismic profiling investigation of the southern Oregon continental shelf between Cape Blanco and Coos Bay (M.S. thesis): Corvallis, Oregon, Oregon State University, 118 p.

Index Map: Sheet D, E; Figure 1

Data Type: Structure, stratigraphy
Study Area: 43°25'N. to 42°45'N.

Offshore
Data Degree Sheets D, E

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry	21,28	700	sparker	high
Seismic	21,28	700	sparker	high
Magnetic				
Side scan				

Notes: Structure map of the continental shelf off southern Oregon included as plate. Ten discernible seismic units were mapped.

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Reference: Maloney, N.J., 1965, Geology of the continental terrace off the central coast of Oregon (Ph.D. thesis): Corvallis, Oregon, Oregon State University, 233 p.

Index Map: Sheet C, D; Figure 1

Data Type: Structure, sediment and rock composition
Study Area: 44°40'N. to 43°50'N.

Offshore

Data Degree Sheet C

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry	-	*	PDR	
Seismic				
Magnetic				
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab	18	101			
shipek					
Subsurface					
box					
gravity	18	58			
borehole					

Data Degree Sheet D

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry	-	*	PDR	
Seismic				
Magnetic				
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab	24	57			
shipek					
Subsurface					
box					
piston	18	21			
borehole					
Oceanography					

Notes: *The majority of the Precision Depth Recorder bathymetric survey covers the continental slope.
Oregon State Archives has compiled Maloney's data.

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Reference: McManus, D.A., 1964, Bathymetric features near the coast of Oregon, Washington, and Vancouver Island: Northwest Science, v. 38, no. 3, p. 65-82.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Structure
Study Area: 51°00'N. to 40°00'N.

Offshore
Notes: physiography names

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Reference: McManus, D.A., 1972, Bottom topography and sediment texture near the Columbia River, IN Pruter, A.T., and Alverson, D.L., eds., The Columbia River estuary and adjacent ocean waters: Seattle, Wa., University of Washington Press, p. 241-253.

Index Map: Sheet A, B; Figure 1

Data Type: Structure, sediment composition
Study Area: 46°50'N. to 45°55'N.

Offshore
Data Degree Sheet A
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	4	393			
shipek					
Subsurface					
box					
piston					
borehole					

Data Degree Sheet B
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	12	57			
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Maps include: Distribution of sediment types.
Distribution of median-phi size of bottom sediments.

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Reference: Moore, G.W., and Luken, M.D., 1979, Offshore sand and gravel resources of the Pacific Northwest: Oregon Geology, v. 41, no. 9, p. 143-151.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sedimentation processes, mineral resources
Study Area: 48°30'N. to 42°00'N.

Offshore
Notes: This paper contains maps of the sea floor materials off the coast of Washington and Oregon and a table of the offshore gravel deposits of Washington and Oregon.

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Reference: Muehlberg, G.E., 1971, Structure and stratigraphy of Tertiary and Quaternary strata Heceta Bank, central Oregon shelf (M.S. thesis): Corvallis, Oregon, Oregon State University, 78 p.

Index Map: Sheet C, D; Figure 1

Data Type: Structure, stratigraphy
Study Area: 44°30'N. to 43°55'N.

Offshore
Data Degree Sheets C, D

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic	15,21	625	sparker/ air gun	high
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
dart(33)	18,23	32			
piston					
borehole					

Notes: This data has been compiled in the Oregon State Archives.
Age and paleodepth determinations for offshore Oregon rock samples in this study area.
Cross reference: Kulm and Fowler (1974).

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Reference: National Geophysical Data Center, 1985, NGDC-NOS-MMS Marine minerals bibliography listing: placers: National Geophysical Data Center, NOAA, Boulder, Co., 25 p.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: References
Study Area: 48°00'N. to 40°00'N.

Onshore
Notes:

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Reference: Nittrouer, C.A., Sternberg, R.W., Carpenter, R., and Bennett, J.T., 1979, The use of Pb-210 geochronology as a sedimentological tool: application to the Washington continental shelf: Marine Geology, v. 31, p. 297-316.

Index Map: Sheet A, Figure 1

Data Type: Stratigraphy, sedimentation processes
Study Area: 47°30'N. to 46°15'N.

Offshore
Data Degree Sheet A
Methods

Sampling	Fig.	Number of Samples			
		Grain Size	H. Min.	Assemb.	Element Pb-210
Surface					
grab					
shipek					
Subsurface					
box(50)	6				48
piston					
borehole					
Oceanography					

Notes: Data degree sheet A has 37 sample site locations. The Pb-210 analysis is used for determination of sediment accumulation rates

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Reference: Oregon State University Archives, College of Oceanography- Marine Geology and Geophysics, Technical reports and data: bathymetry, seismic reflection, magnetic and side scan sonar tracklines; sediment and rock sample locations; camera stations; current meter stations, (unpublished data).

Index Map: Sheet B, C, D, E; Figure 1

Data Type: Structure, stratigraphy, sediment composition, oceanography
Study Area: 46°20'N. to 42°00'N.

Offshore
Degree Sheet B

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic	9	1200	sparker/ air gun	high/ low
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab(70)	11	68	68		
shipek					
Subsurface					
box					
piston					
borehole					

Oceanography	Fig.	
camera	14	2 stations
transmissometer	14	1 station

Data Degree Sheet C

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic	15	950	sparker/ air gun	high/ low
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab(68)	17	68	68		
shipek					
Subsurface					
box					
piston					
borehole					

Oceanography		
camera	20	27 stations

(Continued: Oregon State University Archives, (unpublished))

Data Degree Sheet D

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic	21	550	sparker/ air gun	high/ low
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab(76) shipek	23	76	76		
Subsurface					
box(1) piston borehole	23	1	2		
Oceanography					
camera	27	12 stations			

Data Degree Sheet E

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic	28	675	sparker/ air gun	high/ low
Magnetic				
Side scan				

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab(148) shipek	30	148	148		
Subsurface					
box(60) piston borehole	30	60	120		
Oceanography					
camera	35	22 stations			

Notes: Cross reference: Kulm et al. (1975), Kulm and Fowler (1974), Clifton (1968), Bushnell (1964), Chambers (1969), Mackay (1969), Maloney (1965), Muehlberg (1971), Roush (1970), Runge (1966), Fowler et al. (1971), Scheidegger et al. (1971).

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Reference: Pardee, J.T., 1934, Beach placers of the Oregon coast: U.S. Geological Survey Circular 8, 41 p.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sedimentation processes, assay
Study Area: 46°15'N. to 42°00'N.

Onshore
Notes: Records production of gold and platinum from Oregon beach placers, 1903-1929.
Mine descriptions: Pioneer, Eagle, Chickamin, Iowa, Otter Point/Hubbard Knob.
Sample locations plotted on Figures 19, 26, and 34.

****

Reference: Peterson, C.D., Scheidegger, K.F., and Schrader, H.J., 1984a, Holocence depositional evolution of a small active-margin estuary of the northwestern United States: Marine Geology, v. 59, p. 51-83.

Index Map: Sheet C, Figure 1

Data Type: Sedimentation processes, oceanography
Study Area: 44°30'N. to 44°20'N.

Onshore
Data Degree Sheet C

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic	-	68 m.	uniboom	high
Magnetic				
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box					
rotary(6)	19	6	6		
borehole					
Oceanography					
Sea level					

Notes: Topic: Sea level curve for Holocene.
The 6 sediment cores were subsampled in Alsea Bay, Oregon.
Depositional patterns and sedimentary structures are discussed.

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Reference: Peterson, C.D., Scheidegger, K.F., Komar, P.D., and Niem, W.A., 1984b, Sediment composition and hydrography in six high-gradient estuaries of the northwestern United States: Journal of Sedimentary Petrology, v. 54, no. 1, p. 86-97.

Index Map: Sheet A, B, C; Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 47°00'N. to 44°00'N.

Onshore
Data Degree Sheets A, B, C
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	7,13,19	~329	~329		
shipek					
Subsurface					
box					
piston					
borehole					
Oceanography					

Notes: The number of samples from the six estuaries, Grays Harbor, Tillamook, Siuslaw, Alsea, Siletz, and Salmon, is the following, respectively: 59, 65, 47, 80, 49, 29.
Influence of tidal and river flow upon sediment composition discussed.

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Reference: Peterson, C.D., Komar, P.D., Scheidegger, K.F., 1986, Distribution, geometry, and origin of heavy mineral placer deposits on Oregon beaches: Journal of Sedimentary Petrology, v. 56, no. 1, p. 67-77.

Index Map: Sheet B, Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 45°30'N. to 44°15'N.

Onshore
Data Degree Sheet B
Methods

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab	13	12	12		
shipek					
Subsurface					
box					
piston					
borehole					

Data Degree Sheet C

Methods	Fig.	Trackline(km)	Instrument	Resolution
Geophysics				
Bathymetry				
Seismic				
Magnetic	-	900 m.	proton precess.	
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab	19	26	26	6	
shipek					
Subsurface					
box					
piston					
borehole					
Oceanography					
current					

Notes: A more detailed study covered the section from Otter Rock to Yaquina Head with 9 shore-normal transects and defined a small placer body.
Six of the samples above are from the detailed study.

****

****

Reference: Peterson, C.D., Gleeson, W., and Wetzel, N., Mineral sources, stratigraphic development and preservation of marine placers from Pleistocene terraces in southern Oregon, (unpublished data).

Index Map: Sheet D, E; Figure 1

Data Type: Stratigraphy, sediment composition, sedimentation processes
Study Area: 43°20'N. to 42°50'N.

Onshore
Data Degree Sheets D, E
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface				*	
grab	25,33			9	
shipek					
Subsurface					
box					
piston					
core(4)	25	18	18		
Oceanography					
sea level					

Notes: Detail work on the Seven Devils and Pioneer terraces and the Whiskey Run and Sacci beach placers.
Samples are from 7 rivers and 4 terraces.
*Microprobe analyses for Cr, Fe, Mn, Al, and Ti on the opaque oxides.
*Magnetite: chromite: ilmenite (ratio); Cr-Magnetite (>2 wt% Cr_2O_3), High Cr Chromite (>50 wt% Cr_2O_3).

****

Reference: Peterson, C.D., Elemental composition of modern beach placers in southern Washington and northern Oregon, (unpublished data).

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Sediment composition
Study Area: 46°20'N. to 41°00'N.

Onshore
Data Degree Sheets A, B, C, D, E, F
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	33,39		11	11	11
shipek					
Subsurface					
box					
piston					
borehole					
Oceanography					

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****

Reference: Peterson, C.P., Loubere, P.W., Kulm, L.D., and Peper, J.S., 1984, Stratigraphy of continental shelf and coastal region: Kulm, L.D., et al., eds., Ocean Margin Drilling Program Regional Data Synthesis Series Atlas 1, Western North American continental margin and adjacent ocean floor off Oregon and Washington, Woods Hole, Ma., Marine Science International, sheet 30.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Structure, stratigraphy
Study Area: 46°15'N. to 42°00'N.

Offshore
Notes: Shelf stratigraphy: stratigraphic sections of 10 offshore drill holes. Cross reference to Kulm et al. (1984) for drill hole locations.

****

Reference: Plopper, C.S., 1978, Hydraulic sorting and longshore transport of beach sand, Pacific coast of Washington (Ph.D. thesis): Syracuse, New York, Syracuse University, 184 p.

Index Map: Sheet A, Figure 1

Data Type: Sediment composition, sedimentation processes, oceanography
Study Area: 47°45'N. to 46°15'N.

Onshore
Data Degree Sheet A
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	7	745	28		
shipek					
Subsurface					
box					
piston					
borehole					
Oceanography					

Notes: Includes 8 graphs of log hydraulic ratios.
The 25 symbols shown on Figure 7 are representative of transects.

****

****

Reference: Rau, W.W., 1973, Geology of the Washington coast between Point Grenville and the Hoh River, Washington Department of Natural Resources, Geology and Earth Resources Division, Bulletin no 66, 58 p.

Index Map: None

Data Type: Structure, stratigraphy, sedimentation processes
Study Area: 47°45'N. to 47°20'N.

Offshore/Onshore
Notes:

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Reference: Rau, W.W., 1980, Washington coastal geology between the Hoh and Quillayute Rivers, Washington Department of Natural Resources, Division of Geology and Earth Resources, Bulletin 72, 57 p.

Index Map: None

Data Type: Structure, stratigraphy, sedimentation processes
Study Area: 47°55'N. to 47°45'N.

Offshore/Onshore
Notes:

****

Reference: Ricks, C.L., 1983, Flood history and sedimentation at the mouth Redwood Creek, Humboldt County, California (M.S. thesis): Corvallis, Oregon, Oregon State University, 165 p.

Index Map: Sheet F, Figure 1

Data Type: Sediment composition
Study Area: 41°18'N. to 41°15'N.

Onshore
Data Degree Sheet F
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	-	61	56		
shipek					
Subsurface					
box					
piston					
borehole					

Notes:

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Reference: Roberts, R.W., 1972, Sediment and rock samples from the marine environment that have been added to the sample collection at the Department of Oceanography University of Washington since 1965: University of Washington Department of Oceanography, Special Report no. 50, 71 p.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sediment sample locations
Study Area: Extensive -- includes 47°- 42°N.

Offshore
Notes: Portion of report includes Washington continental shelf and slope stations.
Five cruises pertaining to the 47°-46°N. study area on the Washington continental shelf and slope obtained 42 grab samples and 17 vibracores. Vibracore locations plotted on Figure 5.

****

Reference: Roush, R.C., 1970, Sediment textures and internal structures: a comparison between central Oregon continental shelf sediments and adjacent coastal sediments (M.S. thesis): Corvallis, Oregon, Oregon State University, 75 p.

Index Map: Sheet C, D; Figure 1

Data Type: Structure, sediment composition, oceanography
Study Area: 45°00'N. to 43°49'N. (offshore only)

Offshore
Data Degree Sheet C
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box(15)	18	54			
piston					
borehole					

Data Degree Sheet D
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box(12)	24	49			
piston					
borehole					

(Continued: Roush, 1970)
Onshore
Data Degree Sheets A, B, C, D, E, F
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	-	90*			
shipek					
Subsurface					
box					
piston					
borehole					

Notes: These 90 onshore samples are from beaches and dunes.
*Each data degree sheet in order A, B, C, D, E, F has the following number of samples, respectively: 12, 15, 12, 22, 24, 5.

****

Reference: Runge, E.R., Jr., 1966, Continental shelf sediments, Columbia River to Cape Blanco, Oregon (Ph.D. thesis): Corvallis, Oregon, Oregon State University, 143 p.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sediment composition
Study Area: 46°20.0'N. to 42°56.0'N.

Offshore
Data Degree Sheet A
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	6	54	6	3	
shipek					
Subsurface					
box					
piston					
borehole					

Data Degree Sheet B
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	11	172	14	14	
shipek					
Subsurface					
gravity(10)	11	10	1	1	
piston					
borehole					

(Continued: Runge, 1966)
Data Degree Sheet C
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	17	164	7	7	
shipek					
Subsurface					
box					
piston					
borehole					

Data Degree Sheet D
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	23	138	22	14	
shipek					
Subsurface					
box					
piston					
borehole					

Data Degree Sheet E
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	31	20	4	4	
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Some samples were obtained from Chambers (1969) and Bushnell, (1964). The samples were collected on a 3-mile grid.

****

Reference: Scheidegger, K.F., Kulm, L.D., and Runge, E.J., 1971, Sediment sources and dispersal patterns of Oregon continental shelf sands: Journal of Sedimentary Petrology, v. 41, no. 4, p. 1112-1120.

Index Map: Sheet A, B, C, D, E, F; Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 47°20'N to 41°50'N.

Offshore
Notes: Heavy mineral analyses were used to define four major sources of sediment supply - provenance.
Cross reference to OSU Archives for sample locations.

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Reference: Smith, J.D., and Hopkins, T.S., 1972, Sediment transport on the continental shelf off of Washington and Oregon in light of recent current measurements, IN Swift, D., Duane, D.B., and Pilkey, O.H., eds., Shelf sediment transport: process and pattern: Stroudsburg, Pa., Dowden, Hutchinson, & Ross, p. 143-180.

Index Map: Sheet A, Figure 1.

Data Type: Sedimentation processes, oceanography
Study Area: 47°00'N. to 46°15'N.

Offshore
Data Degree Sheet A
Methods

Oceanography	Fig.	
current meter	8	2 stations

Notes: Direct current measurements -- time series of a two year duration.

****

Reference: Spigai, J.J., 1971, Marine geology of the continental margin off southern Oregon (Ph.D. thesis): Corvallis, Oregon, Oregon State University, 214 p.

Index Map: Sheet E, Figure 1

Data Type: Structure, sediment composition
Study Area: 42°50'N. to 42°00'N.

Offshore
Data Degree Sheet E
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry	28	2500*	PDR	
Seismic				
Magnetic				
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box					
piston(23)	32	256	33		
borehole					

Notes: *The majority of the bathymetry studied is on the continental slope and only 35 km of bathymetric tracklines is on the shelf. (See OSU Archives trackline maps).
The 23 piston cores were split into 256 samples. Also, ten dredge hauls were collected on the margin. Cross reference to Emilia et al. (1968), -- magnetic discussion.

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Reference: Sternberg, R.W., 1972, Predicting initial motion and bedload transport of sediment particles in the shallow marine environment, IN Swift, D., Duane, D.B., and Pilkey, O.H., eds., Shelf sediment transport: process and pattern, Stroudsburg, Pa., Dowden, Hutchinson, & Ross, p. 61-82.

Index Map: Sheet A, Figure 1

Data Type: Sedimentation processes, oceanography
Study Area: 48°00'N. to 46°15'N.

Offshore
Notes: Data collection from current meters and visual observation.

****

Reference: Sternberg, R.W., and McManus, D.A., 1972, Implications of sediment dispersal from long-term, bottom-current measurements on the continental shelf of Washington, IN Swift, D., Duane, D.B., and Pilkey, O.H., eds., Shelf sediment transport: process and pattern, Stroudsburg, Pa., Dowden, Hutchinson, & Ross, p. 181-194.

Index Map: Sheet A, Figure 1.

Data Type: Sedimentation processes, oceanography
Study Area: 46°25'N.

Offshore
Notes: Oceanography data included current speed and direction data.

****

References: Sternberg, R.W., and Larsen, L.H., 1976, Frequency of sediment movement on the Washington continental shelf: a note: Marine Geology, v. 21, p. 37-47.

Index Map: Sheet A, Figure 1

Data Type: Sedimentation processes, oceanography
Study Area: 46°51'N. to 46°25'N.

Offshore
Data Degree Sheet A
Method

Oceanography current meter	Fig. 8	4 stations

Note: One station is detailed in Hopkins(1971) and Smith and Hopkins (1972).

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Reference: Thorsen, G.W., 1964, Mineralogy of black sands at Grays Harbor, Washington: Washington Division of Mines and Geology, Report of Investigations 23, 29 p.

Index Map. Sheet A, Figure 1

Data Type: Sediment composition
Study Area: 46°58'N. to 46°56'N.

Onshore
Data Degree Sheet A
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element %Fe, %TiO2
Surface					
grab(9)	7		3	1	9
shipek					
Subsurface					
box					
piston					
borehole					

Note: Study area covers approximately one square mile.

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Reference: Twenhofel, W.H., 1943, Origin of the black sands: Oregon Department of Geology and Mineral Industries, Bulletin 24, 25 p.

Index Map: Sheet D, E; Figure 1

Data Type: Sedimentation processes
Study Area: 43°30'N. to 42°00'N.

Onshore
Note:

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Reference: Twenhofel, W.H., 1946a, Mineralogical and physical composition of the sands of the Oregon coast from Coos Bay to the Columbia River: Oregon Department of Geology and Mineral Industries, Bulletin 30, 64 p.

Index Map. Sheet A, B, C, D; Figure 1

Data Type: Sediment composition
Study Area: 46°15'N. to 43°20'N.

(Continued: Twenhofel, 1946a)
Onshore
Data Degree Sheets A, B, C, D
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	7,13, 19.25	~213	~213		
shipek					
Subsurface					
box					
piston					
borehole					

Notes: The data degree sheets A, B, C, D have the following approximate number of beach samples, respectively: A:17, B:32, C:103, D:42. The approximate number of dune samples in each data degree sheet follows: A:8, B:2, C:1, D:8.

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Reference: Twenhofel, W.H., 1946b, Beach and river sands of the coastal region of southwest Oregon with particular reference to black sands: American Journal of Science, v. 244, p. 114-139, p. 200-215.

Index Map: Sheet D, E; Figure 1

Data Type: Sediment composition
Study Area: 43°15'N. to 42°10'N.

Onshore
Data Degree Sheets D, E
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	25,33	~91	~91		
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Data degree sheet D has approximately 30 beach and 4 river sample sites. Data degree E has approximately 43 beach and 14 river sample sites.

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Reference: U.S. Army Corps of Engineers, 1986, Geological and seismic investigations of Oregon offshore disposal sites and the Columbia River mouth study area: U.S. Army Corps of Engineers, Portland district, 51 p

Index Map: Sheet A, B, C, D, E; Figure 1.

Data Type: Structure, stratigraphy
Study Area: 46°20'N. to 42°00'N.

Offshore
Data Degree Sheets A, B, C, D, E,
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry	-	40		high
Seismic	2,9,15, 21,28	40	uniboom/ bubble pulser	high
Magnetic				
Side scan	2,9,15, 21,28	40	sonar	high

Notes: The offshore disposal site study areas are: Chetco River, Rogue River, Port Orford, Coquille River, Umpqua River, Siuslaw River, Yaquina Bay, Depoe Bay, Tillamook Bay, and Columbia River. This report includes localized geologic maps of the 10 study sites and the seismic reflection profiles.

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Reference: U.S. Coast and Geodetic Survey, 1962, Columbia River to Destruction Island, soundings in fathoms: U.S. Department of Commerce Coast and Geodetic Survey 6002, scale 1:180,789.

Index Map: Sheet A, Figure 1

Data Type: Structure, bathymetry
Study Area: 47°42'N. to 46°08'N.

Offshore
Notes: Navigational soundings map used for data degree sheet base map.

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Reference: U.S. Coast and Geodetic Survey, 1968, Bathymetric map, Tillamook Head to Heceta Head: U.S. Department of Commerce Coast and Geodetic Survey 1308N-22, scale 1:250,000.

Index Map: Sheet B, C; Figure 1

Data Type: Structure, bathymetry
Study Area: 46°00'N. to 44°00'N.

Offshore
Notes: Bathymetry map used for data degree sheet base maps.

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Reference: U.S. Coast and Geodetic Survey, 1968, Bathymetric map, Umpqua River to Cape Ferrelo: U.S. Department of Commerce Coast and Geodetic Survey 1308N-17, scale 1:250,000.

Index Map: Sheet D, E; Figure 1

Data Type: Structure, bathymetry
Study Area: 44°00'N. to 42°00'N.

Offshore
Notes: Bathymetry map used for data degree sheet base maps.

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Reference: U.S. Coast and Geodetic Survey, 1969, Bathymetric map, Point St. George to Point Delgada: U.S. Department of Commerce Coast and Geodetic Survey 1308N-12, scale 1:250,000.

Index Map: Sheet F, Figure 1

Data Type: Structure, bathymetry
Study Area: 42°00'N. to 40°00'N.

Offshore
Notes: Bathymetry map used for data degree sheet base maps.

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Reference: U.S. Geological Survey, 1984, Aeromagnetic map of southwest Washington and northwest Oregon: U.S. Geological Survey Open-File Report 84-205, scale 1:250,000, 1 plate.

Index Map: Sheet A, B; Figure 1

Data Type: Magnetic survey
Study Area: 46°30'N. to 45°45'N.

Offshore/Onshore
Notes: Aeromagnetic survey flown on two mile flight line spacing in 1976. Geometrics compiled an aeromagnetic map with a 20 gamma contour interval.

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Reference: Venkatarathnam, K., and McManus, D.A., 1973, Origin and distribution of sands and gravels on the northern continental shelf off Washington: Journal of Sedimentary Petrology, v. 43, no. 3, p. 799-811.

Index Map: Sheet A, Figure 1

Data Type: Sediment composition
Study Area: 48°20'N. to 46°50'N.

Offshore
Data Degree Sheet A
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element
Surface					
grab	4	450*	235*		
shipek					
Subsurface					
box					
piston					
borehole					

Notes: *The majority of this study is north of the area covered in this inventory, but area sheet A has 31 samples analyzed for grain size and 14 for heavy mineral.
Table--Depth distribution of heavy mineral-rich zones.
Bathymetric chart of the Washington shelf (contours based upon NOAA unpublished soundings) included.

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Reference: Wagner , H.C., and Batatian, L.D., 1985, Preliminary geologic framework studies showing bathymetry, locations of geophysical tracklines and exploratory wells, sea floor geology and deeper geologic structures, magnetic contours, and inferred thickness of Tertiary rocks on the continental shelf and upper continental slope off southwestern Washington between latitudes 46°N. and 47°30'N.: Washington Department of Natural Resources, Division of Geology and Earth Resources Open-File Report 85-1, 6 p.

Index Map: Sheet A, Figure 1

Data Type: Structure, stratigraphy, sediment composition, magnetic survey

Study Area: 47°30'N. to 46°15'N.

Offshore
Data Degree Sheet A
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry	2	*		
Seismic	2	2500**	air gun	low
Magnetic		***	shipborne/ airborne	low
Side scan				

Sampling	Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element
Surface					
grab					
shipek					
Subsurface					
box					
piston					
exploratory well (5)	6				

Notes: Maps include: Isopach sediment thickness (post Mid-Miocene), seafloor geology, magnetic, (*) bathymetric map with 20 meter contour interval.
**Approximately 950 km of seismic trackline covers the continental shelf for Data Sheet A.
***Coverage of magnetic tracklines unavailable.
Cross reference to U.S. Geological Survey, 1984, aeromagnetic map.

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Reference: Washington Mineral Products, Inc., 1973, Magnetite beach sands and off shore products: reports, (technical reports).

Index Map: Sheet A, Figure 1

Data Type: Stratigraphy, sediment composition, magnetic survey
Study Area: 46°20'N. to 46°15'N.

Offshore/Onshore
Data Degree Sheet A
Methods

Geophysics	Fig.	Trackline(km)	Instrument	Resolution
Bathymetry				
Seismic				
Magnetic	3	40	airborne	
Side scan				

Sampling		Number of Samples			
	Fig.	Grain Size	H. Min.	Assemb.	Element %Ti, %Fe
Surface					
grab					
shipek					
Subsurface					
box					
auger(45)	7		45		
borehole(12)	7				12

Notes: Airborne magnetic survey data of an area near Fort Canby (9 lines - 1000 ft. centers) compiled in magnetic interpretative overlay.
North Benson Beach 1966 evaluation: drilling grid on 100 ft. centers, 45 auger holes tested for % magnetite and % heavy minerals.

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Reference: White, S.M., 1967, The mineralogy and geochemistry of the sediments on the continental shelf off the Washington-Oregon coast (Ph.D. thesis): Seattle, Washington, University of Washington, 213 p.

Index Map: Sheet A, B; Figure 1

Data Type: Sediment composition, element
Study Area: 46°45'N. to 45°55'N.

(Continued: White, 1967)
Offshore
Data Degree Sheets A, B
Methods

Sampling	Fig.	Number of Samples: Grain Size	H. Min.	Assemb.	Element trace
Surface					
grab	5,12		210	210	45
shipek					
Subsurface					
box					
piston					
borehole					

Notes: Map sheet A has 171 sample sites--156 sites of McManus (1972).
Map sheet B has 16 sample sites (see McManus, 1972).

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Reference: White, S.M., 1970, Mineralogy and geochemistry of continental shelf sediments off the Washington-Oregon coast: Journal of Sedimentary Petrology, v. 40, no. 1, p. 38-54.

Index Map: Sheet A, B; Figure 1

Data Type: Sediment composition, sedimentation processes
Study Area: 46°45'N. to 45°55'N.

Offshore
Notes: Sample data is given in White's thesis (1967).
Study includes 45 thin sections.

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Reference: Woodruff, J.L., and McManus, D.A., 1966, Bottom sediment and rock samples (1954 - 1965) stored at the Department of Oceanography University of Washington, University of Washington Department of Oceanography, Technical Report no. 158, 51 p.

Index Map: Sheet A, B, C, D, E; Figure 1

Data Type: Sample locations
Study Area: Extensive -- includes 47°- 42°N.

Offshore
Notes: The report includes sites only from 12 cruises that pertain to the 47°- 42°N area (No data).

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