

**PRINCE RUPERT AREA COASTAL
FISH HABITAT BIBLIOGRAPHY**

Prepared for:

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INTRODUCTION

To assist the Department of Fisheries and Oceans (DFO) manage the fisheries resources in the Prince Rupert area, G.L. Williams and Associates Ltd. was retained to compile a bibliography of existing coastal information describing habitats and biota. The study area is bounded by Tuck Inlet in the north, Marcus Passage in the south, Chatham Sound in the west and De Horsey Island in the east. The Skeena River estuary was not included in the study. To facilitate processing the information, the study area was divided into four sub-areas: Prince Rupert, Digby Island, Port Edward and Smith Island (Figure 1).

The report has been organized into two main parts. The first provides a complete alphabetical listing of the citations included in the bibliography, with each citation given a reference number. The second part lists bibliographic citations according to subject areas related to habitat and water quality. This format was selected during discussions with DFO biologists to provide a practical bibliography that would benefit DFO habitat managers. Report citations which have "bold" typeface indicate they contain original sampling data and, in many cases, the sampling locations have been mapped on the sub-area maps.

Preparation of the report involved compiling listings of existing published primary literature as well as "grey literature" which included internal agency reviews, consultant client reports and file data. The work included searches of in-house DFO information, especially file data, in Prince Rupert and Ministry of Environment files in Smithers to obtain up-to-date listings of permitted effluent discharges. In some cases it was not possible to find the report and the author was unable to conduct a review of its contents. However, the citation was included in the bibliography. Citations were entered according to author, year, title, agency, with "Anon." being used if no author was identified.

One of the objectives of the report was to assist DFO habitat managers identify existing sampling data describing salmonid utilization within the estuary. Original sampling locations were marked on base maps for each of the four sub-areas. The sampling locations mapped provide a **preliminary indication** of the sampling effort, since not all references cited were actually reviewed and not all sampling locations could be mapped at the scale used.

The report provides a useful compilation of existing information for the Prince Rupert coastal area related to fish habitat. It has been entered on computer (i.e. WordPerfect 5.1) to facilitate access and updating.

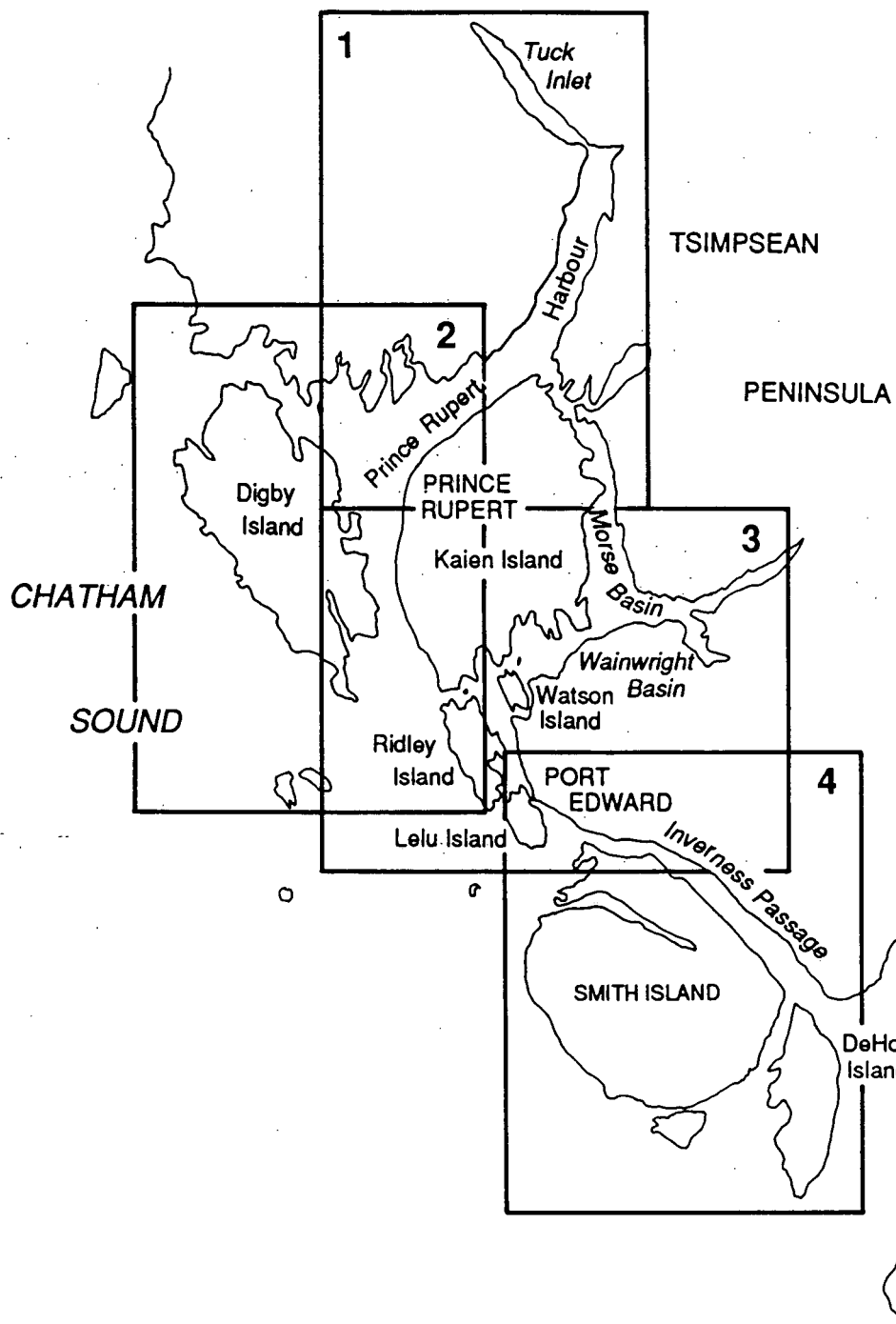


Figure 1
Study Area Showing
Four Sub-Areas

BIBLIOGRAPHIC LISTING BY AUTHOR

(bold citations indicate report covers the Marmot River estuary)

**Ref.
No.**

1. **Anderson, E.P. 1986. Skeena juvenile salmon ecology. Habitat use and diet of juvenile salmon from the Skeena River estuary, 2 May to 20 August, 1986. MS Rep. Job development strategy project 4038 RX2, Canada Employment and Immigration, Terrace, B.C. (sampling sites in Inverness Passage and Flora Bank) Available from Edward Anderson Marine Sciences, Sidney, B.C.**
2. **Anon. 1964. Report on hydrological studies related to increased flow requirements of the Watson Island mill, Prince Rupert, B.C. Ingledow Kidd and Associates.**
3. **Anon. 1967. Deep-sea shipping terminal development plans for the port of Prince Rupert, B.C. Stothert Engineering Ltd. Rep. for Western Wharves Limited, Prince Rupert.**
4. **Anon. 1969. Feasibility report of the Ridley Island bulk terminal. C.B.A. Engineering Ltd. Rep. for Prince Rupert Port Development Commission Rep.: 22 p.**
5. **Anon. 1970. Pollution control review and program for Northern Pulp Operations, Canadian Cellulose Co. Ltd., Watson Island, Prince Rupert, B.C. Ker, Priestman, Keenan and Assoc. Ltd. Rep. for Canadian Cellulose Co. Ltd., Prince Rupert.**
6. **Anon. 1972. A cursory investigation of the productivity of the Skeena River estuary. Fish. Serv. Unpubl. Rep.: 12 p.**
7. **Anon. 1973. Environmental review of proposed port development, Prince Rupert, B.C. H. Paish and Associates Ltd. Rep. for the Province of B.C.**
8. **Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. 2 vols. Dep. Environ., Ottawa.**
9. **Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.**

10. Anon. 1974. Phase 1 - Bulk marine terminal sites in the Prince Rupert area of British Columbia (engineering aspects). Swan Wooster Engineering Co. Ltd. Rep. for Tsimpsean Peninsula Federal-Provincial Joint Committee: 87 p. + appendix.
11. Anon. 1974 Summary report on water quality evaluation of Prince Rupert Harbour and associated environs. Task Force Committee for Provincial Interagency Evaluation of Prince Rupert.: 34 p.
12. Anon. 1974. Appendix A: Wastewater and solid waste disposal. Provincial Interagency Evaluation of Prince Rupert Harbour. Pollution Control Branch, Water Res. Serv. Rep.: 20 p. + appendices.
13. Anon. 1975. The Skeena River estuary: pollution sources. Environ. Protection Serv. Unpubl. Rep. 3 p. + figures and tables.
14. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. 5 volumes. North Coast Environmental Analysis Team (NEAT) Rep. for Federal/Provincial joint committee on Tsimpsean Peninsula port development.
15. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C - Existing aquatic environment and Appendix D - Pollution Impact. Federal/provincial joint committee on Tsimpsean Peninsula port development. North Coast Environmental Analysis Team.
16. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C. Existing aquatic environment. Lee Doran Associates Ltd. Rep. for Federal-Provincial Joint Committee on Tsimpsean Peninsula Port Development: 69 p. + annexes.
17. Anon. 1976. Prince Rupert study. Special Projects Maps. 8 themes (scale: 1:100,000): generalized present land use, land status, recreation capability, topographic base, ungulate capability, waterfowl capability, mineral deposit land use, transporation corridors. Maps B.C., Victoria.
18. Anon. 1977. Preliminary design study effluent outfalls and diffusers in Porpoise Harbour and Chatham Sound. H.A. Simons (International) Ltd. Rep. for Canadian Cellulose Co. Ltd.
19. Anon. 1977. Report on long range plan for sewage disposal, Associated Engineering Services Ltd. Rep. for City of Prince Rupert, Prince Rupert.

20. Anon. 1978. Ridley Island master plan. 3 volumes. CBA Engineering Ltd. - Carr Donaldson and Associates Rep. for National Harbour Board and Port of Prince Rupert, Prince Rupert.
21. Anon. 1979. A study of coal dust contamination of Canadian Cellulose's Watson Island (Prince Rupert) pulp mill from the operation of a coal terminal on Ridley Island and coal unit train access and egress to the proposed terminal. Phase One - Problem definition. Beak Consultants Ltd., Sandwell and Company Ltd., Swan Wooster Engineering Company Ltd. Rep. for Technical Committee on Coal Dust Contamination. Regional Economic Expansion Canada and Ministry of Industry and Small Business Development.
22. Anon. 1980. A study of coal dust contamination of Canadian Cellulose's Watson Island (Prince Rupert) pulp mill from the operation of a coal terminal on Ridley Island and coal unit train access and egress to the proposed terminal. Executive Summary. Beak Consultants Ltd., Hardy and Associates, Sandwell and Company Ltd., Swan Wooster Engineering Company Ltd. Rep. for Technical Committee on Coal Dust Contamination. Regional Economic Expansion Canada and Ministry of Industry and Small Business Development.
23. Anon. 1980. A study of coal dust contamination of Canadian Cellulose's Watson Island (Prince Rupert) pulp mill from the operation of a coal terminal on Ridley Island and coal unit train access and egress to the proposed terminal. Phase Two: mitigating measures. Beak Consultants Ltd., Hardy and Associates, Sandwell and Company Ltd., Swan Wooster Engineering Company Ltd. Rep. for Technical Committee on Coal Dust Contamination. Regional Economic Expansion Canada and Ministry of Industry and Small Business Development.
24. Anon. 1980. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.
25. Anon. 1981. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.
26. Anon. 1981. Transpac gas project. Proposal. Liquefied natural gas (LNG) export project. 2 volumes. Carter Energy Ltd., Vancouver.

27. Anon. 1981. Official community plan of Port Edward Amendment Bylaw No. 194. McElhanney Rep. for Village of Port Edward, Port Edward, B.C.
28. Anon. 1982. Ridley Island development: prospectus and preliminary planning report. Prince Rupert Terminals Ltd., Prince Rupert.
29. Anon. 1982. Prince Rupert petrochemical project detailed environmental studies. 2 volumes. Transec Canada Ltd. and Simon TR Holding Limited Rep. for Prince Rupert Terminals Ltd., Prince Rupert.
30. Anon. 1982. Site development criteria for a proposed petrochemical terminal at Kaien Island, Prince Rupert, British Columbia. Swan Wooster Engineering Co. Ltd. Rep. for B.C. Development Corporation.
31. Anon. 1982. Water quality and biological studies in the marine environment near the B.C. Timber pulp mill - 1981. Beak Consultants Limited Rep. for B.C. Timber Ltd., Prince Rupert.
32. Anon. 1982. Initial environmental evaluation for renewed petroleum exploration in Hecate Strait and Queen Charlotte Sound. 2 volumes. Chevron Canada Resources Ltd., Calgary, Alt.
33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].
34. Anon. 1983. Skeena River juvenile salmon ecology project. Job development Project 4038 RX2. (beach seine and vegetation sampling data for De Horsey, Tyee and Khyex sampling sites) [limited data available in DFO files] Dep. Fish. Oceans, Prince Rupert.
35. Anon. 1983. Offshore Queen Charlotte Islands initial environmental evaluation. 3 volumes. Petro-Canada.
36. Anon. 1984. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1983. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.
37. Anon. 1984. Ridley Island Development Plan. 3 volumes. FencoLavalin Rep. for Port of Prince Rupert Corporation, Prince Rupert.

38. Anon. 1985. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1984. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.
39. Anon. 1985. Lelu Island beach seine data, June 16, 1985. DFO Waterfront file 550-6-2H. Dep. Fish. Oceans, Habitat Management Unit, Prince Rupert.
40. Anon. 1986. Lelu Island beach seine data, June 5, 1986. DFO Waterfront file 550-6-2H. Dep. Fish. Oceans, Habitat Management Unit, Prince Rupert.
41. Anon. 1986. Beach seining data - June 5 and July 9, 1986. Dep. Fish. Oceans, Hab. Manage. Unit, Prince Rupert. [DFO file Waterfront 7430-8-2]
42. Anon. 1987. Environmental and socio-economic impact assessment. Tera Environmental Consultants Ltd. Rep. for Sandwell Swan Wooster Ltd., Vancouver.
43. Anon. 1987. Fairview Terminal expansion preliminary engineering investigations. Volume 3: environmental and socio-economic impact. Final report. Sandwell Swan Wooster Inc. (in association with Golder Associates, Tera Environmental Consultants and RIM Engineering) Rep. for Prince Rupert Port Corporation, Prince Rupert.
44. Anon. 1988. Fairview terminal expansion habitat compensation program. Tera Environmental Consultants Ltd., R.U. Kistritz Consultants Ltd., Hay and Company Consultants Inc. Rep. for Prince Rupert Port Corporation, Prince Rupert.
45. Anon. 1988. Port Edward airport study. McNeal and Associates Consultants Ltd. Rep. for Air Transport Assistance Program (ATAP) Ministry of Transportation and Highways and Village of Port Edward, Port Edward, B.C.
46. Anon. 1988. Geotechnical evaluation, leachate treatment, leachate collection and treated leachate discharge system for City's landfill operation. Phase I report - site suitability (geotechnical aspects). B.H. Levelton & Associates Ltd. and Dayton & Knight Ltd. Rep. for City of Prince Rupert.

47. Anon. 1989. Fairview terminal expansion project. Environmental impact assessment. Tera Environmental Consultants Ltd., R.U. Kistritz Consultants Ltd., Hay and Company Consultants Inc. Rep. for Prince Rupert Port Corporation, Prince Rupert.
48. Anon. 1990. Eelgrass transplanting. Fairview Terminal expansion project habitat compensation program. R.U. Kistritz Consultants Ltd. Rep to Prince Rupert Port Corporation, Prince Rupert: 21 p.
49. Anon. 1990. City of Prince Rupert Wainwright landfill development treated leachate ocean disposal. Dayton and Knight Ltd., Rep. for City of Prince Rupert, Prince Rupert.
50. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 1). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. Can. Data Rep. Hydrol. Ocean Sci. 37: 302 p.
51. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 2). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. Can. Data Rep. Hydrol. Ocean Sci. 37: 265 p.
52. Brothers, D.E. 1970. Results of oxygen surveys conducted on the waters contiguous to the Columbia Cellulose pulp mill at Port Edward, B.C., May to November, 1969. Dep. Fish. Can. Memorandum Rep.: 20 p.
53. Cameron, W.M. 1948. Fresh water in Chatham Sound. Pac. Prog. Rep. Fish. Res. Board Can. 76: 72-75.
54. Cameron, W.M. 1948. The oceanography of Chatham Sound. Fish. Res. Board Can. (Pac. Oceanogr. Group) MS (mimeo).
55. Cameron, W.M. 1951. Transvers forces in a British Columbia inlet. Trans. Roy. Soc. Can. Sec. V, 45 (Ser. 3): 1-8.
56. Cannings, R.J. 1979. A study of bird use on mudflats on Ridley Island, B.C. Environ. Can., Can. Wildl. Serv., Delta, B.C.: 69 p.

57. Carimichael, J.R., and J.A. Boutillier. 1979. Sidestripe shrimp exploration, British Columbia Central and North Coasts, October and November 1978. Fish. Mar. Serv. MS Rep. 1520.
58. Clague, J.J., and B.D. Bornhold. 1980. Morphology and littoral processes of the Pacific Coast of Canada, pp. 339-380. *In* S.B. Cann [ed.] The Coastline of Canada. Geol. Surv. Can. Pap. 80-10.
59. Cooper, J., and J.A. Boutillier. 1979. Prawn trap exploration, B.C. North Coast. September 1978 to December 1978. Fish. Mar. Serv. MS Rep. 1521.
60. Drinnan, R.W., and I. Webster. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Tasks 1 and 2. Oceanography and water quality. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 44 p. + figures.
61. Drinnan, R.W. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Task 3. Intertidal (beach) biology. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 92 p.
62. Drinnan, R.W. 1977. Prince Rupert pulp mill monitoring program - survey of intertidal macroalgae, 1974-1975. Wat. Investigations Branch, Ministry of Environment.
63. Dwernychuk, L.W. 1983. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1982. IEC Beak Consultants Ltd. 2 volumes. Rep. for Westar Timber Limited, Prince Rupert.
64. Dwernychuk, L.W. 1986. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1985. Hatfield Consultants Limited Rep. for Westar Timber Limited, Prince Rupert.
65. Dwernychuk, L.W. 1987. Water quality and biological studies in the marine environment near the Skeena Cellulose pulp mill, 1986. 2 volumes. Hatfield Consultants Limited Rep. for Skeena Cellulose Inc., Prince Rupert.

66. Dwernychuk, L.W. 1988. The marine receiving environment near Skeena Cellulose Inc.: a study of the physical, chemical and biological components of subtidal and intertidal systems. 3 volumes. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.
67. Dwernychuk, L.W. 1989. Bottom sediments and biological tissues: a baseline organochlorine contamination survey in the marine environment near Skeena Cellulose Inc. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.
68. Goyette, D.E., D.E. Brothers, and D. Demill. 1970. Summary report of environmental surveys at Prince Rupert, 1961-1970. Dep. Fish. Memorandum Rep.: 28 p.
69. Greenius, A.W. 1973. The general status of the seaweed industry in British Columbia.: 37 p.
70. Hancock, M.J., A.J. Leaney-East, and D.E. Marshall. 1983. Catalogue of salmon streams and spawning escapements of Statistical Area 4 (Lower Skeena River) including coastal streams. Can. Data Rep. Fish. Aquat. Sci. 395: 422 p.
71. Hay, D.E., and P.B. McCarter, R. Kronlund, and C. Roy. 1989. Spawning areas of British Columbia herring: a review, geographical analysis and classification. Volume II: North Coast. Can. MS Rep. Fish. Aquat. Sci. 2019: 99 p.
72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.
73. Hodgins, D.O., and M. Knoll. 1990. Effluent dispersion study for the Skeena Cellulose outfall in Porpoise Harbour, British Columbia. Seaconsult Marine Res. Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert: 62 p.
74. Hoos, L.M. 1975. The Skeena River estuary. Status of environmental knowledge to 1975. Environ. Can. Spec. Estuary Ser. 3: 418 p.
75. Johnson, K. 1984. Skeena River estuary project Inverness Passage field Report August 1-2, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.

76. Knapp, W., and I. Cairns. 1978. Canadian Cellulose pulp mill - Port Edward, B.C.; Fisheries resources of Fisheries and Marine Service Statistical Area 4. Internal Rep., Habitat Protection Unit, Fish. Mar. Serv.: 20 p.
77. Kussat, R. 1968. Investigation of fish kills in Wainwright Basin and Porpoise Harbour. Unpubl. Project Rep. for Dep. Fish. Can.
78. Langford, R.W. (ed.). 1983. Offshore hydrocarbon exploration and development...a preliminary environmental assessment. Planning and Assessment Branch, Ministry of Environment, Victoria: 334 p.
79. Last, G. 1984. Skeena River estuary project Lelu Island field report August 10, October 10 and 12, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.
80. Last, G. 1984. Skeena River estuary project Lelu Island field report October 24, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.
81. Last, G. 1984. Skeena River estuary project Inverness Passage field report November 5, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.
82. Last, G. 1984. Skeena River estuary project Inverness Passage field report November 23/26, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.
83. Last, G. 1984. Skeena River estuary project Inverness Passage field report November 28, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.
84. Maclean, D.B. 1986. Trace metals in *Mytilus edulis* (mussels) and sediments from Kitimat Arm and Porpoise Harbour. Min. Environ. Waste Manage. Rep 86-03, Smithers, B.C.
85. Manzer, J.I. 1956. Distribution and movement of young Pacific salmon during early ocean residence. Fish. Res. Board Can. Prog. Rep. 106: 24-28.
86. Manzer, J.I. 1969. Stomach contents of juvenile Pacific salmon in Chatham Sound and adjacent waters. J. Fish. Res. Board Can. 26: 2219-2223.

87. McGreer, E.R., P.W. Delaney, G.A. Vigers, J.W. McDonald, and E.H. Owens. 1980. Review of oceanographic data relating to ocean dumping in the Prince Rupert area with comments on present and alternate dump sites. E.V.S. Consultants Ltd., ESL Environmental Sciences Limited, and Woodward-Clyde Consultants Rep. for Dep. Fish. Oceans., Inst. Ocean Sci., Sidney, B.C.: 81 p.
88. Nyers, F. 1973. Water environment quality study of Comox and Prince Rupert harbours. B.C. For. Serv., B.C. Pollution Control Branch file (C-45).
89. Packman, G.A. 1977. Environmental surveillance in the vicinity of the Canadian Cellulose Co. Ltd. pulpmill at Prince Rupert, B.C. Environ. Protection Serv. Rep. EPS 5-PR-77-8: 24 p.
90. Packman, G.A. 1979. Pulpmill environmental assessment Canadian Cellulose Limited, Northern Pulp Operation, Port Edward, B.C. Environ. Protection Serv. Regional Program Rep. 79-7.
91. Pomeroy, W.M. 1983. B.C. Timber pulp mill, Porpoise Harbour - an assessment of mill impact on the receiving environment. Dep. Environ. EPS Regional Program Rep. 83-09.
92. Rowse, B. 1984. Effluent sites in the Prince Rupert and Port Edward harbour area. Skeena Estuary Study. Project 982-024.
93. Schoenrank, R.V. 1967. Tidal currents and volume transport at Galloway Rapids. University of Victoria MS Rep.: 11 p.
94. Stokes, J.W. 1953. Pollution survey of the Watson Island area, June 1953. Fish. Mar. Serv., MS Rep., Vancouver: 4 p.
95. Sullivan, D.L. 1987. Compilation and assessment of research, monitoring and dumping information for active dump sites on the British Columbia and Yukon coasts from 1979 to 1987. (Prep. for Pac. Region Ocean Dumping Advisory Committee). Environ. Can. EPS MS Rep. 87-02: 263 p.
96. Sunderland, P.A. 1935. The herring run in Prince Rupert Harbour. Fish. Res. Board Can. 23: 16-17.
97. Sunderland, P.A. 1936. Sea water conditions and the herring fishing in the Prince Rupert Harbour. Fish Res. Board Can. Prog Rep. 27: 8-10.

98. Thompson, R.E. 1981. Oceanography of the British Columbia coast. Can. Spec. Publ. Fish. Aquat. Sci. 56: 291 p.
99. Trites, R.W. 1952. The oceanography of Chatham Sound, British Columbia. M.A. thesis, Univ. British Columbia, Vancouver.
100. Trites, R.W. 1953. Oceanography of Chatham Sound. University of British Columbia, Inst. Oceanogr. MS Rep. 3: 32 p.
101. Trites, R.W. 1956. The oceanography of Chatham Sound, British Columbia. J. Fish. Res. Board Can. 13: 385-434.
102. Tutt, D. 1983. Ridley Island port construction activities - 1982. Background and environmental monitoring. Environ. Can., EPS Regional Program Rep. 83-02, Vancouver: 46 p.
103. Walden, C.C. 1964. Disposal of effluents from existing sulfite and proposed Kraft mills at Watson Island, B.C. B.C. Research Council abridged Rep. 61-253-B-1 for Celgar Limited: 15 p.
104. Waldichuk, M. 1962. Some water pollution problems connected with the disposal of pulp mill wastes. Can. Fish. Cult. 31: 3-34.
105. Waldichuk, M. 1962. Observations in marine waters of the Prince Rupert area, particularly with reference to pollution from sulphite pulp mill on Watson Island, September 1961. Fish Res. Board Can. MS. Rep. (Biol.): 733 p.
106. Waldichuk, M., and E.L. Bousfield. 1962. Amphipods in low-oxygen marine waters adjacent to a sulphite pulp mill. J. Fish. Res. Board Can. 19: 1163-1165.
107. Waldichuk, M. 1966. Effects of sulfite wastes in a partially enclosed marine system in British Columbia. J. Wat. Pollut. Contr. Fed. 38: 1484-1505.
108. Waldichuk, M., J.R. Markert, and J.H. Meikle. 1968. Physical and chemical oceanographic data from the west coast of Vancouver Island and northern British Columbia coast, 1957-1967. Volume II: Fisher Channel - Cousins Inlet, Douglas Channel - Kitimat Arm and Prince Rupert Harbour and its contiguous waters. Fish. Res. Board Can. MS Rep. 990: 303 p.

109. Werner, A.E. 1968. Gases from sediments in polluted coastal waters. Pulp Paper Mag. Can. 69: 127-136.
110. Wolferstan, W.H. 1986. Ridley Island development plan environmental review. Planning and Assessment Branch, Ministry of Environment, Victoria: 13 p.

PRINCE RUPERT SUB-AREA

BIBLIOGRAPHIC LISTING BY SUBJECT

1.0 GENERAL

7. Anon. 1973. Environmental review of proposed port development, Prince Rupert, B.C. H. Paish and Associates Ltd. Rep. for the Province of B.C.
8. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. 2 vols. Dep. Environ., Ottawa.
9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.
10. Anon. 1974. Phase 1 - Bulk marine terminal sites in the Prince Rupert area of British Columbia (engineering aspects). Swan Wooster Engineering Co. Ltd. Rep. for Tsimpsean Peninsula Federal-Provincial Joint Committee: 87 p. + appendix.
14. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. 5 volumes. North Coast Environmental Analysis Team (NEAT) Rep. for Federal/Provincial joint committee on Tsimpsean Peninsula port development.
15. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C - Existing aquatic environment and Appendix D - Pollution Impact. Federal/provincial joint committee on Tsimpsean Peninsula port development. North Coast Environmental Analysis Team.
16. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C. Existing aquatic environment. Lee Doran Associates Ltd. Rep. for Federal-Provincial Joint Committee on Tsimpsean Peninsula Port Development: 69 p. + annexes.

1.0 GENERAL (continued)

17. Anon. 1976. Prince Rupert study. Special Projects Maps. 8 themes (scale: 1:100,000): generalized present land use, land status, recreation capability, topographic base, ungulate capability, waterfowl capability, mineral deposit land use, transporation corridors. Maps B.C., Victoria.
26. Anon. 1981. Transpac gas project. Proposal. Liquified natural gas (LNG) export project. 2 volumes. Carter Energy Ltd., Vancouver.
29. Anon. 1982. Prince Rupert petrochemical project detailed environmental studies. 2 volumes. Transec Canada Ltd. and Simon TR Holding Limited Rep. for Prince Rupert Terminals Ltd., Prince Rupert.
30. Anon. 1982. Site development criteria for a proposed petrochemical terminal at Kaien Island, Prince Rupert, British Columbia. Swan Wooster Engineering Co. Ltd. Rep. for B.C. Development Corporation.
32. Anon. 1982. Initial environmental evaluation for renewed petroleum exploration in Hecate Strait and Queen Charlotte Sound. 2 volumes. Chevron Canada Resources Ltd., Calgary, Alt.
35. Anon. 1983. Offshore Queen Charlotte Islands initial environmental evaluation. 3 volumes. Petro-Canada.
74. Hoos, L.M. 1975. The Skeena River estuary. Status of environmental knowledge to 1975. Environ. Can. Spec. Estuary Ser. 3: 418 p.
78. Langford, R.W. (ed.). 1983. Offshore hydrocarbon exploration and development...a preliminary environmental assessment. Planning and Assessment Branch, Ministry of Environment, Victoria: 334 p.

2.0 HABITAT

2.1 Physical

A. GEOMORPHOLOGY

- 9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep for Dep. Environ., Ottawa: 82 pages + appendices.**
- 33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].**
- 58. Clague, J.J., and B.D. Bornhold. 1980. Morphology and littoral processes of the Pacific Coast of Canada, pp. 339-380. *In* S.B. Cann [ed.] *The Coastline of Canada*. Geol. Surv. Can. Pap. 80-10.**

C. OCEANOGRAPHY

- 9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep for Dep. Environ., Ottawa: 82 pages + appendices.**
- 50. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 1). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. *Can. Data Rep. Hydrol. Ocean Sci.* 37: 302 p.**

C. OCEANOGRAPHY (continued)

51. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 2). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. Can. Data Rep. Hydrol. Ocean Sci. 37: 265 p.
60. Drinnan, R.W., and I. Webster. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Tasks 1 and 2. Oceanography and water quality. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 44 p. + figures.
87. McGreer, E.R., P.W. Delaney, G.A. Vigers, J.W. McDonald, and E.H. Owens. 1980. Review of oceanographic data relating to ocean dumping in the Prince Rupert area with comments on present and alternate dump sites. E.V.S. Consultants Ltd., ESL Environmental Sciences Limited, and Woodward-Clyde Consultants Rep. for Dep. Fish. Oceans., Inst. Ocean Sci., Sidney, B.C.: 81 p.
98. Thompson, R.E. 1981. Oceanography of the British Columbia coast. Can. Spec. Publ. Fish. Aquat. Sci. 56: 291 p.

2.2 Biological

A. VEGETATION

9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep for Dep. Environ., Ottawa: 82 pages + appendices.
33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].

A. VEGETATION (continued)

61. Drinnan, R.W. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Task 3. Intertidal (beach) biology. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 92 p.

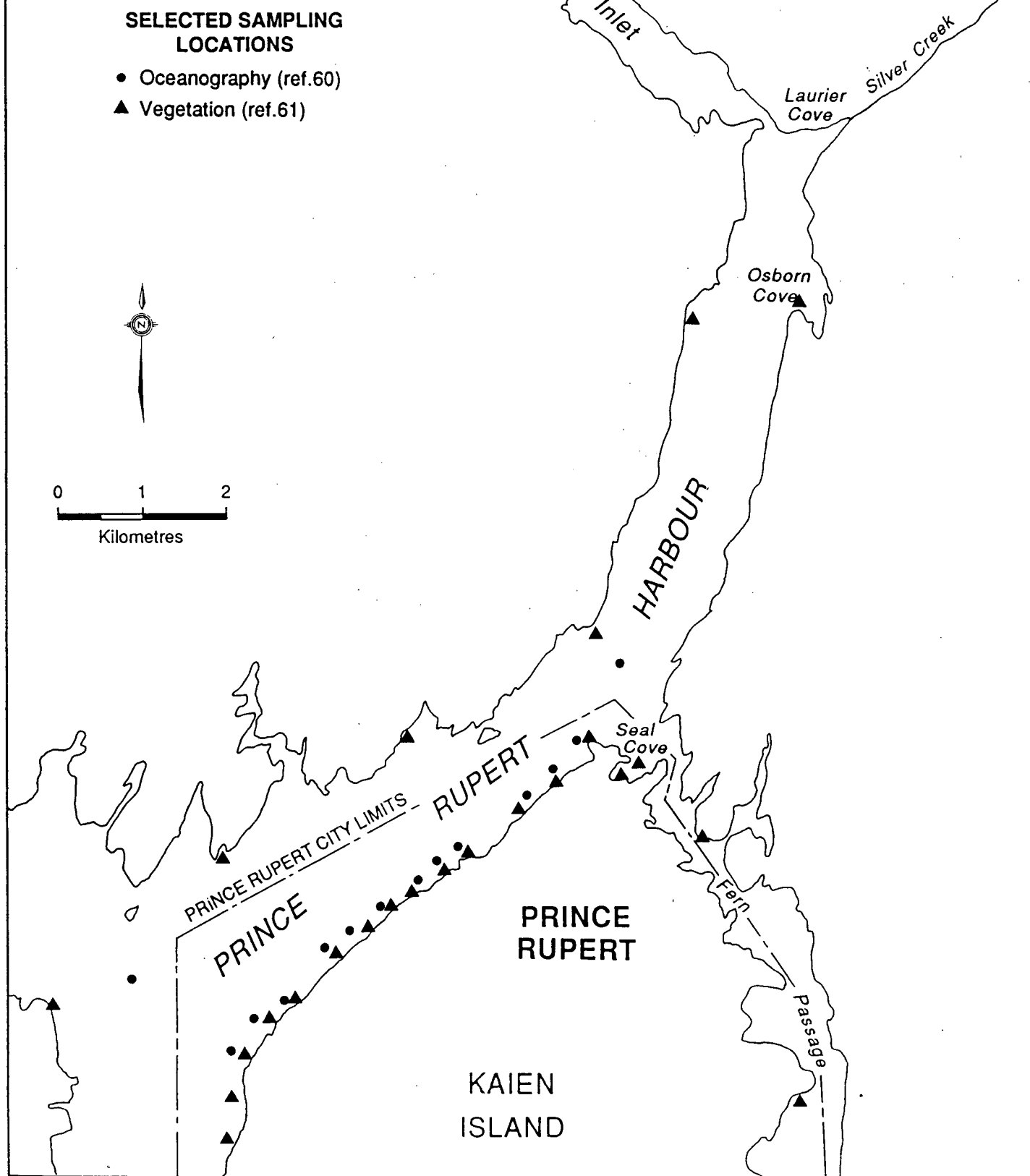
B. INVERTEBRATES

9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep for Dep. Environ., Ottawa: 82 pages + appendices.

C. FISH

9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep for Dep. Environ., Ottawa: 82 pages + appendices.
70. Hancock, M.J., A.J. Leaney-East, and D.E. Marshall. 1983. Catalogue of salmon streams and spawning escapements of Statistical Area 4 (Lower Skeena River) including coastal streams. Can. Data Rep. Fish. Aquat. Sci. 395: 422 p.
71. Hay, D.E., and P.B. McCarter, R. Kronlund, and C. Roy. 1989. Spawning areas of British Columbia herring: a review, geographical analysis and classification. Volume II: North Coast. Can. MS Rep. Fish. Aquat. Sci. 2019: 99 p.

Figure 2
Habitat Sampling Locations
for Prince Rupert
(Sub-Area 1)



3.0 WATER QUALITY

3.1 Permitted Discharges

PE-00215	Chevron Canada Limited
PE-01812	British Columbia Packers Limited
PE-01816	British Columbia Packers Limited
PE-01862	Ocean Fisheries Limited
PE-02603	Rivtow Straits Limited
PE-04299	City of Prince Rupert
PE-04748	J.S. McMillan Fisheries Limited
PE-05577	City of Prince Rupert
PE-05627	Rivtow Straits Limited

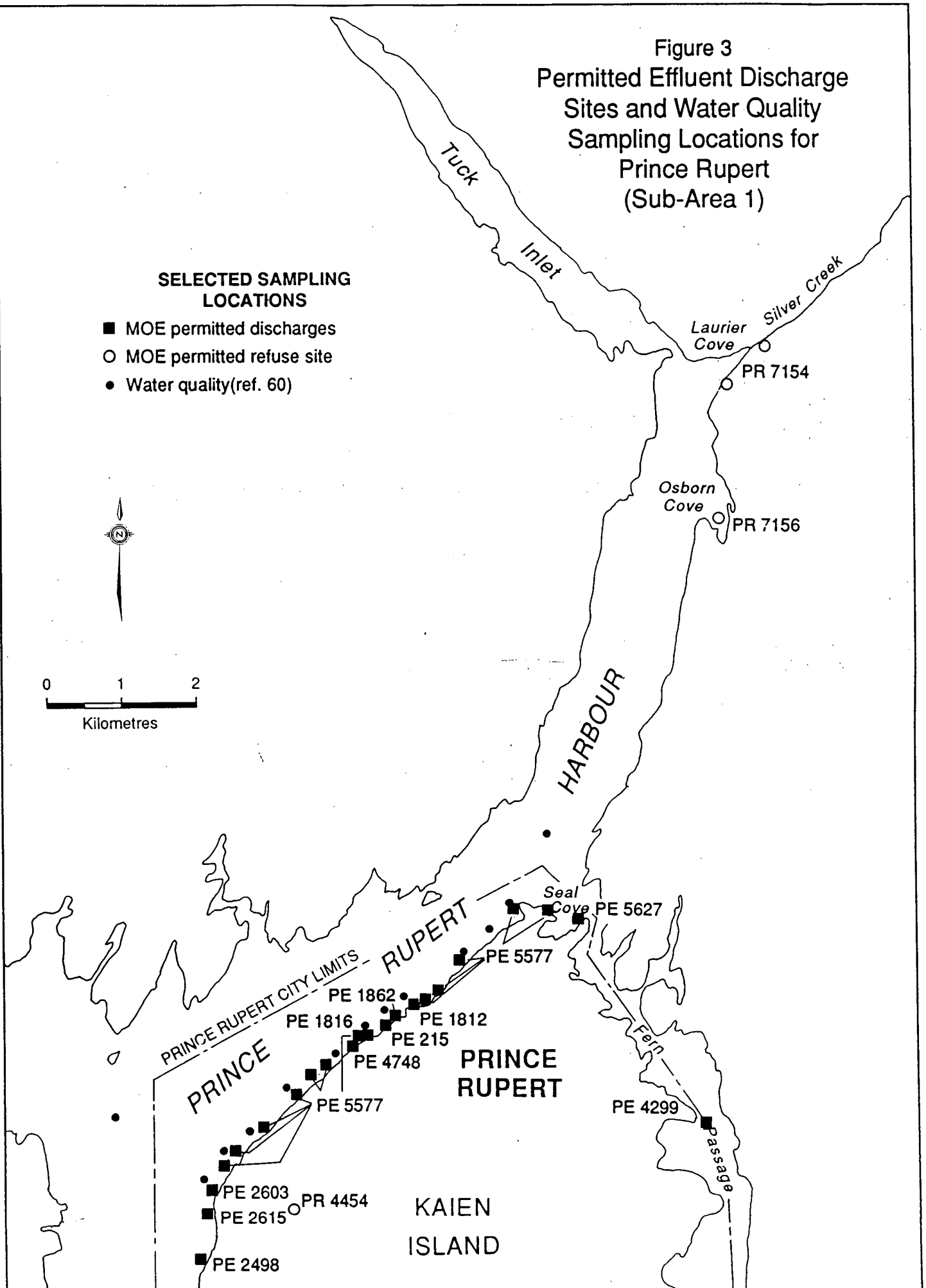
3.2 Permitted Refuse Sites

PR-04454	City of Prince Rupert
PR-07154	Wedene River Contracting Co. Ltd.
PR-07156	Prince Rupert Harbour Debris Society

3.3 Reports

60. Drinnan, R.W., and I. Webster. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Tasks 1 and 2. Oceanography and water quality. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 44 p. + figures.
92. Rowse, B. 1984. Effluent sites in the Prince Rupert and Port Edward harbour area. Skeena Estuary Study. Project 982-024.

Figure 3
Permitted Effluent Discharge
Sites and Water Quality
Sampling Locations for
Prince Rupert
(Sub-Area 1)



DIGBY ISLAND SUB-AREA

BIBLIOGRAPHIC LISTING BY SUBJECT

1.0 GENERAL

7. Anon. 1973. Environmental review of proposed port development, Prince Rupert, B.C. H. Paish and Associates Ltd. Rep. for the Province of B.C.
8. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. 2 vols. Dep. Environ., Ottawa.
9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.
10. Anon. 1974. Phase 1 - Bulk marine terminal sites in the Prince Rupert area of British Columbia (engineering aspects). Swan Wooster Engineering Co. Ltd. Rep. for Tsimpsean Peninsula Federal-Provincial Joint Committee: 87 p. + appendix.
14. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. 5 volumes. North Coast Environmental Analysis Team (NEAT) Rep. for Federal/Provincial joint committee on Tsimpsean Peninsula port development.
15. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C - Existing aquatic environment and Appendix D - Pollution Impact. Federal/provincial joint committee on Tsimpsean Peninsula port development. North Coast Environmental Analysis Team.
16. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C. Existing aquatic environment. Lee Doran Associates Ltd. Rep. for Federal-Provincial Joint Committee on Tsimpsean Peninsula Port Development: 69 p. + annexes.

1.0 GENERAL (continued)

17. Anon. 1976. Prince Rupert study. Special Projects Maps. 8 themes (scale: 1:100,000): generalized present land use, land status, recreation capability, topographic base, ungulate capability, waterfowl capability, mineral deposit land use, transportation corridors. Maps B.C., Victoria.
26. Anon. 1981. Transpac gas project. Proposal. Liquefied natural gas (LNG) export project. 2 volumes. Carter Energy Ltd., Vancouver.
29. Anon. 1982. Prince Rupert petrochemical project detailed environmental studies. 2 volumes. Transec Canada Ltd. and Simon TR Holding Limited Rep. for Prince Rupert Terminals Ltd., Prince Rupert.
30. Anon. 1982. Site development criteria for a proposed petrochemical terminal at Kaien Island, Prince Rupert, British Columbia. Swan Wooster Engineering Co. Ltd. Rep. for B.C. Development Corporation.
32. Anon. 1982. Initial environmental evaluation for renewed petroleum exploration in Hecate Strait and Queen Charlotte Sound. 2 volumes. Chevron Canada Resources Ltd., Calgary, Alt.
35. Anon. 1983. Offshore Queen Charlotte Islands initial environmental evaluation. 3 volumes. Petro-Canada.
42. Anon. 1987. Environmental and socio-economic impact assessment. Tera Environmental Consultants Ltd. Rep. for Sandwell Swan Wooster Ltd., Vancouver.
43. Anon. 1987. Fairview Terminal expansion preliminary engineering investigations. Volume 3: environmental and socio-economic impact. Final report. Sandwell Swan Wooster Inc. (in association with Golder Associates, Tera Environmental Consultants and RIM Engineering) Rep. for Prince Rupert Port Corporation, Prince Rupert.
44. Anon. 1988. Fairview terminal expansion habitat compensation program. Tera Environmental Consultants Ltd., R.U. Kistritz Consultants Ltd., Hay and Company Consultants Inc. Rep. for Prince Rupert Port Corporation, Prince Rupert.

1.0 GENERAL (continued)

- 47. Anon. 1989. Fairview terminal expansion project. Environmental impact assessment. Tera Environmental Consultants Ltd., R.U. Kistritz Consultants Ltd., Hay and Company Consultants Inc. Rep. for Prince Rupert Port Corporation, Prince Rupert.
- 74. Hoos, L.M. 1975. The Skeena River estuary. Status of environmental knowledge to 1975. Environ. Can. Spec. Estuary Ser. 3: 418 p.
- 78. Langford, R.W. (ed.). 1983. Offshore hydrocarbon exploration and development...a preliminary environmental assessment. Planning and Assessment Branch, Ministry of Environment, Victoria: 334 p.
- 110. Wolferstan, W.H. 1986. Ridley Island development plan environmental review. Planning and Assessment Branch, Ministry of Environment, Victoria: 13 p.

2.0 HABITAT

2.1 Physical

A. GEOMORPHOLOGY

- 33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].**
- 58. Clague, J.J., and B.D. Bornhold. 1980. Morphology and littoral processes of the Pacific Coast of Canada, pp. 339-380. *In* S.B. Cann [ed.] *The Coastline of Canada*. Geol. Surv. Can. Pap. 80-10.**

C. OCEANOGRAPHY

- 50. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 1). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. *Can. Data Rep. Hydrol. Ocean Sci.* 37: 302 p.**
- 51. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 2). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. *Can. Data Rep. Hydrol. Ocean Sci.* 37: 265 p.**
- 53. Cameron, W.M. 1948. Fresh water in Chatham Sound. *Pac. Prog. Rep. Fish. Res. Board Can.* 76: 72-75.**

C. OCEANOGRAPHY (continued)

54. Cameron, W.M. 1948. The oceanography of Chatham Sound. Fish. Res. Board Can. (Pac. Oceanogr. Group) MS (mimeo).
55. Cameron, W.M. 1951. Transvers forces in a British Columbia inlet. Trans. Roy. Soc. Can. Sec. V, 45 (Ser. 3): 1-8.
60. Drinnan, R.W., and I. Webster. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Tasks 1 and 2. Oceanography and water quality. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 44 p. + figures.
87. McGreer, E.R., P.W. Delaney, G.A. Vigers, J.W. McDonald, and E.H. Owens. 1980. Review of oceanographic data relating to ocean dumping in the Prince Rupert area with comments on present and alternate dump sites. E.V.S. Consultants Ltd., ESL Environmental Sciences Limited, and Woodward-Clyde Consultants Rep. for Dep. Fish. Oceans., Inst. Ocean Sci., Sidney, B.C.: 81 p.
98. Thompson, R.E. 1981. Oceanography of the British Columbia coast. Can. Spec. Publ. Fish. Aquat. Sci. 56: 291 p.
99. Trites, R.W. 1952. The oceanography of Chatham Sound, British Columbia. M.A. thesis, Univ. British Columbia, Vancouver.
100. Trites, R.W. 1953. Oceanography of Chatham Sound. University of British Columbia, Inst. Oceanogr. MS Rep. 3: 32 p.
101. Trites, R.W. 1956. The oceanography of Chatham Sound, British Columbia. J. Fish. Res. Board Can. 13: 385-434.

2.2 Biological

A. VEGETATION

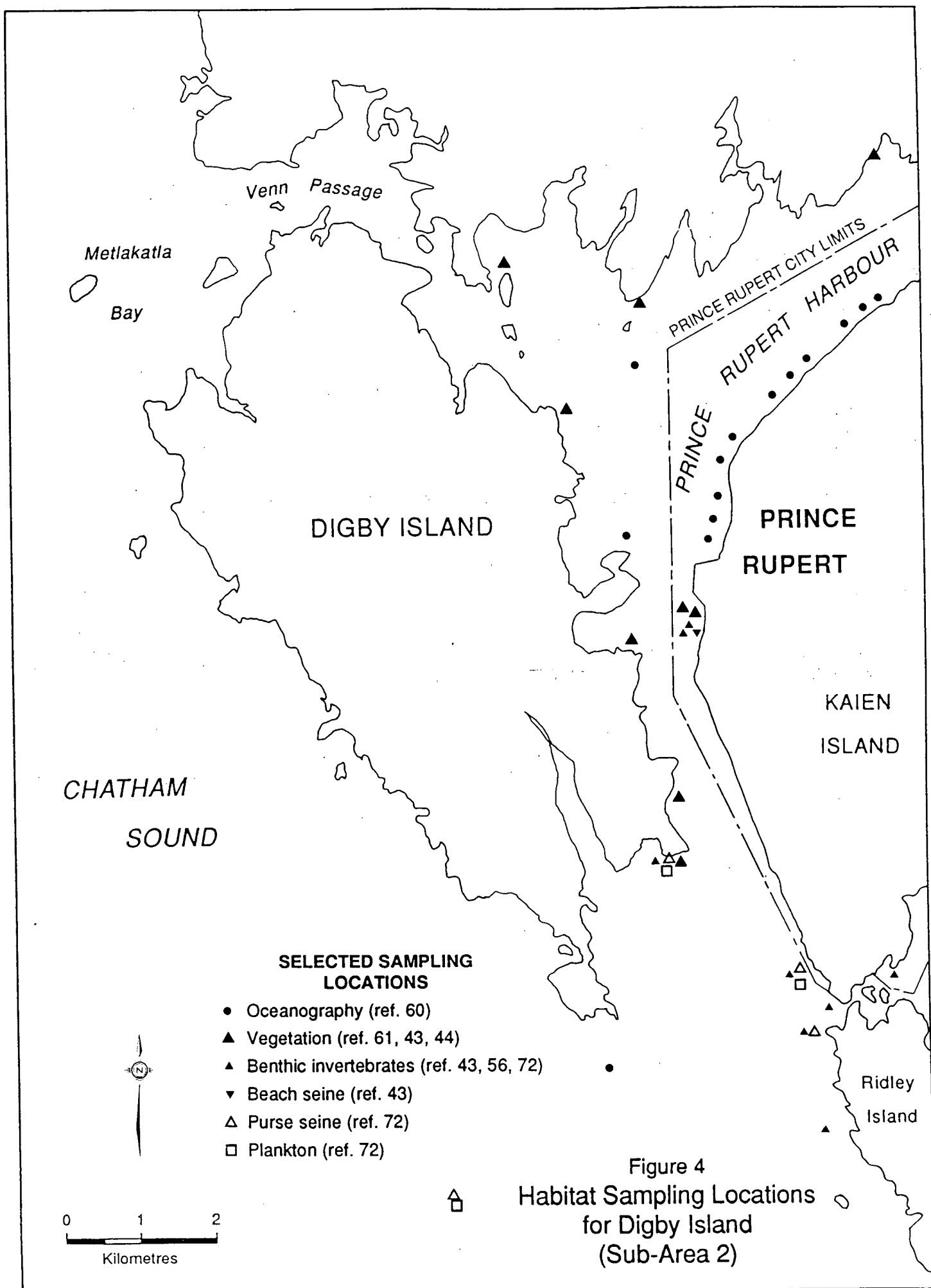
- 33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].**
- 48. Anon. 1990. Eelgrass transplanting. Fairview Terminal expansion project habitat compensation program. R.U. Kistritz Consultants Ltd. Rep to Prince Rupert Port Corporation, Prince Rupert: 21 p.**
- 61. Drinnan, R.W. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Task 3. Intertidal (beach) biology. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 92 p.**

B. INVERTEBRATES

- 9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.**
- 72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.**

C. FISH

43. Anon. 1987. Fairview Terminal expansion preliminary engineering investigations. Volume 3: environmental and socio-economic impact. Final report. Sandwell Swan Wooster Inc. (in association with Golder Associates, Tera Environmental Consultants and RIM Engineering) Rep. for Prince Rupert Port Corporation, Prince Rupert.
70. Hancock, M.J., A.J. Leaney-East, and D.E. Marshall. 1983. Catalogue of salmon streams and spawning escapements of Statistical Area 4 (Lower Skeena River) including coastal streams. Can. Data Rep. Fish. Aquat. Sci. 395: 422 p.
71. Hay, D.E., and P.B. McCarter, R. Kronlund, and C. Roy. 1989. Spawning areas of British Columbia herring: a review, geographical analysis and classification. Volume II: North Coast. Can. MS Rep. Fish. Aquat. Sci. 2019: 99 p.
72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.
84. Manzer, J.I. 1956. Distribution and movement of young Pacific salmon during early ocean residence. Fish. Res. Board Can. Prog. Rep. 106: 24-28.
85. Manzer, J.I. 1969. Stomach contents of juvenile Pacific salmon in Chatham Sound and adjacent waters. J. Fish. Res. Board Can. 26: 2219-2223.



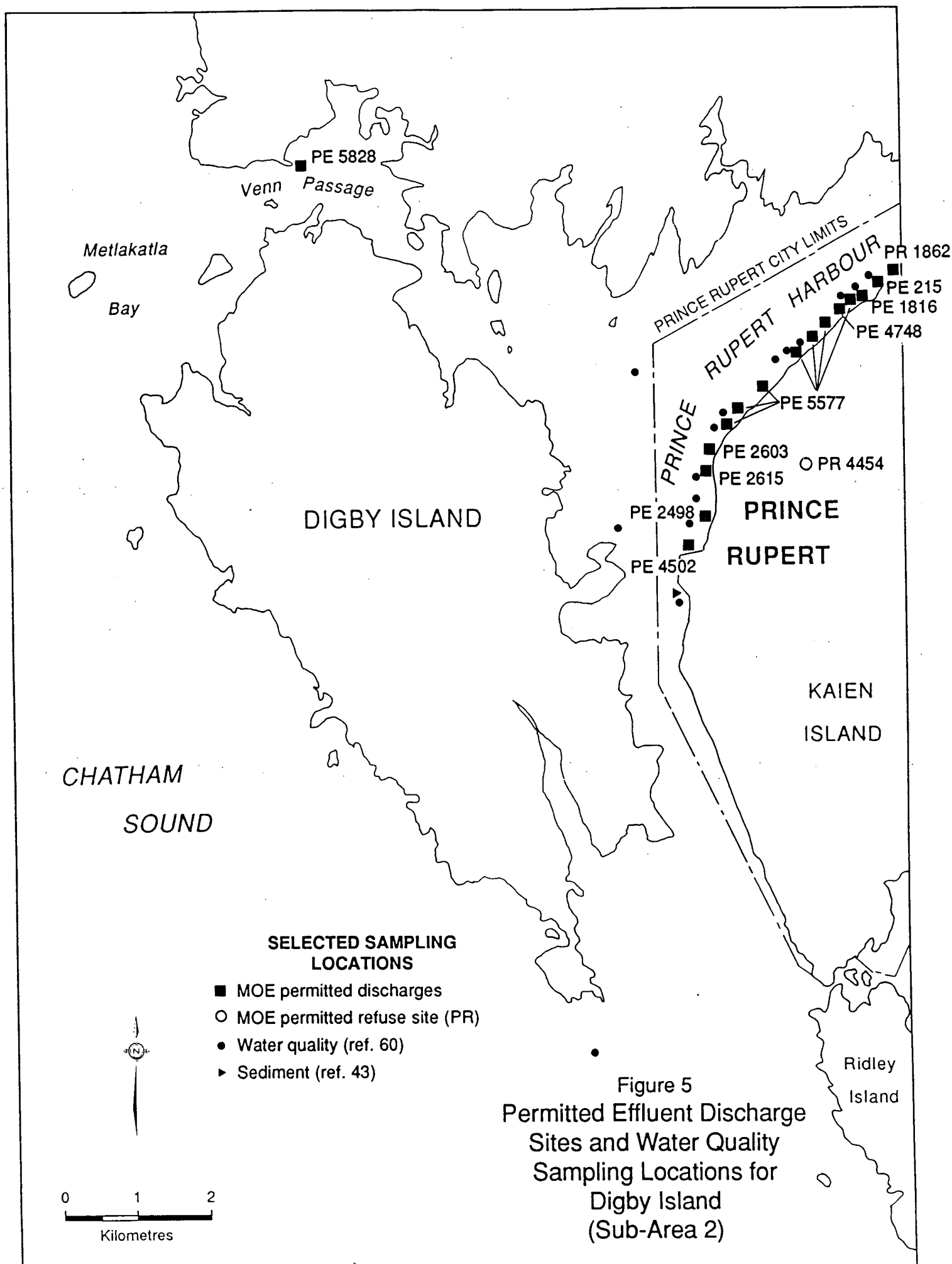
3.0 WATER QUALITY

3.1 Permitted Discharges

PE-02498	Prince Rupert Fisherman's Co-op
PE-02615	British Columbia Ferry Corporation
PE-04502	Prince Rupert Port Corporation
PE-05577	City of Prince Rupert
PE-05828	Metlakatla Band Tsimpean Indian Reservation 2

3.2 Reports

60. Drinnan, R.W., and I. Webster. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Tasks 1 and 2. Oceanography and water quality. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 44 p. + figures.
92. Rowse, B. 1984. Effluent sites in the Prince Rupert and Port Edward harbour area. Skeena Estuary Study. Project 982-024.



PORT EDWARD SUB-AREA

BIBLIOGRAPHIC LISTING BY SUBJECT

1.0 GENERAL

3. Anon. 1967. Deep-sea shipping terminal development plans for the port of Prince Rupert, B.C. Stothert Engineering Ltd. Rep. to Western Wharves Limited, Prince Rupert.
4. Anon. 1969. Feasibility report of the Ridley Island bulk terminal. C.B.A. Engineering Ltd. Rep. for Prince Rupert Port Development Commission Rep.: 22 p.
7. Anon. 1973. Environmental review of proposed port development, Prince Rupert, B.C. H. Paish and Associates Ltd. Rep. for the Province of B.C.
8. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. 2 vols. Dep. Environ., Ottawa.
9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.
10. Anon. 1974. Phase 1 - Bulk marine terminal sites in the Prince Rupert area of British Columbia (engineering aspects). Swan Wooster Engineering Co. Ltd. Rep. for Tsimpsean Peninsula Federal-Provincial Joint Committee: 87 p. + appendix.
14. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. 5 volumes. North Coast Environmental Analysis Team (NEAT) Rep. for Federal/Provincial joint committee on Tsimpsean Peninsula port development.
15. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C - Existing aquatic environment and Appendix D - Pollution Impact. Federal/provincial joint committee on Tsimpsean Peninsula port development. North Coast Environmental Analysis Team.

1.0 GENERAL (continued)

16. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C. Existing aquatic environment. Lee Doran Associates Ltd. Rep. for Federal-Provincial Joint Committee on Tsimpsean Peninsula Port Development: 69 p. + annexes.
17. Anon. 1976. Prince Rupert study. Special Projects Maps. 8 themes (scale: 1:100,000): generalized present land use, land status, recreation capability, topographic base, ungulate capability, waterfowl capability, mineral deposit land use, transporation corridors. Maps B.C., Victoria.
20. Anon. 1978. Ridley Island master plan. 3 volumes. CBA Engineering Ltd. - Carr Donaldson and Associates Rep. for National Harbour Board and Port of Prince Rupert, Prince Rupert.
21. Anon. 1979. A study of coal dust contamination of Canadian Cellulose's Watson Island (Prince Rupert) pulp mill from the operation of a coal terminal on Ridley Island and coal unit train access and egress to the proposed terminal. Phase One - Problem definition. Beak Consultants Ltd., Sandwell and Company Ltd., Swan Wooster Engineering Company Ltd. Rep. for Technical Committee on Coal Dust Contamination. Regional Economic Expansion Canada and Ministry of Industry and Small Business Development.
22. Anon. 1980. A study of coal dust contamination of Canadian Cellulose's Watson Island (Prince Rupert) pulp mill from the operation of a coal terminal on Ridley Island and coal unit train access and egress to the proposed terminal. Executive Summary. Beak Consultants Ltd., Hardy and Associates, Sandwell and Company Ltd., Swan Wooster Engineering Company Ltd. Rep. for Technical Committee on Coal Dust Contamination. Regional Economic Expansion Canada and Ministry of Industry and Small Business Development.

1.0 GENERAL (continued)

23. Anon. 1980. A study of coal dust contamination of Canadian Cellulose's Watson Island (Prince Rupert) pulp mill from the operation of a coal terminal on Ridley Island and coal unit train access and egress to the proposed terminal. Phase Two: mitigating measures. Beak Consultants Ltd., Hardy and Associates, Sandwell and Company Ltd., Swan Wooster Engineering Company Ltd. Rep. for Technical Committee on Coal Dust Contamination. Regional Economic Expansion Canada and Ministry of Industry and Small Business Development.
26. Anon. 1981. Transpac gas project. Proposal. Liquefied natural gas (LNG) export project. 2 volumes. Carter Energy Ltd., Vancouver.
27. Anon. 1981. Official community plan of Port Edward Amendment Bylaw No. 194. McElhanney Rep. for Village of Port Edward, Port Edward, B.C.
28. Anon. 1982. Ridley Island development: prospectus and preliminary planning report. Prince Rupert Terminals Ltd., Prince Rupert.
29. Anon. 1982. Prince Rupert petrochemical project detailed environmental studies. 2 volumes. Transec Canada Ltd. and Simon TR Holding Limited Rep. for Prince Rupert Terminals Ltd., Prince Rupert.
30. Anon. 1982. Site development criteria for a proposed petrochemical terminal at Kaien Island, Prince Rupert, British Columbia. Swan Wooster Engineering Co. Ltd. Rep. for B.C. Development Corporation.
32. Anon. 1982. Initial environmental evaluation for renewed petroleum exploration in Hecate Strait and Queen Charlotte Sound. 2 volumes. Chevron Canada Resources Ltd., Calgary, Alt.
35. Anon. 1983. Offshore Queen Charlotte Islands initial environmental evaluation. 3 volumes. Petro-Canada.
37. Anon. 1984. Ridley Island Development Plan. 3 volumes. FencoLavalin Rep. for Port of Prince Rupert Corporation, Prince Rupert.

1.0 GENERAL (continued)

- 42. Anon. 1987. Environmental and socio-economic impact assessment. Tera Environmental Consultants Ltd. Rep. for Sandwell Swan Wooster Ltd., Vancouver.**
- 43. Anon. 1987. Fairview Terminal expansion preliminary engineering investigations. Volume 3: environmental and socio-economic impact. Final report. Sandwell Swan Wooster Inc. (in association with Golder Associates, Tera Environmental Consultants and RIM Engineering) Rep. for Prince Rupert Port Corporation, Prince Rupert.**
- 44. Anon. 1988. Fairview terminal expansion habitat compensation program. Tera Environmental Consultants Ltd., R.U. Kistritz Consultants Ltd., Hay and Company Consultants Inc. Rep. for Prince Rupert Port Corporation, Prince Rupert.**
- 45. Anon. 1988. Port Edward airport study. McNeal and Associates Consultants Ltd. Rep. for Air Transport Assistance Program (ATAP) Ministry of Transportation and Highways and Village of Port Edward, Port Edward, B.C.**
- 47. Anon. 1989. Fairview terminal expansion project. Environmental impact assessment. Tera Environmental Consultants Ltd., R.U. Kistritz Consultants Ltd., Hay and Company Consultants Inc. Rep. for Prince Rupert Port Corporation, Prince Rupert.**
- 52. Brothers, D.E. 1970. Results of oxygen surveys conducted on the waters contiguous to the Columbia Cellulose pulp mill at Port Edward, B.C., May to November, 1969. Dep. Fish. Can. Memorandum Rep.: 20 p.**
- 66. Dwernychuk, L.W. 1988. The marine receiving environment near Skeena Cellulose Inc.: a study of the physical, chemical and biological components of subtidal and intertidal systems. 3 volumes. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.**
- 74. Hoos, L.M. 1975. The Skeena River estuary. Status of environmental knowledge to 1975. Environ. Can. Spec. Estuary Ser. 3: 418 p.**

1.0 GENERAL (continued)

- 76. Knapp, W., and I. Cairns. 1978. Canadian Cellulose pulp mill - Port Edward, B.C.; Fisheries resources of Fisheries and Marine Service Statistical Area 4. Internal Rep., Habitat Protection Unit, Fish. Mar. Serv.: 20 p.**
- 78. Langford, R.W. (ed.). 1983. Offshore hydrocarbon exploration and development...a preliminary environmental assessment. Planning and Assessment Branch, Ministry of Environment, Victoria: 334 p.**
- 89. Packman, G.A. 1977. Environmental surveillance in the vicinity of the Canadian Cellulose Co. Ltd. pulpmill at Prince Rupert, B.C. Environ. Protection Serv. Rep. EPS 5-PR-77-8: 24 p.**
- 90. Packman, G.A. 1979. Pulpmill environmental assessment Canadian Cellulose Limited, Northern Pulp Operation, Port Edward, B.C. Environ. Protection Serv. Regional Program Rep. 79-7.**
- 91. Pomeroy, W.M. 1983. B.C. Timber pulp mill, Porpoise Harbour - an assessment of mill impact on the receiving environment. Dep. Environ. EPS Regional Program Rep. 83-09.**
- 94. Stokes, J.W. 1953. Pollution survey of the Watson Island area, June 1953. Fish. Mar. Serv., MS Rep., Vancouver: 4 p.**
- 95. Sullivan, D.L. 1987. Compilation and assessment of research, monitoring and dumping information for active dump sites on the British Columbia and Yukon coasts from 1979 to 1987. (Prep. for Pac. Region Ocean Dumping Advisory Committee). Environ. Can. EPS MS Rep. 87-02: 263 p.**
- 102. Tutt, D. 1983. Ridley Island port construction activities - 1982. Background and environmental monitoring. Environ. Can., EPS Regional Program Rep. 83-02, Vancouver: 46 p.**
- 110. Wolferstan, W.H. 1986. Ridley Island development plan environmental review. Planning and Assessment Branch, Ministry of Environment, Victoria: 13 p.**

2.0 HABITAT

2.1 Physical

A. GEOMORPHOLOGY

9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.
33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].
46. Anon. 1988. Geotechnical evaluation, leachate treatment, leachate collection and treated leachate discharge system for City's landfill operation. Phase I report - site suitability (geotechnical aspects). B.H. Levelton & Associates Ltd. and Dayton & Knight Ltd. Rep. for City of Prince Rupert.
58. Clague, J.J., and B.D. Bornhold. 1980. Morphology and littoral processes of the Pacific Coast of Canada, pp. 339-380. *In* S.B. Cann [ed.] *The Coastline of Canada*. Geol. Surv. Can. Pap. 80-10.

C. OCEANOGRAPHY

2. Anon. 1964. Report on hydrological studies related to increased flow requirements of the Watson Island mill, Prince Rupert, B.C. Ingledow Kidd and Associates.
9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.

C. OCEANOGRAPHY (continued)

18. Anon. 1977. Preliminary design study effluent outfalls and diffusers in Porpoise Harbour and Chatham Sound. H.A. Simons (International) Ltd. Rep. for Canadian Cellulose Co. Ltd.
49. Anon. 1990. City of Prince Rupert Wainwright landfill development treated leachate ocean disposal. Dayton and Knight Ltd., Rep. for City of Prince Rupert, Prince Rupert.
50. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 1). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. Can. Data Rep. Hydrol. Ocean Sci. 37: 302 p.
51. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 2). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. Can. Data Rep. Hydrol. Ocean Sci. 37: 265 p.
53. Cameron, W.M. 1948. Fresh water in Chatham Sound. Pac. Prog. Rep. Fish. Res. Board Can. 76: 72-75.
54. Cameron, W.M. 1948. The oceanography of Chatham Sound. Fish. Res. Board Can. (Pac. Oceanogr. Group) MS (mimeo).
55. Cameron, W.M. 1951. Transvers forces in a British Columbia inlet. Trans. Roy. Soc. Can. Sec. V, 45 (Ser. 3): 1-8.
60. Drinnan, R.W., and I. Webster. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Tasks 1 and 2. Oceanography and water quality. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 44 p. + figures.

C. OCEANOGRAPHY (continued)

87. McGreer, E.R., P.W. Delaney, G.A. Vigers, J.W. McDonald, and E.H. Owens. 1980. Review of oceanographic data relating to ocean dumping in the Prince Rupert area with comments on present and alternate dump sites. E.V.S. Consultants Ltd., ESL Environmental Sciences Limited, and Woodward-Clyde Consultants Rep. for Dep. Fish. Oceans., Inst. Ocean Sci., Sidney, B.C.: 81 p.
93. Schoenrank, R.V. 1967. Tidal currents and volume transport at Galloway Rapids. University of Victoria MS Rep.: 11 p.
98. Thompson, R.E. 1981. Oceanography of the British Columbia coast. Can. Spec. Publ. Fish. Aquat. Sci. 56: 291 p.
99. Trites, R.W. 1952. The oceanography of Chatham Sound, British Columbia. M.A. thesis, Univ. British Columbia, Vancouver.
100. Trites, R.W. 1953. Oceanography of Chatham Sound. University of British Columbia, Inst. Oceanogr. MS Rep. 3: 32 p.
101. Trites, R.W. 1956. The oceanography of Chatham Sound, British Columbia. J. Fish. Res. Board Can. 13: 385-434.
108. Waldichuk, M., J.R. Markert, and J.H. Meikle. 1968. Physical and chemical oceanographic data from the west coast of Vancouver Island and northern British Columbia coast, 1957-1967. Volume II: Fisher Channel - Cousins Inlet, Douglas Channel - Kitimat Arm and Prince Rupert Harbour and its contiguous waters. Fish. Res. Board Can. MS Rep. 990: 303 p.

2.2 Biological

A. VEGETATION

- 9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.**
- 24. Anon. 1980. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.**
- 25. Anon. 1981. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.**
- 31. Anon. 1982. Water quality and biological studies in the marine environment near the B.C. Timber pulp mill - 1981. Beak Consultants Limited Rep. for B.C. Timber Ltd., Prince Rupert.**
- 33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].**
- 36. Anon. 1984. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1983. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.**
- 38. Anon. 1985. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1984. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.**

A. VEGETATION (continued)

- 44. Anon. 1988. Fairview terminal expansion habitat compensation program. Tera Environmental Consultants Ltd., R.U. Kistritz Consultants Ltd., Hay and Company Consultants Inc. Rep. for Prince Rupert Port Corporation, Prince Rupert.**
- 48. Anon. 1990. Eelgrass transplanting. Fairview Terminal expansion project habitat compensation program. R.U. Kistritz Consultants Ltd. Rep to Prince Rupert Port Corporation, Prince Rupert: 21 p.**
- 61. Drinnan, R.W. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Task 3. Intertidal (beach) biology. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 92 p.**
- 62. Drinnan, R.W. 1977. Prince Rupert pulp mill monitoring program - survey of intertidal macroalgae, 1974-1975. Wat. Investigations Branch, Ministry of Environment.**
- 63. Dwernychuk, L.W. 1983. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1982. IEC Beak Consultants Ltd. 2 volumes. Rep. for Westar Timber Limited, Prince Rupert.**
- 64. Dwernychuk, L.W. 1986. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1985. Hatfield Consultants Limited Rep. for Westar Timber Limited, Prince Rupert.**
- 65. Dwernychuk, L.W. 1987. Water quality and biological studies in the marine environment near the Skeena Cellulose pulp mill, 1986. 2 volumes. Hatfield Consultants Limited Rep. for Skeena Cellulose Inc., Prince Rupert.**
- 66. Dwernychuk, L.W. 1988. The marine receiving environment near Skeena Cellulose Inc.: a study of the physical, chemical and biological components of subtidal and intertidal systems. 3 volumes. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.**

B. INVERTEBRATES

9. Anon. 1973. Preliminary environmental effect assessment - superport development Prince Rupert region. F.F. Slaney and Company Limited Rep. for Dep. Environ., Ottawa: 82 pages + appendices.
24. Anon. 1980. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.
25. Anon. 1981. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.
31. Anon. 1982. Water quality and biological studies in the marine environment near the B.C. Timber pulp mill - 1981. Beak Consultants Limited Rep. for B.C. Timber Ltd., Prince Rupert.
36. Anon. 1984. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1983. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.
38. Anon. 1985. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1984. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.
49. Anon. 1990. City of Prince Rupert Wainwright landfill development treated leachate ocean disposal. Dayton and Knight Ltd., Rep. for City of Prince Rupert, Prince Rupert.
56. Cannings, R.J. 1979. A study of bird use on mudflats on Ridley Island, B.C. Environ. Can., Can. Wildl. Serv., Delta, B.C.: 69 p.

B. INVERTEBRATES (continued)

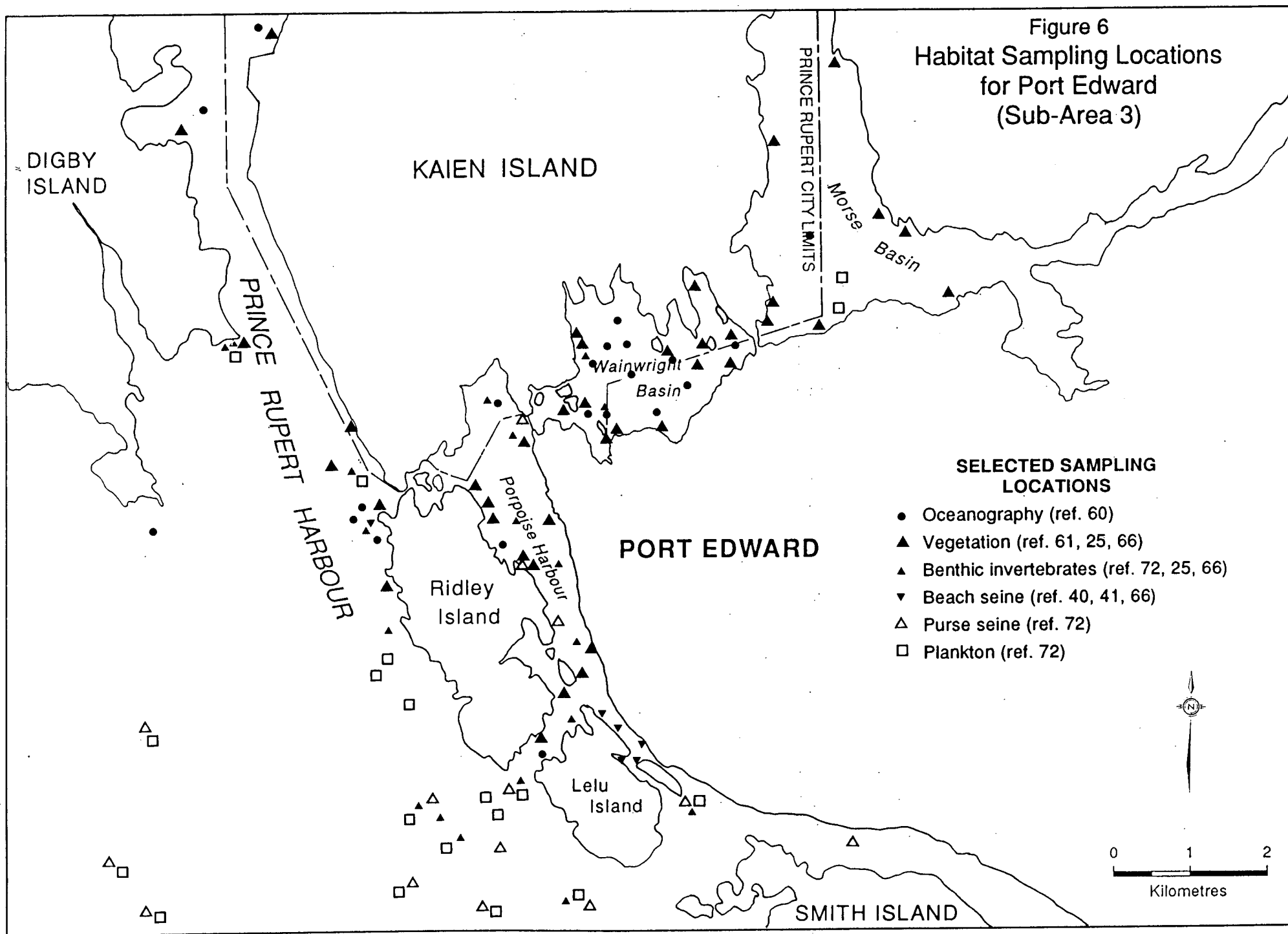
63. Dwernychuk, L.W. 1983. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1982. IEC Beak Consultants Ltd. 2 volumes. Rep. for Westar Timber Limited, Prince Rupert.
64. Dwernychuk, L.W. 1986. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1985. Hatfield Consultants Limited Rep. for Westar Timber Limited, Prince Rupert.
65. Dwernychuk, L.W. 1987. Water quality and biological studies in the marine environment near the Skeena Cellulose pulp mill, 1986. 2 volumes. Hatfield Consultants Limited Rep. for Skeena Cellulose Inc., Prince Rupert.
66. Dwernychuk, L.W. 1988. The marine receiving environment near Skeena Cellulose Inc.: a study of the physical, chemical and biological components of subtidal and intertidal systems. 3 volumes. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.
72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.
84. Maclean, D.B. 1986. Trace metals in *Mytilus edulis* (mussels) and sediments from Kitimat Arm and Porpoise Harbour. Min. Environ. Waste Manage. Rep 86-03, Smithers, B.C.

C. FISH

1. Anderson, E.P. 1986. Skeena juvenile salmon ecology. Habitat use and diet of juvenile salmon from the Skeena River estuary, 2 May to 20 August, 1986. MS Rep. Job development strategy project 4038 RX2, Canada Employment and Immigration, Terrace, B.C. (sampling sites in Inverness Passage and Flora Bank) Available from Edward Anderson Marine Sciences, Sidney, B.C.
40. Anon. 1986. Lelu Island beach seine data, June 5, 1986. DFO Waterfront file 550-6-2H. Dep. Fish. Oceans, Habitat Management Unit, Prince Rupert.
41. Anon. 1986. Beach seining data - June 5 and July 9, 1986. Dep. Fish. Oceans, Hab. Manage. Unit, Prince Rupert. [DFO file Waterfront 7430-8-2]
49. Anon. 1990. City of Prince Rupert Wainwright landfill development treated leachate ocean disposal. Dayton and Knight Ltd., Rep. for City of Prince Rupert, Prince Rupert.
66. Dwernychuk, L.W. 1988. The marine receiving environment near Skeena Cellulose Inc.: a study of the physical, chemical and biological components of subtidal and intertidal systems. 3 volumes. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.
70. Hancock, M.J., A.J. Leaney-East, and D.E. Marshall. 1983. Catalogue of salmon streams and spawning escapements of Statistical Area 4 (Lower Skeena River) including coastal streams. Can. Data Rep. Fish. Aquat. Sci. 395: 422 p.
71. Hay, D.E., and P.B. McCarter, R. Kronlund, and C. Roy. 1989. Spawning areas of British Columbia herring: a review, geographical analysis and classification. Volume II: North Coast. Can. MS Rep. Fish. Aquat. Sci. 2019: 99 p.

C. FISH (continued)

- 72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.**
- 76. Knapp, W., and I. Cairns. 1978. Canadian Cellulose pulp mill - Port Edward, B.C.; Fisheries resources of Fisheries and Marine Service Statistical Area 4. Internal Rep., Habitat Protection Unit, Fish. Mar. Serv.: 20 p.**
- 85. Manzer, J.I. 1956. Distribution and movement of young Pacific salmon during early ocean residence. Fish. Res. Board Can. Prog. Rep. 106: 24-28.**
- 86. Manzer, J.I. 1969. Stomach contents of juvenile Pacific salmon in Chatham Sound and adjacent waters. J. Fish. Res. Board Can. 26: 2219-2223.**



3.0 WATER QUALITY

3.1 Permitted Discharges

PE-01157	Skeena Cellulose Inc.
PE-04557	Village of Port Edward
PE-05680	British Columbia Hydro and Power Authority
PE-06279	Prince Rupert Grain Limited
PE-06511	Prince Rupert Grain Limited
PE-06698	Ridley Terminal Incorporated
PE-07866	Aero Trading Company Ltd.

3.2 Permitted Refuse Site

PR-03097	Skeena Cellulose Inc.
PR-05414	Skeena Cellulose Inc.

3.3 Permitted Special Waste Storage Site

PS-08045	Skeena Cellulose
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3.4 Reports

5. Anon. 1970. Pollution control review and program for Northern Pulp Operations, Canadian Cellulose Co. Ltd., Watson Island, Prince Rupert, B.C. Ker, Priestman, Keenan and Assoc. Ltd. Rep. for Canadian Cellulose Co. Ltd., Prince Rupert.
24. Anon. 1980. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.
25. Anon. 1981. Biological and water quality studies in the marine environment near the Canadian Cellulose pulp mill. Beak Consultants Limited Rep. for Canadian Cellulose Company Limited, Prince Rupert.

3.4 Reports (continued)

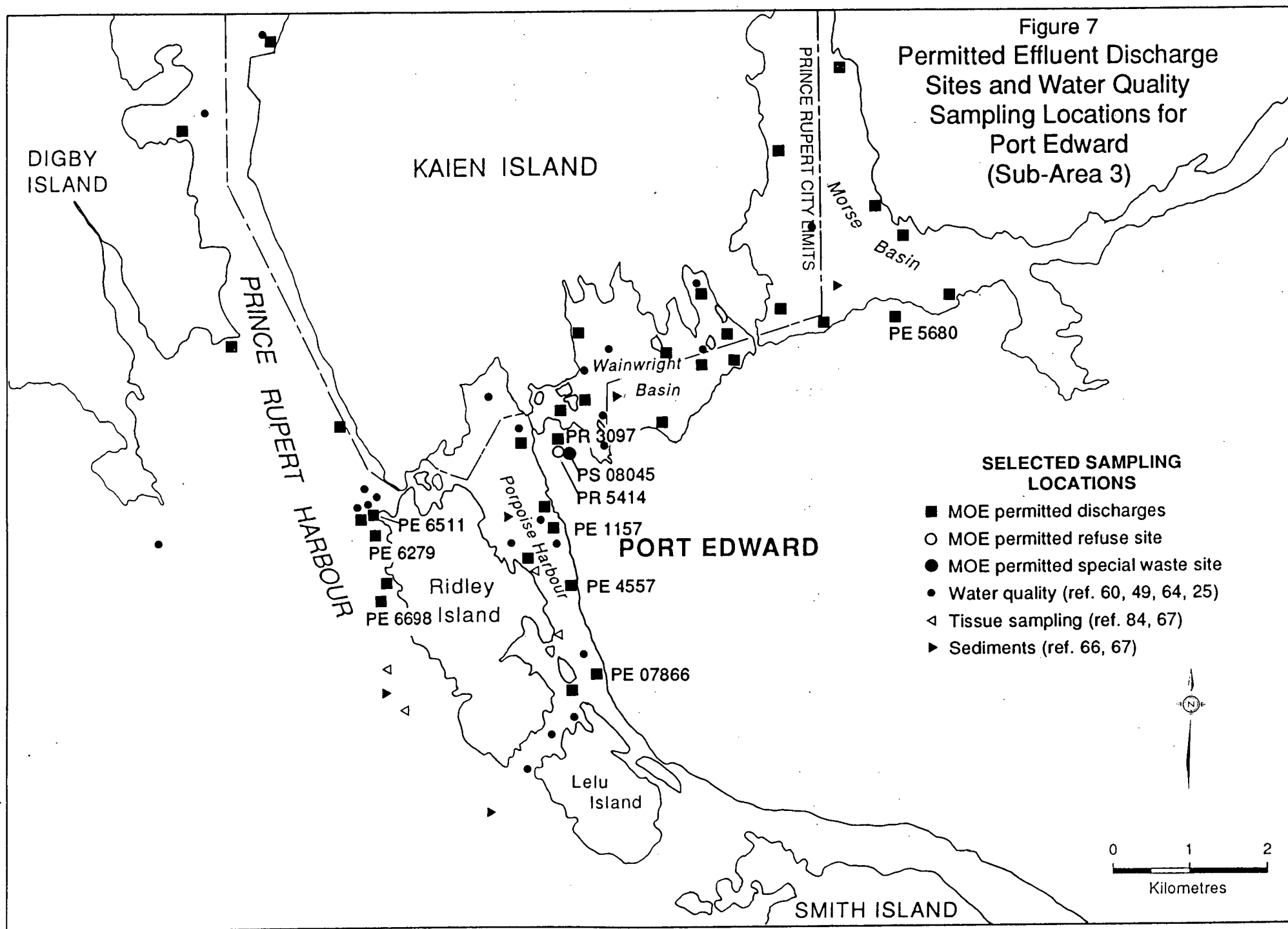
31. Anon. 1982. Water quality and biological studies in the marine environment near the B.C. Timber pulp mill - 1981. Beak Consultants Limited Rep. for B.C. Timber Ltd., Prince Rupert.
36. Anon. 1984. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1983. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.
38. Anon. 1985. Water quality and biological studies in the marine environment near the Westar Timber pulp mill -1984. IEC Beak Consultants Ltd. Rep. for B.C. Timber Ltd., Prince Rupert.
46. Anon. 1988. Geotechnical evaluation, leachate treatment, leachate collection and treated leachate discharge system for City's landfill operation. Phase I report - site suitability (geotechnical aspects). B.H. Levelton & Associates Ltd. and Dayton & Knight Ltd. Rep. for City of Prince Rupert.
49. Anon. 1990. City of Prince Rupert Wainwright landfill development treated leachate ocean disposal. Dayton and Knight Ltd., Rep. for City of Prince Rupert, Prince Rupert.
60. Drinnan, R.W., and I. Webster. 1974. Prince Rupert Harbour provincial interagency study. Program 3: Tasks 1 and 2. Oceanography and water quality. Pollut. Control Branch, Wat. Resour. Serv., Dep. Lands, Forests and Wat. Resour., Victoria: 44 p. + figures.
63. Dwernychuk, L.W. 1983. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1982. IEC Beak Consultants Ltd. 2 volumes. Rep. for Westar Timber Limited, Prince Rupert.

3.4 Reports (continued)

64. Dwernychuk, L.W. 1986. Water quality and biological studies in the marine environment near the Westar Timber pulp mill - 1985. Hatfield Consultants Limited Rep. for Westar Timber Limited, Prince Rupert.
65. Dwernychuk, L.W. 1987. Water quality and biological studies in the marine environment near the Skeena Cellulose pulp mill, 1986. 2 volumes. Hatfield Consultants Limited Rep. for Skeena Cellulose Inc., Prince Rupert.
66. Dwernychuk, L.W. 1988. The marine receiving environment near Skeena Cellulose Inc.: a study of the physical, chemical and biological components of subtidal and intertidal systems. 3 volumes. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.
67. Dwernychuk, L.W. 1989. Bottom sediments and biological tissues: a baseline organochlorine contamination survey in the marine environment near Skeena Cellulose Inc. Hatfield Consultants Ltd. Rep. for Skeena Cellulose Inc., Prince Rupert.
73. Hodgins, D.O., and M. Knoll. 1990. Effluent dispersion study for the Skeena Cellulose outfall in Porpoise Harbour, British Columbia. Seaconsult Marine Res. Ltd. Rep. to Skeena Cellulose Inc., Prince Rupert: 62 p.
77. Kussat, R. 1968. Investigation of fish kills in Wainwright Basin and Porpoise Harbour. Unpubl. Project Rep. for Dep. Fish. Can.
84. Maclean, D.B. 1986. Trace metals in *Mytilus edulis* (mussels) and sediments from Kitimat Arm and Porpoise Harbour. Min. Environ. Waste Manage. Rep 86-03, Smithers, B.C.
92. Rowse, B. 1984. Effluent sites in the Prince Rupert and Port Edward harbour area. Skeena Estuary Study. Project 982-024.

3.4 Reports (continued)

- 103. Walden, C.C. 1964. Disposal of effluents from existing sulfite and proposed Kraft mills at Watson Island, B.C. B.C. Research Council abridged Rep. 61-253-B-1 for Celgar Limited: 15 p.**
- 104. Waldichuk, M. 1962. Some water pollution problems connected with the disposal of pulp mill wastes. Can. Fish. Cult. 31: 3-34.**
- 105. Waldichuk, M. 1962. Observations in marine waters of the Prince Rupert area, particularly with reference to pollution from sulphite pulp mill on Watson Island, September 1961. Fish Res. Board Can. MS. Rep. (Biol.) 733 p.**
- 106. Waldichuk, M., and E.L. Bousfield. 1962. Amphipods in low-oxygen marine waters adjacent to a sulphite pulp mill. J. Fish. Res. Board Can. 19: 1163-1165.**
- 107. Waldichuk, M. 1966. Effects of sulfite wastes in a partially enclosed marine system in British Columbia. J. Wat. Pollut. Contr. Fed. 38: 1484-1505.**
- 109. Werner, A.E. 1968. Gases from sediments in polluted coastal wasters. Pulp Paper Mag. Can. 69: 127-136.**



SMITH ISLAND SUB-AREA

BIBLIOGRAPHIC LISTING BY SUBJECT

1.0 GENERAL

14. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. 5 volumes. North Coast Environmental Analysis Team (NEAT) Rep. for Federal/Provincial joint committee on Tsimpsean Peninsula port development.
15. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C. Existing aquatic environment and Appendix D - Pollution Impact. Federal/provincial joint committee on Tsimpsean Peninsula port development. North Coast Environmental Analysis Team.
16. Anon. 1975. Prince Rupert bulk loading facility. Phase II. Environmental assessment of alternatives. Vol. 4. Appendix C. Existing aquatic environment. Lee Doran Associates Ltd. Rep. for Federal-Provincial Joint Committee on Tsimpsean Peninsula Port Development: 69 p. + annexes.
17. Anon. 1976. Prince Rupert study. Special Projects Maps. 8 themes (scale: 1:100,000): generalized present land use, land status, recreation capability, topographic base, ungulate capability, waterfowl capability, mineral deposit land use, transporation corridors. Maps B.C., Victoria.
32. Anon. 1982. Initial environmental evaluation for renewed petroleum exploration in Hecate Strait and Queen Charlotte Sound. 2 volumes. Chevron Canada Resources Ltd., Calgary, Alt.
35. Anon. 1983. Offshore Queen Charlotte Islands initial environmental evaluation. 3 volumes. Petro-Canada.
74. Hoos, L.M. 1975. The Skeena River estuary. Status of environmental knowledge to 1975. Environ. Can. Spec. Estuary Ser. 3: 418 p.

1.0 GENERAL (continued)

78. Langford, R.W. (ed.). 1983. Offshore hydrocarbon exploration and development...a preliminary environmental assessment. Planning and Assessment Branch, Ministry of Environment, Victoria: 334 p.

2.0 HABITAT

2.1 Physical

A. GEOMORPHOLOGY

- 33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].**
- 58. Clague, J.J., and B.D. Bornhold. 1980. Morphology and littoral processes of the Pacific Coast of Canada, pp. 339-380. *In* S.B. Cann [ed.] *The Coastline of Canada*. Geol. Surv. Can. Pap. 80-10.**

C. OCEANOGRAPHY

- 50. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 1). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. *Can. Data Rep. Hydrol. Ocean Sci.* 37: 302 p.**
- 51. Birch, J.R., E.C. Luscombe, D.B. Fissel, and L.F. Giovando. 1985. West Coast data inventory and appraisal. Volume 1 (Part 2). Dixon Entrance, Hecate Strait, Queen Charlotte Sound and adjoining B.C. coastal waters: physical oceanography - temperature, salinity, currents, water levels and waves, 1903 through 1984. *Can. Data Rep. Hydrol. Ocean Sci.* 37: 265 p.**
- 53. Cameron, W.M. 1948. Fresh water in Chatham Sound. *Pac. Prog. Rep. Fish. Res. Board Can.* 76: 72-75.**
- 54. Cameron, W.M. 1948. The oceanography of Chatham Sound. *Fish. Res. Board Can. (Pac. Oceanogr. Group)* MS (mimeo).**

C. OCEANOGRAPHY (continued)

- 55. Cameron, W.M. 1951. Transvers forces in a British Columbia inlet. Trans. Roy. Soc. Can. Sec. V, 45 (Ser. 3): 1-8.
- 87. McGreer, E.R., P.W. Delaney, G.A. Vigers, J.W. McDonald, and E.H. Owens. 1980. Review of oceanographic data relating to ocean dumping in the Prince Rupert area with comments on present and alternate dump sites. E.V.S. Consultants Ltd., ESL Environmental Sciences Limited, and Woodward-Clyde Consultants Rep. for Dep. Fish. Oceans., Inst. Ocean Sci., Sidney, B.C.: 81 p.
- 98. Thompson, R.E. 1981. Oceanography of the British Columbia coast. Can. Spec. Publ. Fish. Aquat. Sci. 56: 291 p.
- 99. Trites, R.W. 1952. The oceanography of Chatham Sound, British Columbia. M.A. thesis, Univ. British Columbia, Vancouver.
- 100. Trites, R.W. 1953. Oceanography of Chatham Sound. University of British Columbia, Inst. Oceanogr. MS Rep. 3: 32 p.
- 101. Trites, R.W. 1956. The oceanography of Chatham Sound, British Columbia. J. Fish. Res. Board Can. 13: 385-434.

2.2 Biological

A. VEGETATION

- 33. Anon. 1982. North District resource mapping and planning exercise program. Substrate and vegetation (kelp). Job creation. Dep. Fish. Oceans, Habitat Management Div., Prince Rupert [24 maps and draft text in file box 9, S. Hamilton].

A. VEGETATION (continued)

72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.

B. INVERTEBRATES

72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.

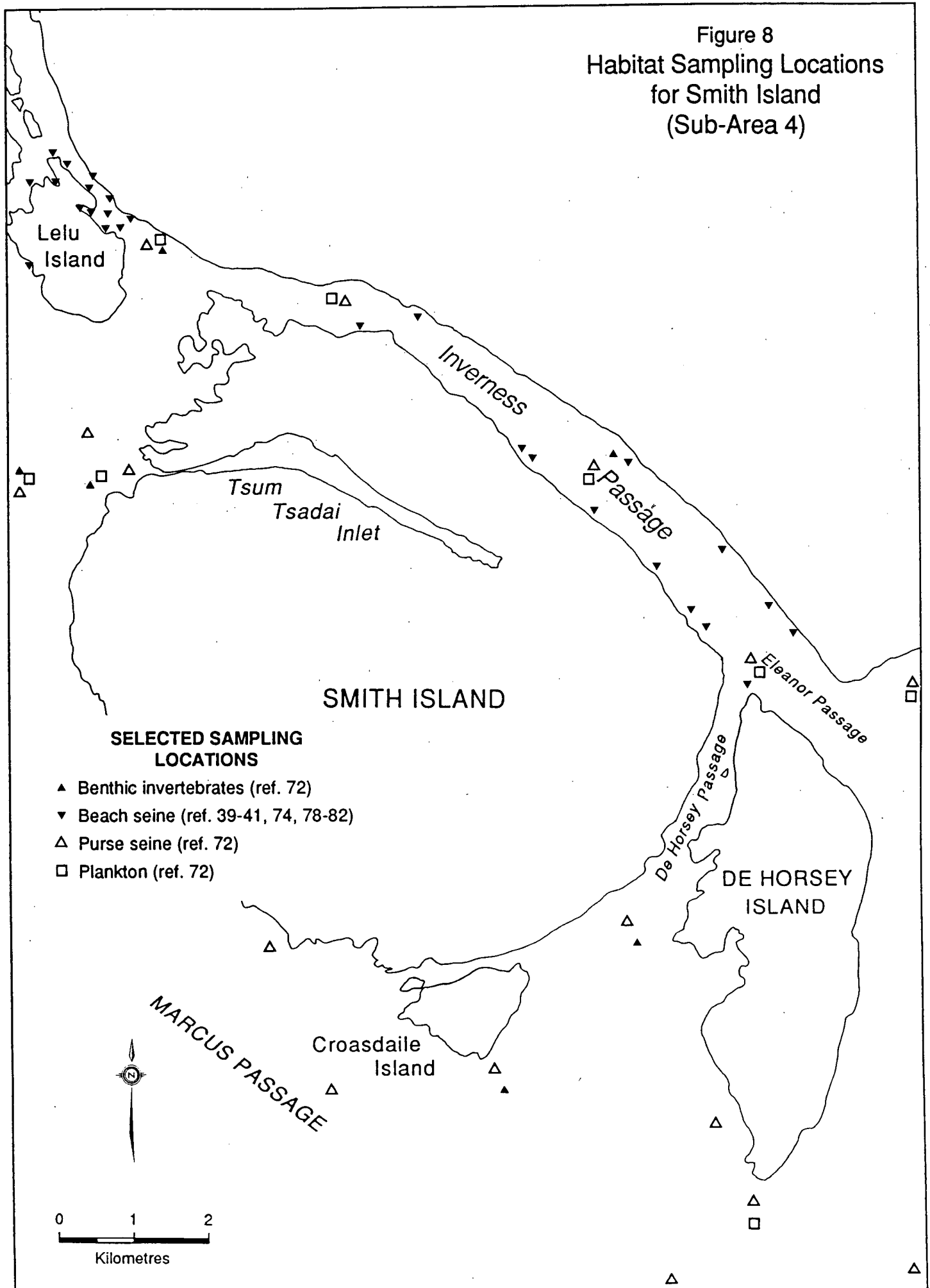
C. FISH

1. Anderson, E.P. 1986. Skeena juvenile salmon ecology. Habitat use and diet of juvenile salmon from the Skeena River estuary, 2 May to 20 August, 1986. MS Rep. Job development strategy project 4038 RX2, Canada Employment and Immigration, Terrace, B.C. (sampling sites in Inverness Passage and Flora Bank) Available from Edward Anderson Marine Sciences, Sidney, B.C.
39. Anon. 1985. Lelu Island beach seine data, June 16, 1985. DFO Waterfront file 550-6-2H. Dep. Fish. Oceans, Habitat Management Unit, Prince Rupert.
40. Anon. 1986. Lelu Island beach seine data, June 5, 1986. DFO Waterfront file 550-6-2H. Dep. Fish. Oceans, Habitat Management Unit, Prince Rupert.
41. Anon. 1986. Beach seining data - June 5 and July 9, 1986. Dep. Fish. Oceans, Hab. Manage. Unit, Prince Rupert. [DFO file Waterfront 7430-8-2]

C. FISH (continued)

- 70. Hancock, M.J., A.J. Leaney-East, and D.E. Marshall. 1983. Catalogue of salmon streams and spawning escapements of Statistical Area 4 (Lower Skeena River) including coastal streams. Can. Data Rep. Fish. Aquat. Sci. 395: 422 p.**
- 71. Hay, D.E., and P.B. McCarter, R. Kronlund, and C. Roy. 1989. Spawning areas of British Columbia herring: a review, geographical analysis and classification. Volume II: North Coast. Can. MS Rep. Fish. Aquat. Sci. 2019: 99 p.**
- 72. Higgins, R.J., and W.J. Schouwenburg. 1973. A biological assessment of fish utilization of the Skeena River estuary, with special reference to port development in Prince Rupert. Dep. Environ., Fish. Mar. Serv., Northern Operations Branch, Tech. Rep. (1973-1): 65 p.**
- 75. Johnson, K. 1984. Skeena River estuary project Inverness Passage field Report August 1-2, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.**
- 79. Last, G. 1984. Skeena River estuary project Lelu Island field report August 10, October 10 and 12, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.**
- 80. Last, G. 1984. Skeena River estuary project Lelu Island field report October 24, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.**
- 81. Last, G. 1984. Skeena River estuary project Inverness Passage field report November 5, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.**
- 82. Last, G. 1984. Skeena River estuary project Inverness Passage field report November 23/26, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.**
- 83. Last, G. 1984. Skeena River estuary project Inverness Passage field report November 28, 1984. Dep. Fish. Oceans, Habitat Manage. Unit, Prince Rupert.**

Figure 8
Habitat Sampling Locations
for Smith Island
(Sub-Area 4)



3.0 WATER QUALITY

3.1 Permitted Discharges

PE-01810 Ocean Fisheries Limited

Figure 9
Permitted Effluent Discharge
Sites for
Smith Island
(Sub-Area 4)

